LAND TRANSPORT AUTHORITY

MAINTENANCE MANAGEMENT SYSTEM

OPERATION MANUAL COSWIN WORK VOLUME 5 OF 11

Ref.: 756/PMP/8029e/A- KSC Version: 2.<u>10</u> Date: <u>213 JuneAugust</u> 2002





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

MODIFICATIONS

Version	Date	Comments
1.0	20 October 2001	Draft version.
2.0	3 June 2002	Updated
<u>2.1</u>	21 August 2002	Updated as per LTA ref. DS/756/PMP/8029/-



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: B

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u> Formatted: Font: 10 pt, Font color:

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PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: i

Date: 21 August 200221 August 200221 August 20023 June 2002

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029e/A756/PMP/8029e/A756/ KSC Version: <u>2.12.12.1</u>2.0

756/PMP/8029e/A756/PMP/8

Reference:

PMP/8029e/-

TABLE OF CONTENTS

<u>1.</u>	INTI	RODUCTION	<u>1</u>
2.	PES	OURCES	2
			2
2	.1 2.1.1	SKILLS	3
	$\frac{2.1.1}{2.1.2}$		
		To Delete a Skill	to the second se
	$\frac{2.1.5}{2.1.4}$		
	$\frac{2.1.4}{2.1.5}$		
2		RESOURCES.	
<u> </u>		To Add a New Resource	
	2.2.2		
	2.2.3		10
		Resource Skill Details	
2	.3	SUPERVISOR	
_	2.3.1		
	2.3.2	To Modify a Supervisor	13
	2.3.3	To Delete a Supervisor	14 13
	2.3.4	To DEL/MOD/ADD an Associated Employee	14
2	.4	EMPLOYEE	15
	2.4.1	To Open Employee Calendar	23
	2.4.2		
	2.4.3		23 22
	2.4.4		24
	<u>2.4.5</u>		24
	2.4.6	Employee Skill Details	25
_		EMPLOYEE CALENDAR	27 26
2	.6	ATTENDANCE	30 29
		To Add a New Attendance Details	
	2.6.2	To Modify an Attendance Details	
	2.6.3		
	<u>2.6.4</u>		
3.	SHII	T AND ROSTER MANAGEMENT	35 <u>33</u>
3	.1	DEFINE SHIFT	3634
<u> </u>	3.1.1		
	3.1.2	· · · · · · · · · · · · · · · · · · ·	
		To Delete a Shift	
3		DEFINE SHIFT PATTERN	
	3.2.1	To Add a New Shift Pattern	4138
	3.2.2		
	3.2.3	To Delete a Shift Pattern	
	3.2.4	Shift Pattern Daily Shifts Details	42 39
	3.2.5	Shift Pattern Global/Specific Resource Details	4441
3	.3	ATTACH SHIFT PATTERN TO A COMPANY ENTITY	4643
		To Add a Shift Pattern to a Company Entity	
	<u>3.3.2</u>	To Modify the details of an Adopted Company Shift Pattern	47 <u>44</u>
	<u>3.3.3</u>		47 44
<u>3</u>	.4	DEFINE EMPLOYEE'S SHIFT PATTERN	48 45
		To Add a New Employee Shift Pattern	484 5
	3.4.2		48 <u>45</u>
	<u>3.4.3</u>	To Delete an Employee Shift Pattern	<u>4845</u>
<u>3</u>		CREATE SHIFT ROSTER FOR A COMPANY ENTITY	
	<u>3.5.1</u>	To Generate a Roster	53 <u>49</u>



MAINTENANCE MANAGEMENT SYSTEM | Page: ii

COSWIN WORKCOSWIN WORK

C756

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

3.5.2	To Modify a Roster	54 50
3.5.3	To Delete a Roster	
3.5.4	Roster Shift Details	54 50
3.5.5	Roster Shift Employee Details	55 51
3.6 V	VORKLOAD	57 53
	ANNED MAINTENANCE	
4.1	O CREATE AN UNPLANNED WORK ORDER	62 57
4.1.1	List of fields to Define during Work Order Creation	6459
	To Save the Work Order	
4.1.3	To Specify the Job Activities of the Work	75 70
4.1.4	To Specify the Specific Text pertaining to the Equipment To Allocate Employee to the Work Order	75 70
4.1.5	To Allocate Employee to the Work Order	
4.1.6	To Generate Work Permit Request	78 73
	NED MAINTENANCE	
5. PLAN	NED MAINTENANCE	79 74
5.1 I	DEFINE METERS	80 75
5.1.1	Types of Meters	81 76
5.1.2	Meter Details	83 78
5.2 I	DEFINE JOB GUIDELINES FOR EQUIPMENT	89 84
5.2.1	Concept on Job Behaviours	89 84
5.2.2	List of Fields to Define in Job Guidelines	9287
5.2.3	To Add a New Job to an Equipment	114 106
5.2.4		115 107
5.2.5	To Modify an Equipment Job	
5.2.6	To Delete an Eauipment Job	117 109
5.2.7	To Release Work Order from an Equipment Job	
5.2.8	To Reset the Next Due Date of the Equipment Job	118 110
5.2.9	Stock Requirement Details	119 111
5.2.10		
5.2.11	Job Actions Details	
5.2.12		
5.2.13		129 120
5.2.14		130 122
5.2.15		
5.3 J	OB PLANNING	134 126
5.3.1	Concept of Planning in COSWIN	
5.3.2	Create a Job Plan	
5.3.3		144 135
5.3.4	Display Daily Resource Availability	148 138
5.3.5		
5.3.6	Compute Stock Availability	152 142
5.4	CONSULTING THE PLAN AND RELEASING JOB	157 147
	Plan Summary	
5.4.2	Releasing Jobs	159 149
	DITION BASED MAINTENANCE	
6.1 N	MEASUREMENT SETS DIRECTORY	169 <u>158</u>
	To Add a New Measurement Set	
6.1.2	To Modify a Measurement Set	
6.1.3	To Delete a Measurement Set	170 159
6.2 N	MEASUREMENT NORMS DIRECTORY	171 160

6.2.1 To Add a New Measurement Norms

6.3 MEASUREMENT JOBS DIRECTORY.

6.2.2 To Modify a Measurement Norms....

6.2.4 Norm Value Details



172161

.... 172161

.... 173162 175163

6.2.3 To Delete a Measurement Norms....

C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: iii Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

6.3.1 To Add a New Measurement Job	176 164
6.3.2 To Modify a Measurement Job.	
6.3.3 To Delete a Measurement Job	
6.4 EQUIPMENT MEASUREMENT SET	
6.4.1 To Add a Measurement Set to an Equipment	
6.4.2 To Modify a Measurement Set of an Equipment	
6.4.3 To Delete a Measurement Set from an Equipment	
6.4.4 Set Details	
6.5 MEASUREMENT POINT	180 168
6.5.1 To Add a New Measurement Point	
6.5.2 To Modify a Measurement Point.	
6.5.3 To Delete a Measurement Point	
6.5.4 Feedback Details	
6.6 MEASUREMENT FEEDBACK	193 180
6.6.1 Feedback Readings	194 181
6.7 MEASUREMENT DISPLAY	
6.7.1 To View Point Details	
6.7.2 To View Feedback Display	
6.8 MEASUREMENT BATCH ANALYSIS	204191
6.9 ALARMS SUMMARY	
6.9.1 To Specify a Rectification Date for a Measurement Point	
6.9.2 To Reset Alarm Occurred on a Measurement Point	211108
6.9.3 To Create Manual Work Order for Alarm	
· ·	
7. JOB REQUESTS	212 199
7.1 CREATE USER REQUEST	213 200
7.1.1 To Add a New User Request	219206
7.1.2 To Modify an User Request	219206
7.1.3 To Delete an User Request	219206
7.1.4 Fault Report Details	
7.2 REVIEW JOB REQUEST BY PLANNER	
7.2.1 To Review/Modify the User Request	
7.2.2 To Assign a Job to the User Request	230217
7.2.3 Releasing Job Requests into Plan	231217
7.2.4 Releasing Job Request into Work In Progress	237218
7.2.5 Detailed Field Descriptions for Release Ranges	
7.2.6 Paging from Job Requests	
7.3 COMBINE JOB REQUESTS	
7.4 CANCEL/CLOSE JOB REQUESTS	
7.5 DELETE JOB REQUESTS	
8. WORK IN PROGRESS	240 226
8.1 PROVIDE FEEDBACK ON WORK ORDER	242228
8.1.1 Specifying the Main Parameters of the Work Order	2/3220
8.1.2 Specifying the Time Duration, Source and Costs in the Details tab	
8.1.3 Currency Conversion	
8.1.4 Specifying the Down Time and Others in the More tab	
8.1.5 Specifying the Job Activity	257 250
8.1.6 Specifying the Specific Text	
8.1.7 Updating Comments on the Work Order in Feedback Note tab	257242
8.1.8 Providing feedback on Employee Time Usage	
8.1.9 Allocating Employee to the Work Order	
8.1.10 Specifying Work Order's Resources Requirement	
8.1.11 Specifying Work Order's Resources Requirement	
8.1.12 Analysing Faults/Defects found on the Equipment	
8.1.12 Analysing Faults/Dejects jound on the Equipment	
8.1.14 Creating Follow-up Job Request for the Work Order	281 265
6.1.14 Creating Pollow-up Job Request for the Work Order	



C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: iv Date: 21 August 200221 August 200221 August 20023 June 2002

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....

NGC VEISION. 2.12.12.12.0	
8.1.15 Specifying the Work Order's Facility Requirement	282266
8.1.16 Providing feedback for the Equipment's Meter Usage	
8.1.17 Creating Follow up Work Order	286270
8.1.18 Creating Work Permit for the Work Order	288 272
8.2 EMPLOYEE TIME FEEDBACK	289 273
8.2.1 To Add a New Employee Time Feedback	291 275
8.2.2 To Modify an Employee Time Feedback	292 276
8.2.3 To Delete an Employee Time Feedback	292 276
8.2.4 Employee Time Feedback Details	
8.3 TURBO FEEDBACK	296 280
8.3.1 Define Default Settings for Turbo Feedback	297 281
8.3.2 To Select Work Orders for Turbo Feedback	299 283
8.3.3 To Turbo Feedback on the Selected Work Orders	300 284
8.4 LIMITATION ON CREATION OF WORK ORDER	304288
8.5 METER CONSUMPTION FEEDBACK	
8.5.1 To Add a New Consumption Feedback.	300 290
8.5.2 To Modify Consumption Feedback	
8.5.4 To View Meter Details	
8.6 WORK ORDER GENERATION (SEARCH AND PRINT)	
8.7 ARCHIVAL OF WORK ORDER	314297
9. WORK ORDER HISTORY	
9.1 TO VIEW ARCHIVED WORK ORDER IN HISTORY	323 306
9.2 CREATE/MODIFY HISTORY RECORD	347 327
9.2.1 To Add a New History Work Order	
9.2.2 To Modify a History Work Order	355 334
10. REPAIRABLE EQUIPMENT MANAGEMENT	356 335
10.1 MAINTENANCE GRAPHICS AND ANALYSIS	350338
10.1 MAINTENANCE ORAFFIICS AND ANALTSIS 10.2 ANALYSIS REPORTS	
10.3 DEFECT/EMPLOYEE TIME ANALYSIS REPORTS	364343
10.4 DEPRECIATION REPORTS	365 344
10.5 PLAN JOBS REPORTS	367 346
10.6 CONDITION BASED MAINTENANCE (CBM) REPORTS	370 349
10.7 PERFORMANCE ANALYSIS GRAPHICS REPORTS	372 351
10.8 BUDGET VERSUS ACTUAL REPORTS	374 353
10.9 RESOURCE AVAILABILITY REPORTS	375 354
10.10 RESOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS	378 356
11. HAZARD MONITORING	380 357
11.1 REFERENCE INCIDENTS	
11.1.1 Define Incident Cause	
11.1.2 Define Hazard Type	382 359
11.1.3 Define Incident Effect.	
11.1.4 Define Incident Action	
11.2 HAZARD REPORTS	387 364
11.2.1 To Raise a New Hazard Report	392 369
11.2.2 To Modify a Hazard Report	
11.2.3 To Delete a New Hazard Report	392 369
11.2.4 To Close a New Hazard Report	
11.2.5 Follow Up Action Details	393 369
11.2.6 Hazard Effect Details	
11.2.7 Recommended Action Details	396 373
12. PERMIT TO WORK	200255
	398 3/3



Keppel Steria Consortium (KSC) MAINTENANCE MANAGEMENT SYSTEM

C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

COSWIN WORKCOSWIN WORK

Page: v

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

Formatted: Font: 9 pt

12.1.1 To Add a New Work Permit Type	
12.1.2 To Modify a Work Permit Type	400377
12.1.3 To Delete a Work Permit Type	
12.1.4 Work Permit Type's Indication Details	401 378
12.2 DEFINE WORK PERMIT	
12.2.1 To Raise a New Work Permit	405 382
12.2.2 To Modify a Work Permit	
12.2.3 To Delete a Work Permit	
12.2.4 Work Permit's Employee Details	406 383
12.3 Internet PTW	409 385
12.3.1 To Raise a New Work Permit	411 387
13. END OF DOCUMENT	412388
1.—INTRODUCTION	
2.—RESOURCES	
2.1 SKILLS	
211 STEEDS	
2.1.1—To Add A New Skill 2.1.2—To Modify a Skill	
2.1.2—16 Moatry a Skill	
2.1.4—To Create a Skill Hierarchy Structure	
2.1.5—To Disconnect a Child Skill	
2.2—RESOURCES	
2.2.1—To Add a New Resource	
2.2.2—To Modify a Resource	
2.2.3—To Delete a Resource	
2.2.4—Resource Skill Details	
2.3—SUPERVISOR	
2.3.1—To Add a New Supervisor	
2.3.2—To Modify a Supervisor	
2.3.3 To Delete a Supervisor	
2.3.4—To DEL/MOD/ADD an Associated Employee	
2.4—EMPLOYEE	
2.4.1—To Open Employee Calendar	
2.4.2—To Add a New Employee	
2.4.3—To Modify an Existing Employee	
2.4.4—To Delete an Existing Employee	
2.4.5—Employee Shift Details.	
2.4.6—Employee Skill Details	
2.5—EMPLOYEE CALENDAR	
2.6—ATTENDANCE	
2.6.1—To Add a New Attendance Details	
2.6.2—To Modify an Attendance Details	
2.6.3—To Delete an Attendance Details	
2.6.4—Employee Attendance Details	
3.—SHIFT AND ROSTER MANAGEMENT	
3.1—DEFINE SHIFT	
3.1.1—To Add a New Shift	
3.1.2—To Modify a Shift	
5.1.2 TO 110 at y a 51 at 1	

—DEFINE SHIFT PATTERN 3.2.1—To Add a New Shift Pattern 3.2.2 To Modify a Shift Pattern... 3.2.3—To Delete a Shift Pattern..... Shift Pattern Daily Shifts Details



C756

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

Reference:

PMP/8029e/-

KSC Version: 2.12.12.12.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: vi Date: 21 August 200221

August 200221 August 20023 June 2002

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3.2.5—Shift Pattern Global/Specific Resource Details -ATTACH SHIFT PATTERN TO A COMPANY ENTITY 3.3.1—To Add a Shift Pattern to a Company Entity..... 3.3.2 To Modify the details of an Adopted Company Shift Pattern..... -To Detach an Adopted Shift Pattern from a Company Entity.... DEFINE EMPLOYEE'S SHIFT PATTERN..... 3.4.1—To Add a New Employee Shift Pattern..... -To Modify an Employee Shift Pattern..... -To Delete an Employee Shift Pattern CREATE SHIFT ROSTER FOR A COMPANY ENTITY -To Generate a Roster.... 3.5.2—To Modify a Roster 3.5.3—To Delete a Roster..... -Roster Shift Details Roster Shift Employee Details..... 3.6 WORKLOAD. 4.—UNPLANNED MAINTENANCE 4.1—TO CREATE AN UNPLANNED WORK ORDER 4.1.1—List of fields to Define during Work Order Creation..... 4.1.2—To Save the Work Order 4.1.3—To Specify the Job Activities of the Work...... -To Specify the Specific Text pertaining to the Equipment..... -To Allocate Employee to the Work Order..... 4.1.6 To Generate Work Permit Request -PLANNED MAINTENANCE..... 5.1—DEFINE METERS 5.1.1—Types of Meters..... -Meter Details 5.1.2– 5.2 DEFINE JOB GUIDELINES FOR EQUIPMENT —Concept on Job Behaviours..... 5.2.2—List of Fields to Define in Job Guidelines...... 5.2.3—To Add a New Job to an Equipment..... -To Auto-Generate Equipment Jobs..... To Modify an Equipment Job..... 5.2.6—To Delete an Equipment Job..... 5.2.7 -To Release Work Order from an Equipment Job..... To Reset the Next Due Date of the Equipment Job...... 5.2.9—Stock Requirement Details..... 5.2.10 Resource Requirement Details 5.2.11—Job Actions Details..... Preferred Employee Details —Indication and Restriction Details Skill Requirement Details -Facility Requirement Details..... —JOB PLANNING 5.3.1—Concept of Planning in COSWIN..... 5.3.2—Create a Job Plan..... 5.3.3 Compute Resource Availability..... 5.3.4—Display Daily Resource Availability..... 5.3.5—Display Weekly Resource Availability.....

5.3.6—Compute Stock Availability......



-CONSULTING THE PLAN AND RELEASING JOB 5.4.1—Plan Summary.....

-CONDITION BASED MAINTENANCE

Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756

Page: vii Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

PMP/8029e/-		20023 June 2002
KSC Version: 2.12.12.12.0		
	L	
6.1—MEASUREMENT SETS	DIDECTORY	
6.1.1—To Add a New Measu		
6.1.2—To Modify a Measure	nent Set	
6.1.3—To Delete a Measurer	nent Set	
6.2 MEASUREMENT NOR	MS DIRECTORY	
6.2.1—To Add a New Measur		
6.2.2—To Modify a Measure		
6.2.3—To Delete a Measurer		
6.2.4 Norm Value Details		
6.3 MEASUREMENT JOBS	DIRECTORY	
6.3.1—To Add a New Measu	romant Iah	
6.3.2—To Modify a Measure		
6.3.3—To Delete a Measurer		
6.4 EQUIPMENT MEASUR	<u> EMENT SET</u>	
6.4.1—To Add a Measuremer	rt Set to an Equipment	
6.4.2—To Modify a Measure	ment Set of an Fauinment	
6.4.3—To Delete a Measuren		
·	teni sei jiom un Equipmeni	
6.4.4—Set Details		
6.5 MEASUREMENT POIN	<u>[T</u>	
6.5.1—To Add a New Measur	rement Point	
6.5.2—To Modify a Measure	ment Point	
6.5.3—To Delete a Measuren		
-		
6.5.4—Feedback Details		
6.6 MEASUREMENT FEEL	OBACK	
6.6.1—Feedback Readings		
6.7 MEASUREMENT DISP	LAY	
6.7.1—To View Point Details		
6.7.2—To View Feedback Di		
6.8 MEASUREMENT BAT		
6.9 ALARMS SUMMARY.		
6.9.1—To Specify a Rectifica	tion Date for a Measurement Point	
6.9.2—To Reset Alarm Occur	red on a Measurement Point	
6.9.3—To Create Manual We		
0.9.5 To Create Manual We	TK Oraci joi maini	
7.—JOB REQUESTS		
7.1—CREATE USER REQUI	<u> </u>	
7.1.1—To Add a New User R	eauest	
7.1.2—To Modify an User Re	*	
7.1.3—To Delete an User Re	зиest	
7.1.4—Fault Report Details.		
7.2—REVIEW JOB REQUES	TBY PLANNER	
7.2.1—To Review/Modify the	User Request	
7.2.2—To Assign a Job to the		
7.2.3 Releasing Job Reques		
7.2.4—Releasing Job Reques		
7.2.5—Detailed Field Descri	ptions for Release Ranges	
7.2.6—Paging from Job Regi	tests	
7.3 COMBINE JOB REQUI		
7.4 CANCEL/CLOSE JOB I		
:	~~~	
7.5—DELETE JOB REQUES	15	
8.—WORK IN PROCRESS		
5. WOKK IN PROGRESS		
8.1—PROVIDE FEEDBACK	ON WORK ORDER	
	Parameters of the Work Order	
		1
1 37 8	uration, Source and Costs in the Details to	ab
8.1.3—Currency Conversion		
8.1.4—Specifying the Down	Time and Others in the More tab	



C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: viii

Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

8.1.5—Sp	ecifying the Job Activity
8.1.6—Sp	ecifying the Specific Text
	dating Comments on the Work Order in Feedback Note tab
· · · · · · · · · · · · · · · · · · ·	oviding feedback on Employee Time Usage
<u>8.1.9 — All</u>	ocating Employee to the Work Order
8.1.10	Specifying Work Order's Resources Requirement
8 1 11	Specifying Work Order's Resources Requirement
	Analysing Faults/Defects found on the Equipment
<u>8.1.13</u>	Defining Action Steps for Work Order
<u>8.1.14</u>	Creating Follow up Job Request for the Work Order
8.1.15	Specifying the Work Order's Facility Requirement
8 1 16	Providing feedback for the Equipment's Meter Usage
	Creating Follow up Work Order
	Creating Work Permit for the Work Order
8.2 EMP	LOYEE TIME FEEDBACK
8.2.1—To	Add a New Employee Time Feedback
	Modify an Employee Time Feedback
	Delete an Employee Time Feedback.
	ployee Time Feedback Details
8.3—TURI	BO FEEDBACK
8 3 1 De	fine Default Settings for Turbo Feedback
	Select Work Orders for Turbo Feedback
	Turbo Feedback on the Selected Work Orders
8.4 LIMIT	'ATION ON CREATION OF WORK ORDER
8.5 MET	FR CONSUMPTION FEEDBACK
8 5 1—To	Add a New Consumption Feedback
· · · · · · · · · · · · · · · · · · ·	*
	Modify Consumption Feedback
	Delete Consumption Feedback
0 F / T-	T71 16 : T0 : II
3.3.4 10	View Meter Details
8.6 WOR	K ORDER GENERATION (SEARCH AND PRINT)
8.6 WOR	
8.6 WOR 8.7 ARC	K ORDER GENERATION (SEARCH AND PRINT)
8.6 WOR 8.7 ARC	K ORDER GENERATION (SEARCH AND PRINT)
8.6 WOR 8.7 ARC	K ORDER GENERATION (SEARCH AND PRINT)
8.6 WOR 8.7 ARC 9. WORK O	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD
9.1—TO V 9.2—CRE. 9.2.1—To V	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order
9.1—TO V 9.2—CRE. 9.2.1—To V	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To 9.2.2 To	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To 9.2.2 To	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE 9.2.1 TO 9.2.2 TO	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT
8.6 WOR 8.7 ARC: 9.1 TO V 9.2 CRE. 9.2.1 TO 9.2.2 TO 9.2.2 TO 10.1 MAII	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAII 10.2 ANA	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAII 10.2 ANA 10.3 DEFI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS CT/EMPLOYEE TIME ANALYSIS REPORTS
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAII 10.2 ANA 10.3 DEFI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS CT/EMPLOYEE TIME ANALYSIS REPORTS
8.6 WORK 8.7 ARC 9.1 TO V 9.2 CRE 9.2.1 To 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. STENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS GCT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAI 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAN 10.6 CON	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ECT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS
8.6 WORK 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAN 10.6 CON 10.7 PERI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT INTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS VJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS FORMANCE ANALYSIS GRAPHICS REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAI 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ECT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAI 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT INTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS VJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS FORMANCE ANALYSIS GRAPHICS REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS VJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS OGET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10. REPAI 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ECT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS
8.6 WORK 8.7 ARC 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To V 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESO 10.10 RE	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS VJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS OGET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 To 9.2.2 To 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RE	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ECT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS NJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS FORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 TO 9.2.2 TO 10. REPAI 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RE	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT VIENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS CCT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS COMMONITORING RENCE INCIDENTS
8.6 WORK 0 8.7 ARC 9.1 TO V 9.2 CRE. 9.2.1 TO 9.2.2 TO 10. REPAI 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RE	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. VITENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ECT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS NJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS FORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAY 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RE 11.1 REFI 11.1 REFI 11.1 REFI 11.1 REFI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICTEMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS ORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS REPORTS DEFINE Incident Cause Define Incident Cause
8.6 WOR 8.7 ARC 9.1 TO V 9.2 CRE, 9.2.1 To 9.2.2 To 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAY 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RE 11.1 REFI 11.1 REFI 11.1 REFI 11.1 REFI	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATE/MODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICTEMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS ORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS REPORTS DEFINE Incident Cause Define Incident Cause
8.6 WORK 8.7 ARC 8.7 ARC 9.1 TO V 9.2 CRE 9.2.1 TO V 9.2 CRE 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RI 11.1 REFI 11.1.1 REFI 11.1.2 11.1.2	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY. ATEMODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS RESOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS REPORTS DEFINE INCIDENTS Define Incident Cause Define Incident Effect
8.6 WORK 8.7 ARC 8.7 ARC 9.1 TO V 9.2 CRE 9.2.1 TO V 9.2 CRE 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RI 11.1 REFI 11.1.1 REFI 11.1 REFI 11.	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY ATEMODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS SCTÆMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS NJOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS SOURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS RED MONITORING SCRENCE INCIDENTS Define Incident Cause Define Incident Cause Define Incident Effect Define Incident Action
8.6 WORK 8.7 ARC 8.7 ARC 9.1 TO V 9.2 CRE 9.2.1 TO V 9.2 CRE 10.1 MAII 10.2 ANA 10.3 DEFI 10.4 DEPI 10.5 PLAI 10.6 CON 10.7 PERI 10.8 BUD 10.9 RESC 10.10 RI 11.1 REFI 11.1.1 REFI 11.1 REFI 11.	K ORDER GENERATION (SEARCH AND PRINT) HIVAL OF WORK ORDER RDER HISTORY IEW ARCHIVED WORK ORDER IN HISTORY. ATEMODIFY HISTORY RECORD Add a New History Work Order Modify a History Work Order RABLE EQUIPMENT MANAGEMENT. NTENANCE GRAPHICS AND ANALYSIS LYSIS REPORTS ICT/EMPLOYEE TIME ANALYSIS REPORTS RECIATION REPORTS N JOBS REPORTS DITION BASED MAINTENANCE (CBM) REPORTS CORMANCE ANALYSIS GRAPHICS REPORTS GET VERSUS ACTUAL REPORTS DURCE AVAILABILITY REPORTS SOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS RESOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS REPORTS DEFINE INCIDENTS Define Incident Cause Define Incident Effect



Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: ix

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Vers	sion: <u>2.12.12.12.0</u>	
11.2.1	!To Raise a New Hazard Report	
	?—To Modify a Hazard Report	
	3—To Delete a New Hazard Report	
11.2.3	To Close a New Hazard Penert	
11.2.4	To Close a New Hazard Report Follow Up Action Details	
11.2.3	Hazard Effect Details Hazard Effect Details	
11.2.0 11.2.7		
11.2./	— Recommended Action Details	
12.—PE	RMIT TO WORK	
12.1—1	DEFINE WORK PERMIT TYPE	
	!— To Add a New Work Permit Type	
	To Modify a Work Permit Type	
12.1.2	To Induty a Work Permit Type	
12.1.3	Work Permit Type's Indication Details	
12.1.4	DEFINE WORK PERMIT	
12.2 1	To Paigo a Now Work Pormit	
12.2.1	l To Raise a New Work Permit To Modify a Work Permit	
	7 To Delete a Work Permit.	
12.2.4	/	
12.3.1	To Raise a New Work Permit	
13. EN	D OF DOCUMENT	
1. INTR	ODUCTION	1
2. RESC	OURCES	2
0.1 077	ILLS	2
2. SK		
	To Add A New Skill	4
2.1.2	To Add A New Skill To Modify a Skill	4 4
2.1.2 2.1.3	To Add A New Skill To Modify a Skill To Delete a Skill	4 4
2.1.2 2.1.3 2.1.4	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure	4 4
2.1.2 2.1.3 2.1.4 2.1.5	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill	4 4 4
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES	4 4 4
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2 2.3.3 2.3.4	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete a Supervisor	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2 2.3.3 2.3.4 2.4 EM	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete a Supervisor	4 4 4 4 5 5 6 9 9 9 10 10 12 13 13 14 15 15
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2 2.3.2 2.3.4 2.4.4 EM 2.4.1	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete a Supervisor To DEL/MOD/ADD an Associated Employee	4 4 4 4 5 5 6 9 9 9 10 10 12 13 13 14 14 15 22
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2 2.3.4 2.4.4 EM 2.4.1 2.4.2	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete A Supervisor To Delete B Supervisor To Delete B Supervisor To DELEMOD/ADD an Associated Employee To Open Employee Calendar To Add a New Employee	4 4 4 4 5 5 6 9 9 9 10 10 12 13 13 14 14 15 22
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3.1 2.3.2 2.3.4 2.4.1 2.4.2 2.4.2 2.4.3	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor. To Delete a Supervisor. To Delete a Supervisor. To Delete A Supervisor. To DELMOD/ADD an Associated Employee IPLOYEE To Open Employee Calendar To Add a New Employee To Modify an Existing Employee	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3 SU 2.3.1 2.3.2 2.3.4 2.4 EM 2.4.1 2.4.2 2.4.3 2.4.4	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete Bulleton To Open Employee Calendar To Add a New Employee To Modify an Existing Employee To Modify an Existing Employee	4 4 4 4 5 5 6 6 9 9 9 9 10 10 12 13 13 13 14 14 15 22 22 22 22 23 23
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3.1 2.3.2 2.3.4 2.4.2 2.4.2 2.4.3 2.4.4 2.4.5	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete a Supervisor To Open Employee Calendar To Add a New Employee To Modify an Existing Employee To Delete an Existing Employee Employee Shift Details	4 4 4 4 4 5 5 6 6 9 9 9 9 10 10 12 13 13 14 14 15 22 22 22 23 23 23
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.3.1 2.3.2 2.3.3 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.5 2.4.6	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Add a New Supervisor To Delete a Supervisor To Delete and Supervisor To Open Employee Calendar To Add a New Employee To Delete an Existing Employee To Delete an Existing Employee Employee Shift Details Employee Skill Details	44 44 45 5 66 99 90 100 100 112 13 13 13 14 14 15 22 22 22 23 23 24 24
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.3.1 2.3.2 2.3.3 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.6 2.5 EM	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Open Employee Calendar To Add a New Employee To Modify an Existing Employee To Delete an Existing Employee Employee Shift Details Employee Skill Details	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.3.1 2.3.2 2.3.3 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.6 2.5 EM	To Add A New Skill To Modify a Skill To Delete a Skill To Create a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete a Supervisor To Delete a Supervisor To Delete a Supervisor To Open Employee Calendar To Add a New Employee To Modify an Existing Employee To Modify an Existing Employee Employee Skill Details	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3.1 2.3.2 2.3.3 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.6 2.5 EM	To Add A New Skill To Modify a Skill To Delete a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete Buployee To Delete Calendar To Add a New Employee To Delete an Existing Employee To Delete an Existing Employee Employee Skill Details Employee Skill Details IPLOYEE CALENDAR TENDANCE	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3.1 2.3.1 2.3.2 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.6 2.5 EM	To Add A New Skill To Modify a Skill To Delete a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Delete an Existing Employee Employee Shift Details Employee Skill Details Employee Skill Details Employee Skill Details To Modify an Attendance Details To Modify an Attendance Details	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3.1 2.3.2 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.5 EM 2.6.1 2.6.1 2.6.2 2.6.2 2.6.3	To Add A New Skill To Modify a Skill To Delete a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Modify a Supervisor To Delete an Employee Calendar To Add a New Employee To Modify an Existing Employee To Modify an Existing Employee Employee Skill Details Employee Skill Details Employee Skill Details To Add a New Attendance Details To Add a New Attendance Details To Modify an Attendance Details	
2.1.2 2.1.3 2.1.4 2.1.5 2.2 RE 2.2.1 2.2.2 2.2.3 2.2.4 2.3.1 2.3.2 2.3.4 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.5 EM 2.6.1 2.6.1 2.6.2 2.6.2 2.6.3	To Add A New Skill To Modify a Skill To Delete a Skill Hierarchy Structure To Disconnect a Child Skill SOURCES To Add a New Resource To Modify a Resource To Delete a Resource Resource Skill Details PERVISOR To Add a New Supervisor To Modify a Supervisor To Delete an Existing Employee Employee Shift Details Employee Skill Details Employee Skill Details Employee Skill Details To Modify an Attendance Details To Modify an Attendance Details	

Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: x

Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

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3.1 DEFINE SHIFT	
3.1.1 To Add a New Shift	35
3.1.2 To Modify a Shift	
3.1.3 To Delete a Shift	35
3.2 DEFINE SHIFT PATTERN	
3.2.1 To Add a New Shift Pattern	38
3.2.2 To Modify a Shift Pattern	39
3.2.3 To Delete a Shift Pattern	39
3.2.4 Shift Pattern Daily Shifts Details	39
3.2.5 Shift Pattern Global/Specific Resource Details	41
3.3 ATTACH SHIFT PATTERN TO A COMPANY ENTITY	
3.3.1 To Add a Shift Pattern to a Company Entity	
3.3.2 To Modify the details of an Adopted Company Shift Pattern	44
3.3.3 To Detach an Adopted Shift Pattern from a Company Entity	44
3.4 DEFINE EMPLOYEE'S SHIFT PATTERN	
3.4.1 To Add a New Employee Shift Pattern	
3.4.2 To Modify an Employee Shift Pattern	
3.4.3 To Delete an Employee Shift Pattern	
3.5 CREATE SHIFT ROSTER FOR A COMPANY ENTITY	
3.5.1 To Generate a Roster	10
3.5.2 To Modify a Roster	
3.5.3 To Delete a Roster	
3.5.4 Roster Shift Details	
3.5.5 Roster Shift Employee Details	
3.5.3 Koster Snift Employee Details	
3.6 WORKLOAD	
4. UNPLANNED MAINTENANCE	56
4.1 TO CREATE AN UNPLANNED WORK ORDER	
4.1.1 List of fields to Define during Work Order Creation	
4.1.2 To Save the Work Order	
4.1.3 To Specify the Job Activities of the Work	
4.1.4 To Specify the Specific Text pertaining to the Equipment	
4.1.5 To Allocate Employee to the Work Order	
4.1.6 To Generate Work Permit Request	
5. PLANNED MAINTENANCE	74
5.1 DEFINE METERS	
5.1.1 Types of Meters	
5.1.2 Meter Details	
5.2 DEFINE JOB GUIDELINES FOR EQUIPMENT	
5.2.1 Concept on Job Behaviours	
5.2.2 List of Fields to Define in Job Guidelines	
5.2.3 To Add a New Job to an Equipment	
5.2.4 To Auto-Generate Equipment Jobs	
5.2.5 To Modify an Equipment Job	
5.2.6 To Delete an Equipment Job	
5.2.7 To Release Work Order from an Equipment Job	
5.2.8 To Reset the Next Due Date of the Equipment Job	
5.2.9 Stock Requirement Details	
5.2.10 Resource Requirement Details	113
5.2.11 Joh Actions Details	
5.2.12 Preferred Employee Details	
5.2.13 Indication and Restriction Details	
5.2.14 Skill Requirement Details	
5.2.15 Facility Requirement Details	123
5.2. IOD DI ANNINC	12.0

5.3.1 Concept of Planning in COSWIN....



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: xi

Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

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Reference:	
756/PMP/8029e/A 756/PMP/8	
029e/A756/PMP/8029e/A756/	
DMD/80200/	

KSC Version: <u>2.12.12.1</u>2.0

5.3.2 Create a Job Plan	131
5.3.3 Compute Resource Availability	135
5.3.4 Display Daily Resource Availability	
5.3.5 Display Weekly Resource Availability	140
5.3.6 Compute Stock Availability	
5.4 CONSULTING THE PLAN AND RELEASING JOB	
5.4.1 Plan Summary	147
5.4.2 Releasing Jobs	149
6. CONDITION BASED MAINTENANCE	157
6.1 MEASUREMENT SETS DIRECTORY	150
6.1.1 To Add a New Measurement Set	150
6.1.2 To Modify a Measurement Set	
6.1.3 To Delete a Measurement Set	
6.2. MEASUREMENT NORMS DIRECTORY	160
6.2.1 To Add a New Measurement Norms	161
6.2.2 To Modify a Measurement Norms.	161
6.2.3 To Delete a Measurement Norms	161
6.2.4 Norm Value Details	162
6.3 MEASUREMENT JOBS DIRECTORY	163
6.3.1 To Add a New Measurement Job	164
6.3.2 To Modify a Measurement Job	164
6.3.3 To Delete a Measurement Job	
6.4 EQUIPMENT MEASUREMENT SET	165
6.4.1 To Add a Measurement Set to an Equipment	
6.4.2 To Modify a Measurement Set of an Equipment	
6.4.3 To Delete a Measurement Set from an Equipment	166
6.4.4 Set Details	166
6.5 MEASUREMENT POINT	168
6.5.1 To Add a New Measurement Point	177
6.5.2 To Modify a Measurement Point	177
6.5.3 To Delete a Measurement Point	177
6.5.4 Feedback Details	177
6.6 MEASUREMENT FEEDBACK	180
6.6.1 Feedback Readings	
6.7 MEASUREMENT DISPLAY	185
6.7.1 To View Point Details	186
6.7.2 To View Feedback Display	
6.8 MEASUREMENT BATCH ANALYSIS	191
6.9.1—To Specify a Rectification Date for a Measurement Point	
6.9.3 To Create Manual Work Order for Alarm	
•	198
7. JOB REQUESTS	199
7.1 CREATE USER REQUEST	200
7.1.1 To Add a New User Request	
7.1.2 To Modify an User Request	
7.1.3 To Delete an User Request	
7.1.4 Fault Report Details	
7.2 REVIEW JOB REQUEST BY PLANNER	
7.2.1 To Review/Modify the User Request	
7.2.2 To Assign a Job to the User Request	
7.2.3 Releasing Job Requests into Plan	
7.2.4 Releasing Job Request into Work In Progress	
7.2.5 Detailed Field Descriptions for Release Ranges	
7.3 COMBINE JOB REQUESTS	

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756

Page: xii Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

200221 August Auto

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756/PMP/8029e/A 756/PMP/8
029e/A756/PMP/8029e/A756/
PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

7.4 CANCEL/CLOSE JOB REQUESTS	224
7.5 DELETE JOB REQUESTS	225
8. WORK IN PROGRESS	226
8.1 PROVIDE FEEDBACK ON WORK ORDER	228
8.1.1 Specifying the Main Parameters of the Work Order	
8.1.2 Specifying the Time Duration and Others in the Details tab	
8.1.3 Specifying the Down Time and Others in the More tab	237
8.1.4 Specifying the Job Activity	241
8.1.5 Specifying the Specific Text	241
8.1.6 Updating Comments on the Work Order in Feedback Note tab	242
8.1.7 Providing feedback on Employee Time Usage	242
8.1.8 Allocating Employee to the Work Order	246
8.1.9 Specifying Work Order's Resources Requirement	
8.1.10 Specifying Work Order's Stock Requirement	252
8.1.11 Analysing Faults/Defects found on the Equipment	255
8.1.12 Defining Action Steps for Work Order	258
8.1.13 Creating Follow-up Job Request for the Work Order	
8.1.14 Specifying the Work Order's Facility Requirement	
8.1.15 Providing feedback for the Equipment's Meter Usage	
8.1.16 Creating Follow up Work Order	269
8.1.17 Creating Work Permit for the Work Order	
8.2 EMPLOYEE TIME FEEDBACK	272
8.2.1 To Add a New Employee Time Feedback	274
8.2.2 To Modify an Employee Time Feedback	275
8.2.3 To Delete an Employee Time Feedback	
8.2.4 Employee Time Feedback Details	
8.3 TURBO FEEDBACK	279
8.3.1 Define Default Settings for Turbo Feedback	280 282
8.3.2 To Select Work Orders for Furbo Feedback	
8.4 METER CONSUMPTION FEEDBACK	
8.4.1 To Add a New Consumption Feedback.	
8.4.2 To Modify Consumption Feedback	
8.4.3 To Delete Consumption Feedback.	288
8.4.4 To View Meter Details	289
8.5 WORK ORDER GENERATION (SEARCH AND PRINT)	
8.6 ARCHIVAL OF WORK ORDER	295
9. WORK ORDER HISTORY	303
9.1 TO VIEW ARCHIVED WORK ORDER IN HISTORY	304
9.2 CREATE/MODIFY HISTORY RECORD	325
9.2.1 To Add a New History Work Order	332
9.2.2 To Modify a History Work Order	332
10. REPAIRABLE EQUIPMENT MANAGEMENT	333
10.1 MAINTENANCE GRAPHICS AND ANALYSIS	336
10.2 ANALYSIS REPORTS	339
10.3 DEFECT/EMPLOYEE TIME ANALYSIS REPORTS	
10.4 DEPRECIATION REPORTS	342
10.5 PLAN JOBS REPORTS	344
10.6 CONDITION BASED MAINTENANCE (CBM) REPORTS	<u></u>
10.8 BUDGET VERSUS ACTUAL REPORTS	349 251
10.9 RESOURCE AVAILABILITY REPORTS	
10.10 RESOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS	
11. HAZARD MONITORING	355

C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: xiii Date: 21 August 200221 August 200221 August 20023 June 2002

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11.1 RE	EFERENCE INCIDENTS	350
11.1.1	Define Incident Cause	350
11.1.2	Define Hazard Type	357
11.1.3	Define Incident Effect	359
11.1.4	Define Incident Action	360
11.2 H/	AZARD REPORTS	36
11.2.1	To Raise a New Hazard Report	36
11.2.2		
11.2.3	To Delete a New Hazard Report.	367
11.2.4	To Close a New Hazard Report	367
11.2.5	Follow Up Action Details	367
11.2.6	Hazard Effect Details	370
11.2.7	Recommended Action Details	37.
12. PERI	MIT TO WORK	37
	EFINE WORK PERMIT TYPE	
12.1.1	To Add a New Work Permit Type	
12.1.2	To Modify a Work Permit Type	
12.1.3	***	
12.1.4	Work Permit Type's Indication Details	370
12.2 DE	EFINE WORK PERMIT	
12.2.1	To Raise a New Work Permit	380
12.2.2	To Modify a Work Permit	386
12.2.3	To Delete a Work Permit	38
12.2.4	Work Permit's Employee Details	38.
12 END		207
13. END	OF DOCUMENT	383



MAINTENANCE MANAGEMENT SYSTEM

C756
Page: 1

COSWIN WORK Date

Date: 21 August 200221 August 200221 August 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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KSC Version: <u>2.12.12.1</u>2.0 **1. INTRODUCTION**

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Reference:

PMP/8029e/-

This Operation Manual shall describe in details all the functionalities of the Maintenance Management System (MMS).

COSWIN is a maintenance management tool specialised in assisting the monitoring and tracking maintenance works. It provides a set of comprehensive and configurable options for users to customise the software to meet their operational needs.

This document is the COSWIN Work of the MMS Operation Manual. It describes how maintenance jobs are planned and executed in COSWIN.

Chapter 1 provides a general introduction to COSWIN.

Chapter 2 describes the Resources modules provided by COSWIN.

Chapter 3 describes how COSWIN handles Shift and Roster Management.

Chapter 4 describes Unplanned Maintenance.

Chapter 5 describes Planned Maintenance.

Chapter 6 describes Condition Based Maintenance.

Chapter 7 describes Job Request and Planner Review.

Chapter 8 describes Work in Progress and Feedback to Work Orders.

Chapter 9 describes Work Order History module.

Chapter 10 describes Repairable Equipment Management.

Chapter 11 describes Maintenance Graphics and Analysis.

Chapter 12 describes Hazard Monitoring.

Chapter 13 describes Permit to Work.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 2

Date: 21 August 200221

August 200221 August 20023 June 2002

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2. RESOURCES

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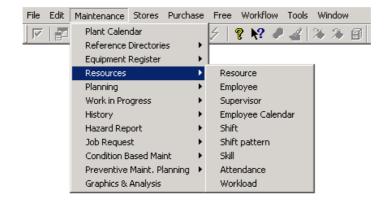
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Reference:

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The purpose of maintenance resources is to provide the facilities to:

- o Define the trades and their rates used in maintenance activities
- Define the employee that perform maintenance activities
- Visualize / define employee attendance at site
- o Define maintenance activities supervisors and planners
- Manage the maintenance shifts





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 3

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/

KSC Version: 2.12.12.1

2.1 SKILLS

Reference:

Path: Maintenance / Resources / Skill

A skill represents the ability to perform a job and the ability is acquired either from talent, training, or practice.

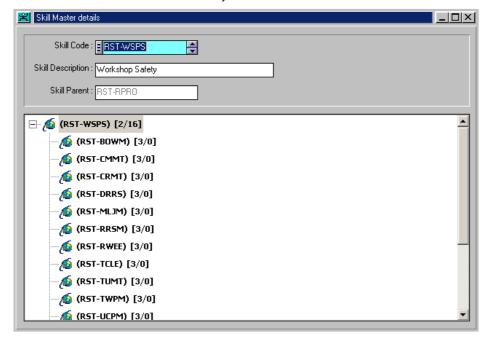
COSWIN provides for a set of parent-child relations between skills. The following rules must be respected for the skill hierarchy structure:

- o The skills structure is tree-like
- Each skill has maximum 1 parent
- o All skills can have any number of children
- There are no loops in the structure

The child skill is sufficient to perform a job that requires a parent skill but a parent skill will not be competent for a job that requires a child skill.

Select from COSWIN menu Maintenance / Resources / Skill to launch the Skill Details module.

The Skill Master Details window looks by default as follows:







C756

Reference: 756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 4 Date: 21 August 200221

August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Skill Code

This is the skill reference code, a mandatory information of maximum 10 alphanumeric characters. The skill code must be unique among all Maintenance Skills.

A selector trigger button (or F2 key) linking to Skill Selector is available.

Skill Description

This is the skill's description, an optional information of maximum 40 alphanumeric characters.

Skill Parent

This is the identifier of the parent skill for the current skill, a read-only information automatically managed by the system when creating the skills structure.

2.1.1 To Add A New Skill

Minimum information required to add a skill, is:

Skill identifier

Click on the icon to launch the ADD window.

2.1.2 To Modify a Skill

All the information can be modified, except:

The skill identifier

2.1.3 To Delete a Skill

A skill cannot be deleted if:

- o They have children in the structure
- They are being used by resources and employee
- o They are required by equipment job

Click on the icon to delete the current Skill.

2.1.4 To Create a Skill Hierarchy Structure

Select the skill that is to be the parent skill at the Skill Code field of the Skill Master details window.

Second on the COSWIN toolbar and a skill slave window Click on the non-standard button appears:



Reference:

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756/PMP/8029e/A756/PMP/8

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KSC Version: <u>2.12.12.1</u>2.0

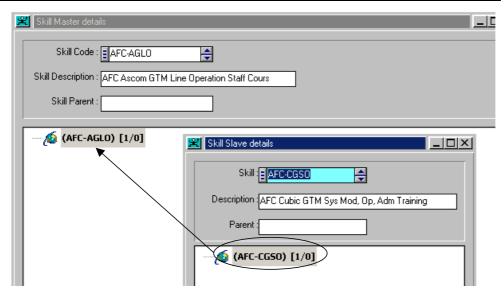
MAINTENANCE MANAGEMENT SYSTEM | Page: 5

C756

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002 Formatted: Font: 10 pt, Font color:

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Drag the skill icon from Skill Slave window and drop it onto the skill icon at the Skill Master window. A link will be formed.

Click on the 🔲 icon and a new structure will be created.

Note: All skills must first be defined before being associated to a hierarchy structure.

2.1.5 To Disconnect a Child Skill

Select the child skill to be disconnected in the hierarchy structure window and click on the non-standard Disconnect button.





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 6

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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2.2 RESOURCES

756/PMP/8029e/A756/PMP/8

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

PMP/8029e/-

Path: Maintenance / Resources / Resource

Maintenance departments consist of one or more maintenance employees, each having skills in a specific information of activity. Such information of activity may be seen as a trade or resource (e.g. the following resources can be defined in a maintenance department: PLUMBER, CARPENTER, MECHANIC, ELECTRICIAN, etc.)

Resource module allows any number of resources to be defined. The resources are basically

- Establish the skills of an employee (each employee is attached to one resource)
- Define resource requirements of a maintenance job
- Do computations on resource requirements for a period of time based on resource requirements for each maintenance job
- Do computations on standard and actual cost of maintenance jobs and work orders based on hours of resource usage

Select from COSWIN menu Maintenance / Resources / Resource to launch the Resource Details module.

The Resource Details window looks by default as follows:







MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 7

Date: 21 August 200221 August 200221 August 20023 June 2002

C756

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Formatted: Font: 9 pt

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Detailed Field Descriptions:

Resource

This is the Resource identifier, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all Resources.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Name

This is the Resource description, an optional information of maximum 25 alphanumeric characters.

DETAILS TAB:

PM Jobs Factor

Preventive Maintenance Job Factor defines in percentage the portion of Wrench Hours which is available for PM Jobs for the resource. This factor is used in Resource balancing process. For example, if the Wrench Hours for a resource is 10.00 Hours/day, a PM Jobs factor of 80% indicates that for planned PM Jobs, the user can assume resource availability for 8 hours every day. The remaining two hours are reserved for unplanned jobs such as breakdowns, emergency jobs, etc. PM Jobs factor can be more than 100% provided multiplication of Wrench Hours with PM Jobs factor yields a value less than or equal to 24 Hours. It is an optional positive numeric information. COSWIN will automatically a value of 0.

Paid Hours/Day

This is the resource's number of paid hours per day, an optional positive numeric information. This value must be less or equal to 24.00 hours.

Wrench Hours/Day

This information represents the number of hours for which employees of the trade would be available for actual Maintenance work i.e. after discounting time for breaks etc. It is an optional positive numeric information, less or equal with the number of resource's number of paid hours. In addition, multiplication of Wrench Hours with PM Jobs factor should yield a value less than or equal to 24.00 hours.

Run Date

This is the date when resource availability was last run (see Planning module). It is a readonly information automatically managed by the system.

From Date

This is the beginning of the interval of resource availability computation, a read-only information automatically managed by the system. See Resource Availability Computation module.

To Date

This is the end of the interval of resource availability interval ending, a read-only information automatically managed by the system. See Resource Availability Computation module.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 8

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

Fixed Rate

This is the fixed cost, which is charged against a Work Order only once when the trade is being used. It is an optional positive numeric information, automatically proposed by COSWIN as 0.

The rates are used to compute standard labour cost for maintenance jobs, taking into account their resource requirements. When employees are defined, the employee rates are considered the default hourly costs of their resource.

Normal Rate

This is the first of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

Double Rate

This is the second of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

Triple Rate

This is the third of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

O / Time Rate

This is the forth of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

On-Call Rate

This is the fifth of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

Holiday Rate

This is the sixth of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

Un-named Seventh Rate

This is the seventh of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

Un-named Eighth Rate

This is the eighth of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.

Un-named Ninth Rate

This is the ninth of the nine cost rate of the resource, an optional positive numeric information. The description of this rate is defined in Rate Headings parameter of COSWIN Configuration's Maintenance module.





Keppel Ste	eria Consortium (KSC)	C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 9
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
KSC Version: 2 12 12 12 0		

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Default Rate Code

This is the default cost rate used for the current resource. It is a mandatory information and it must be selected among the above ones.

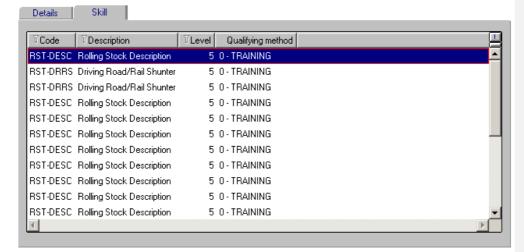
The default rate is used to compute the standard labour cost for a maintenance job.

NB: Refer to Section 8.1.3 for Currency Conversion for the above rates.

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SKILL TAB:

This tab displays the list of skills of the resource. Double click on any of the displayed skill will present the selected record in the *Resource Skill Details* window.



Resource Skill List Box

Code	This is the reference code of the skill the employee has.	
Description	This is the maintenance skill description.	
Level	This is the level of proficiency representing the degree of skill for the employee.	
Qualifying method	This is the method used to qualify the employee with the skill.	

2.2.1 To Add a New Resource

Minimum information required to add a resource, is:

o Resource identifier

Click on the icon to launch the ADD window.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 10

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

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All the information can be modified, except:

- o The Resource identifier
- o Availability Run dates (Run Date, From Date, To Date)

If the costing rates of the resource or the default rate code change, the user can choose to update:

- The costing rates of the related employees
- o The standard labour costs of the jobs which use the resource

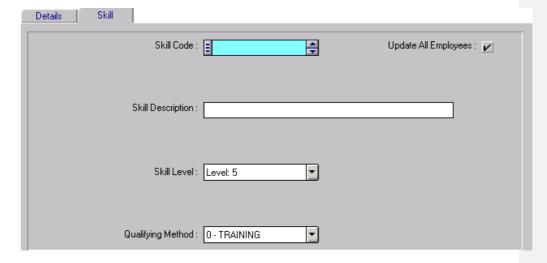
2.2.3 To Delete a Resource

A Resource cannot be deleted, if at least one of the following restrictions occur:

- The Resource is used in the Maintenance activity (is allocated for a Job, or a Work Order, or in PMP module)
- o There are employees who belong to the current Resource

Click on the icon to delete the current Resource.

2.2.4 Resource Skill Details



Detailed Field Descriptions:

Skill Code

This is the reference code of the skill the resource has, and can take up to 10 alphanumeric characters. It is mandatory information that must exist in the directory of maintenance skills.

Update All Employees





MAINTENANCE MANAGEMENT SYSTEM

C756
Page: 11

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

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Date: 21 August 200224

August 200221 August
20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

This checkbox, if selected, will update the skills of the associated employees accordingly.

Skill Description

This is the maintenance skill description, read-only information automatically managed by the system.

Skill Level

This is the level of proficiency representing the default degree of skill proposed for the employee belonging to the resource. It is a mandatory integer information having values on a scale from 1 to 10. The default level of proficiency is 5.

Qualifying Method

This is the default method proposed to qualify the employee belonging to the resource with the skill. It is mandatory numeric information that can have the following values: 0-TRAINING, 1-EXPERIENCE.

The qualifying method distinguish the skills automatically acquired (created by the system on request) from those acquired through training.

2.2.4.1 To Add a new Resource Skill

Minimum information required to add a resource skill, is:

- Skill code
- Skill Level
- Qualifying method

The skill code is unique among the resource skills of a maintenance resource.

When adding a new skill to a resource the user has the choice to update all employees belonging to the resource with the newly added skill.

Click on the icon to launch the ADD window.

2.2.4.2 To Modify a Resource Skill

The information that can be modified to a resource skill, is:

- o Skill Level
- Qualifying method

Click on the licon to save the modification made.

2.2.4.3 To Delete a Resource Skill

No restriction exists to delete a resource skill.

Click on the icon to delete the current Company Type.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 12

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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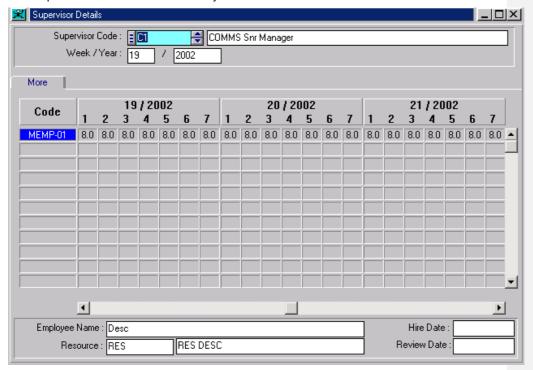
2.3 SUPERVISOR

Path: Maintenance / Resources / Supervisor

The supervisor is the leader of a working team. The working team has a number of employees, directly subordinated to the supervisor. This fact is made explicit by specifying a supervisor for each employee. The working team executes maintenance jobs. The supervisor is responsible for a specified list of maintenance jobs.

Select from COSWIN menu *Maintenance / Resources / Supervisor* to launch the Supervisor Details module.

The Supervisor Details window looks by default as follows:



Detailed Field Descriptions:

Supervisor Code

This is the Supervisor identifier, a mandatory information of maximum 6 alphanumeric characters. It must be unique among all Supervisors.





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 13 Date: 21 August 200221 August 200221 August 20023 June 2002

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A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Name

This is the Supervisor Name, an optional information of maximum 25 alphanumeric characters.

Week / Year

This is the Week and Year index, from which the calendar of the associated employees will be displayed (provided that the Calendar is defined for the specified period). The horizontal scroll bar at be bottom of the calendar facilitate the viewing of others weeks in the calendar.

Employees Calendar (Under MORE tab)

The purpose of this window is to display the Employee's chronological usage, for the Employees assigned to the current Supervisor. In the layout, black colour denotes normal working days; green colour denotes leave days; blue colour denotes holiday days; red colour denotes week's off days and magenta colour denotes absence days.

Whenever an employee ID within the displayed calendar is clicked, the fields at the bottom of the window will display the respective details of the selected employee:

Employee Name

This is the current selected Employee name, a read-only information automatically managed by the system.

Hire Date

This is the current selected Employee hire date, a read-only information automatically managed by the system.

Resource

This is the current selected Employee's resource identifier, a read-only information automatically managed by the system.

Resource description

This is the current selected Employee's resource name, a read-only information automatically managed by the system.

Review Date

This is the current selected Employee's review date, a read-only information automatically managed by the system.

2.3.1 To Add a New Supervisor

Minimum information required to add a supervisor, is:

o The Supervisor identifier

Click on the icon to launch the ADD window.

2.3.2 To Modify a Supervisor

All the information can be modified except the Supervisor identifier.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 14

Date: 21 August 200221 August 200221 August 20023 June 2002

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2.3.3 To Delete a Supervisor

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KSC Version: 2.12.12.1

Reference:

PMP/8029e/-

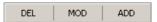
A Supervisor cannot be deleted, if:

- o It has Employees assigned to him
- It is engaged in the Maintenance activity, i.e. there are Jobs / Work Orders supervised by him

Click on the icon to delete the current Company Type.

2.3.4 To DEL/MOD/ADD an Associated Employee

Clicking into the More Tabs, 3 non-standard buttons, namely DEL, MOD, ADD will be appeared in the COSWIN toolbar:



You may use these buttons to delete (DEL) an associated employee record, modify (MOD) an associated employee details, or even add (ADD) a new employee to the system.



C756
Page: 15

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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2.4 EMPLOYEE

Path: Maintenance / Resources / Employee

Maintenance departments consist of one or more maintenance employees, each having skills in a specific field of activity, therefore belonging to a specific trade or resource. These employees are either permanent employee or temporarily hired and they perform maintenance work throughout the plant.

The employee related information is used basically to compute resource availability and to provide employee usage feedback on work orders, establishing work order labour costs.

An employee can only belong to a single resource. It is not mandatory to allocate a supervisor to the employees.

Only employee who are defined in COSWIN database can provide feedback Everybody coming up during the feedback (add the hours) must be given a reference by an employee no in the COSWIN database.

Select from COSWIN menu *Maintenance / Resources / Employee* to launch the Employee Details module.

The Employee Details window looks by default as follows:





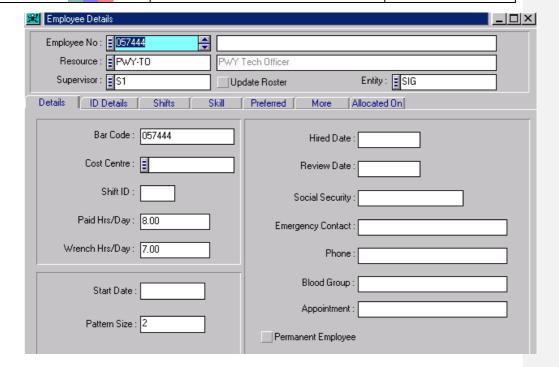
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 C756

 Reference:
 756/PMP/8029e/A756/PMP/8
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 16

 029e/A756/PMP/8029e/A756/PMP/8029e/ COSWIN WORKCOSWIN WORK
 Date: 21 August 200224

 August 200221 August 20023 June 2002
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Detailed Field Descriptions:

Employee No

This is the Employee identifier, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all Employees.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Employee Name

This is the Employee Name, an optional information of maximum 25 alphanumeric characters.

Resource

This is the identifier of the Resource, to which the Employee belongs, a mandatory information. It must exist in the directory of Resources.

When the employee is assigned to a resource, the following information is proposed by default from the given resource:

Paid and Wrench Hours/day

Fixed Rate

the nine cost Rates and the Default Rate code

A selector trigger button (or F2 key) linking to Resource Selector is available.





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 17
Date: 21 August 200221
August 200221 August 20023 June 2002

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Right-mouse click (or F7 key) will activate the Resource Details window for the current code.

Resource description

This is the Resource description identifier, a read-only information automatically managed by the system.

Supervisor

This is the identifier of the Supervisor assigned for the Employee, an optional information. It must exist in the directory of Supervisors.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Right-mouse click (or F7 key) will activate the Supervisor Details window for the current code.

Entity

This is the company entity that the employee belongs to, an mandatory information. It must exist in the directory of Company Entities.

Bar Code

This is the Bar Code identifier, for the Employee, an optional information that can take up to 10 alphanumeric characters. If not specified, COSWIN automatically generates a Bar Code.

Cost Centre

This is the identifier of the Cost Centre, to which Employee costs will be reported, an optional information. It must exist in the directory of cost centres.

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Cost Centre Details window for the current code.

Shift ID

This is the index of the Shift, in which the Employee will work, an optional positive integer information, less than 100.

Paid Hours/Day

This is the Employee's number of Paid Hours in a day, an optional positive numeric information.

The default value is the employee's resource paid hours; this value should be less than or equal to 24 hours.

Wrench Hours/Day

This is the number of hours for which employee is available for actual maintenance work, in a day, i.e. after discounting time for breaks etc. It is an optional positive numeric information, less or equal to the number of paid hours per day. The default value is the employee's resource wrench hours.

Start Date

This is the start date of the employee shift, an optional information.

Pattern Size

This is the shift pattern size of the employee, a read-only information automatically managed by the system. If the employee has a 7-day shift pattern cycle, then the Pattern Size will be 7.

Hired Date





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 18 Date: 21 August 200221

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August 200221 August 20023 June 2002

Review Date

This is the date when the Employee status was last changed, a mandatory information.

This is the date on which the Employee is (or is to be) hired, an optional information.

Social Security

This is the Employee's Social Security number, an optional information of maximum 16 alphanumeric characters.

Emergency Contact

This is the Employee's Emergency Contact (address), an optional information of maximum 25 alphanumeric characters. This may be a name of a person, an address or telephone number to be used in case of emergency.

Phone

This is the Employee's Telephone number (residence/office telephone), an optional information of maximum 20 alphanumeric characters.

Blood Group

This is to record employee's blood group.

Permanent Employee

This information specifies whether the Employee is hired permanent (if checked) or temporarily.

ID DETAILS TAB:

This tab displays the various identification details pertaining to the employee.

The ID Details tab of Employee Details window looks by default as follows:





C756 Page: 19

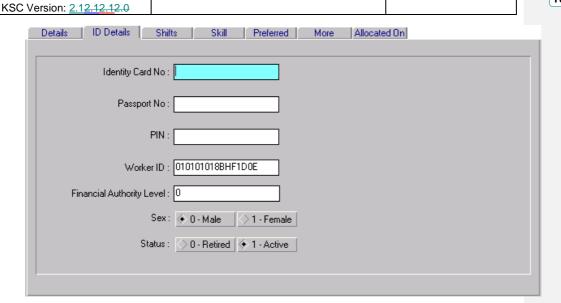
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Identity Card No

This is the identify card number of the Employee, an optional information of maximum 16 alphanumeric characters.

Passport No

This is the passport number of the Employee, an optional information of maximum 16 alphanumeric characters.

PIN

This is the personal identify number of the Employee, an optional information of maximum 16 alphanumeric characters.

Worker ID

This is the worker ID assigned to the Employee, an optional information of maximum 16 alphanumeric characters. This information is also used to store the employee room access card ID for use with AMS interface.

Financial Authority Level

This is the employee level of financial authority for purchasing spares, an optional positive information.

Sex

This radio-button specifies the sex of the employee.

0 - Male The sex of the employee is male 1 - Female The sex of the employee is female





Keppel Ste	eria Consortium (KSC)	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 20	
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221	 Formatted: Font
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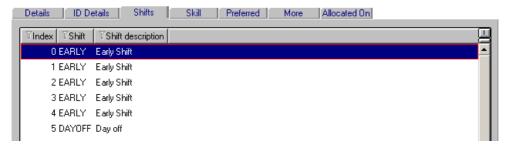
Status

This radio-button specifies the status of the employee.

0 - Retired The status of the employee is not active 1 - Active The status of the employee is active

SHIFTS TAB:

This window captures the various shifts assigned to the employee. Please refer to the chapter Shift and Roster Management for details. Double click on any of the displayed shifts will present the selected record in the *Employee Shift Details* window.



Employee Shift List Box

Index	This is the index of the shift in the employee shift pattern.	
Shift	This is the shift to which the employee shall be assigned in the corresponding day.	
Shift Description	This is the description of the maintenance shift.	

SKILL TAB:

This window provides the information about the various skills that the employee possesses. Double click on any of the displayed skills will activate the *Employee Skill Details* window.



Employee Skill List Box

Skill Code	This is the reference code of the skill that the employee has.	
Skill Description	This is the maintenance skill description.	
Skill Level	This is the level of proficiency representing the degree of skill for the employee.	
Qualifying Method	This is the method used to qualify the employee with the skill.	



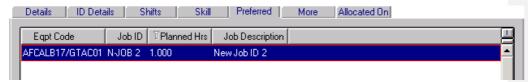


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Reference:	Page: 21	
756/PMP/8029e/A 756/PMP/8	COSWIN WORKCOSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
KSC Version: 2.12.12.12.0		

Date	This is the qualifying date (date when the employee was qualified with the skill).	
Valid until	This is the date until when the qualification is granted.	
Qualifying Authority	This is the authority that qualified the employee with the skill.	

PREFERRED TAB:

This window displays the list of equipment jobs that have indicated the current employee as the preferred employee to perform the job. The information displayed is read-only, automatically managed by the system.



Employee Preferred List Box

Eqpt Code	This is the equipment identifier of the equipment job on which the employee is the preferred employee to perform the job.
Job Identifier	This is the job identifier of the equipment job on which the employee is the preferred employee to perform the job.
Planned Hours	This is the number of hours planned for this employee to perform the job.
Job Description	This is the description of the equipment job on which the employee is the preferred employee to perform the job.

MORE TAB:

This window provides information on the Employee's Cost Rates. An employee more than one (up to 9) cost rates associated, depending on the difficulty degree of the work order assigned to, or other criteria.





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C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

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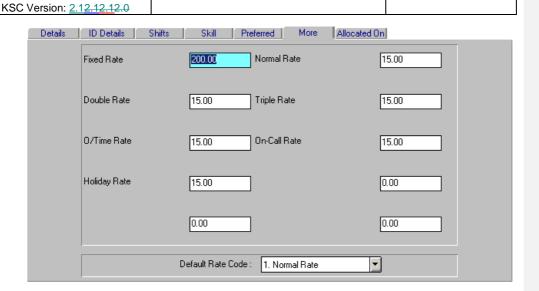
MAINTENANCE MANAGEMENT SYSTEM

Page: 22 Date: 21 August 200221 August 200221 August 20023 June 2002

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Fixed Rate

This is the fixed cost, which is charged against a Work Order only once, if the employee is being used. It is an optional positive numeric information.

The rates are used to compute actual labour cost for work orders, taking into account the actual employee time feedback.

Normal Rate

This is the first cost rate of the employee, an optional positive numeric information. The user can define up to nine rate costs for a specified employee, depending on COSWIN configuration.

Double Rate

This is the second cost rate of the employee, an optional positive numeric information.

Tripple Rate

This is the third cost rate of the employee, an optional positive numeric information.

O / Time Rate

This is the Over Time cost rate of the employee, an optional positive numeric information.

On-Call Rate

This is the On-Call cost rate of the employee, an optional positive numeric information.

Holiday Rate

This is the Holiday cost rate of the employee, four optional positive numeric information.

Default Rate Code

This is the default cost rate used for the current employee. It is a mandatory information and it must be selected among the above ones.

The default rate is used when employee time feedback is entered for a work order. If no charging rate is specified, the default rate will be used by default.





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

MAINTENANCE MANAGEMENT SYSTEM

COSWIN WORKCOSWIN WORK

Page: 23 Date: 21 August 200221

C756

August 200221 August 20023 June 2002

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ALLOCATED TAB:

This window displays the list of work orders that the current employee has been assigned to work on. The information displayed is read-only, automatically managed by the system. Only those work orders that are still in Work-in-Progress will be displayed. That is, those work orders that have been archived to History will not be displayed in this tab.



Employee Allocated On List Box

Work order	This is the number of the work order on which the employee is allocated.
Eqpt Code	This is the equipment code of the work order.
Job ID	This is the Job ID for the work order.
Date	This is the date on which the employee was allocated on the work order.
Hours	This is the number of hours allocated to the employee to accomplish the work.
Job Description	This is the job description for the work order.

2.4.1 To Open Employee Calendar

Click on the non-standard button calendar to display the employee's calendar.

Refer to the section on Employee Calendar for details.

2.4.2 To Add a New Employee

Minimum information required to add an Employee:

- o The Employee identifier
- The Resource identifier to which the Employee belongs

Click on the icon to launch the ADD window.

2.4.3 To Modify an Existing Employee

All information can be modified, except for the Employee identifier.

Click on the licon to save the modification made.





Keppel Steria Consortium (KSC) MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

COSWIN WORKCOSWIN WORK

Page: 24 Date: 21 August 200221 August 200221 August 20023 June 2002

C756

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KSC Version: 2.12.12.1

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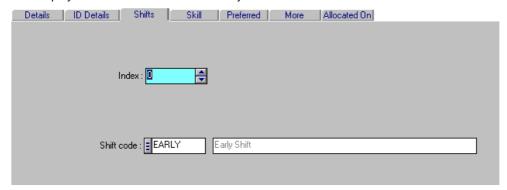
2.4.4 To Delete an Existing Employee

An Employee cannot be deleted if it is referred to in the Maintenance activity, i.e. is currently allocated for a Work Order.

Click on the icon to delete the current Employee.

2.4.5 Employee Shift Details

The Employee Shift Details window looks by default as follows:



Detailed Field Descriptions:

Index

This is the index of the shift in the employee shift pattern. It is a positive integer value unique and contiguous for each employee. Index 0 denotes the first shift in the employee shift pattern.

Shift

This is the shift to which the employee shall be assigned in the corresponding day. It is a mandatory information. It must exist in the directory of Maintenance Shifts.

A selector trigger button (or F2 key) linking to Shifts Selector is available.

Description

This is the description of the maintenance shift. It is a read-only information automatically managed by the system.

2.4.5.1 To Add a New Employee Shift

Minimum information required to add the employee shift pattern, is:

o Shift Code

Click on the icon to launch the ADD window.





MAINTENANCE MANAGEMENT SYSTEM Page: 25

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK Date: 21 August 2002

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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2.4.5.2 To Modify an Employee Shift

The information that can be modified is:

Shift Code

Click on the licon to save the modification made.

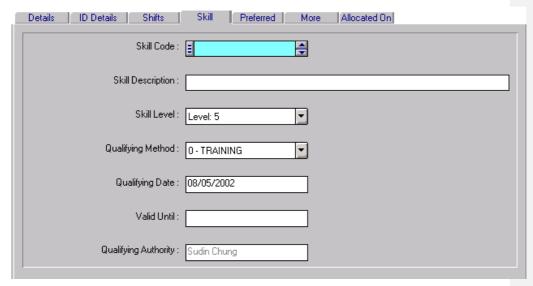
2.4.5.3 To Delete an Employee Shift

There is no restriction in deleting Employee Shift details.

Click on the icon to delete the current Employee Shift.

2.4.6 Employee Skill Details

The Employee Skill Details window looks by default as follows:



Detailed Field Descriptions:

Skill Code

This is the reference code of the skill the employee has. It is a mandatory information that must exist in the directory of Maintenance Skills.

A selector trigger button (or F2 key) linking to Skills Selector is available.

Right-mouse click (or F7 key) will activate the Skill Details window for the current code.

Skill Description

This is the maintenance skill description, a read-only information automatically managed by the system.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 26

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

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Skill Level

This is the level of proficiency representing the degree of skill for the employee. It is a mandatory integer information having values on a scale from 1 to 10. The default level of proficiency is 5.

Qualifying Method

This is the method used to qualify the employee with the skill. It is a mandatory numeric information that can have the following values: 0-TRAINING, 1-EXPERIENCE.

The qualifying method distinguish the skills automatically acquired (created by the system on request) from those acquired through training.

Qualifying Date

This is the qualifying date, the date when the employee was qualified with the skill. It is a mandatory information.

The qualifying date is the employee creation date for skills inherited from the resource. For user added skills the system date is proposed as the qualifying date.

Valid until

This is the date until when the qualification is granted. It is an optional information.

Qualifying Authority

This is the authority that qualified the employee with the skill. It is a read-only information automatically managed by the system. The login name of the user that created the skill is stored.

2.4.6.1 To Add a New Employee Skill

Minimum information required to add an employee skill, is:

- Skill Code
- Level
- Qualifying method

Click on the icon to launch the ADD window.

2.4.6.2 To Modify an Employee Skill

The information that can be modified to an employee skill, is:

- o Level
- o Qualifying method

Click on the licon to save the modification made.

2.4.6.3 To Delete an Employee Skill

No restriction exists to delete employee skills.

Click on the 🔯 icon to delete the current Employee Skill.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 27

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

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2.5 EMPLOYEE CALENDAR

Path: Maintenance / Resources / Employee Calendar

In COSWIN, the calendar modules are used to define the calendars of the production department in the plant, on different levels.

Each employee has a calendar, defined for the Mandatory Period, based on the plant calendar. The employee calendars can be customised for each employee.

The Mandatory Period is the period which lasts between the years BEGIN and END established in COSWIN Configuration's Maintenance / Calendar Control.

The rules to obtain an employee calendar from a plant calendar are:

- The holiday and weekly off days from the plant calendar remain holiday and weekly off days in the employee calendar
- o The shutdown days from the plant calendar become leave days in the employee calendar
- All the other days from the plant calendar become working days in the employee calendar

The Employee Calendars store the following information on the type of day:

Normal working day, Peak Production, Weekly off, Holiday, Leave, Absence

Select from COSWIN menu Maintenance / Resources / Employee Calendar to launch the Employee Calendar module.

The Employee Calendar window looks by default as follows:





C756 Page: 28

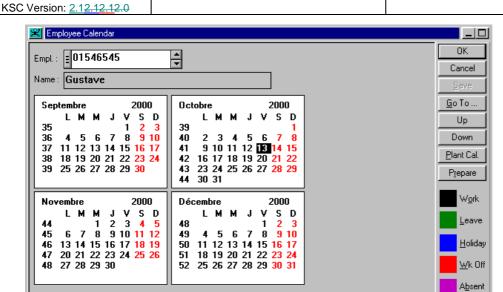
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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The interface includes the Calendar layout, from which the user can select a period. In the status bar, the following information is displayed:

- The entire Calendar period (lower and upper limits)
- The Employee's number of absence hours

As the Employee's Calendar consists of only the mandatory period of the Plant Calendar, therefore it is not possible to add periods to the Employee's Calendar, or delete periods from the Employee's Calendar.

Detailed Field Descriptions:

From: 1998 To: 2000 Abs. Hours:

Employee

This is the Employee identifier, for which the Calendar is displayed, a mandatory information and must exist in the directory of Employees.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Name

This is the Employee description, a read-only information automatically managed by the system.

Detailed Descriptions on the Functional Buttons:

Go To





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 29

Date: 21 August 200221 August 200221 August

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KSC Version: <u>2.12.12.1</u>2.0

Displays a user-specified period, among the existent Calendar periods.

Up

Displays the previous month from the current year.

Down

Displays the next month from the current year.

Plant Calendar

Opens the Plant Calendar window, in order to display the plant's Calendar.

Prepare

Opens the Prepare Calendar for Printing window, in order to provide printing options.

Work

Specifies that the user selected period (the user selects a Calendar period, by highlighting it using the mouse or the keyboard) is further considered a working period.

Leave

Specifies that the user selected period (the user selects a Calendar period, by highlighting it using the mouse or the keyboard) is further considered a period of absence due to an external task assignment.

Holiday

Specifies that the user-selected period (the user selects a Calendar period, by highlighting it using the mouse or the keyboard) is further considered a holiday period.

Weekly Off

Specifies which of the user selected period days of week will be considered free days.

Absent

Specifies that the user selected period (the user selects a Calendar period, by highlighting it using the mouse or the keyboard) is further considered a period of absence. It is specified in hours, which cannot be greater than the employee's wrench hours.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 30

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

2.6 ATTENDANCE

Path: Maintenance / Resources / Attendance

The module is used to enter and visualise the site attendance time for the employee. Attendance at site can be also entered automatically using the interfacing mechanisms available in COSWIN.

Select from COSWIN menu *Maintenance / Resources / Attendance* to launch the Attendance Details module.

The Attendance Details window looks by default as follows:



Double click on any of the employee attendance records will present the selected record in the *Employee Attendance Details* window.

Detailed Field Descriptions:

Employee No

This is the identification of the employee, a mandatory information. It must exist in the directory of Employees.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Employee Name

This Is the full name of the employee that attended the site, a read-only information automatically managed by the system.

Attendance List Box

This list box displays the past entry and exit movement of the employee at various locations.





Keppel Steria Consortium (KSC)		C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 31	
756/PMP/8029e/A 756/PMP/8	COSWIN WORKCOSWIN WORK	Date: 21 August 200221	
029e/A756/PMP/8029e/A756/		August 200221 August	,
PMP/8029e/-		20023 June 2002	
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Cost Centre	This is the cost centre reference of the employee.
Site	This is the code of company entity representing the site attended.
Enter Date	This is the date on which the employee entered the site.
Enter Time	This is the time when the employee entered the site.
Enter Room	This is enter room for the attended place.
Exit Room	This is exit room for the attended place.
Exit Date	This is the date on which the exit the site.
Exit Time	This is the time when the employee exit the site.
Total Hours	This is the total number of hours the employee was inside the site.
Rate	This is the code of the employee's rate for the work done inside the site.

2.6.1 To Add a New Attendance Details

Minimum information required to add a new employee attendance, is:

- o The Employee number
- o The Employee name
- o Enter Date
- o Enter Time
- o Enter Room
- o Exit Room
- o Exit Date
- o Exit Time
- o Total Hours
- o Site
- o Cost Centre
- Rate ID

Click onto the Attendance tab and then on the icon to launch the ADD window.

2.6.2 To Modify an Attendance Details

The information that can be modified is:

- o Enter Date
- o Enter Time
- o Enter Room
- o Exit Date or Exit Time or Exit Room if not already entered





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Page: 32 Date: 21 August 200221 August 200221 August 20023 June 2002

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Rate ID

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2.6.3 To Delete an Attendance Details

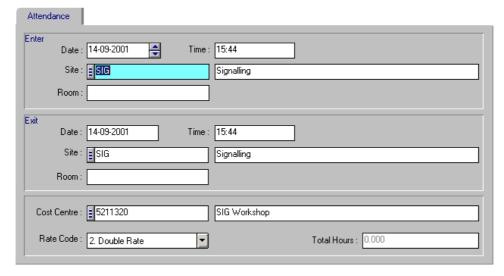
There is no restriction in deleting Attendance Details.

Click on the icon to delete the current Attendance Details.

2.6.4 Employee Attendance Details

This window displays the details of the particular attendance of an employee.

The Employee Attendance Details looks by default as follows:



Detailed Field Descriptions:

Enter Date

This is the date on which the employee entered the site, an optional information.

Enter Time

This is the hour when the employee entered the site, an optional information.

Enter Site

This is the code of company entity representing the enter site attended. It is a mandatory information and must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entity Selector is available.





C756 Page: 33 MAINTENANCE MANAGEMENT SYSTEM

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

Right-mouse click (or F7 key) will activate the Company Entity Details window for the current code.

Enter Site Description

This is the description of enter site attended, a read-only information automatically managed by the system.

Enter Room

This is the enter room for the attended place an optional information of maximum 20 alphanumeric characters.

Exit Date

This is the date on which the exit the site, an optional information.

Exit Time

This is the hour when the employee exits the site, an optional information.

Exit Site

This is the code of company entity representing the site attended. It is a mandatory information and must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entity Selector is available.

Right-mouse click (or F7 key) will activate the Company Entity Details window for the current code.

Exit Site Description

This is the description of exit site attended, a read-only information automatically managed by the system.

Exit Room

This is the exit room for the attended place, an optional information that can take up to 20 alphanumeric characters.

Cost Centre

This is the cost centre reference of the activity performed during site attendance, an optional information and must exist in the directory of Cost Centres. If no information is provided the system will propose the employee's cost centre.

Cost Centre Description

This is the cost centre description, a read-only information automatically managed by the system

A selector trigger button (or F2 key) linking to Maintenance Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Maintenance Cost Centre Details window for the current code.

Rate Code

This is the code of the employee's rate for the work done inside the site. The system will use the employee default rate if no information is provided.

Total Hours





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 34 Date: 21 August 200221 August 200221 August 20023 June 2002

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This specifies the total number of hours the employee was inside the site. It is a read-only information automatically computed by the system if both enter and exit information was provided.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 35

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

KSC Version: 2.12.12.12.0

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3. SHIFT AND ROSTER MANAGEMENT

COSWIN allows both manual allocation and system allocation of employees to works. For system allocation, there are 2 types of shift management methods:

Default Shift Management

Allocate employee to work orders according to preferred employee defined and resource requirement specified without taking into consideration of shift requirement.

Roster-based Shift Management

Allocate employee from a defined Roster List to work orders according to preferred employee defined, preferred shift specified and resource requirement specified.

A Roster List is the schedule of the list of employees who will be working on a particular shift of a particular working day. Therefore from a roster list, it is possible to know the total manpower resource available for a particular working day, etc.

Roster-based Shift Management is adopted for MMS system because the NEL system maintenance staffs are working on a rotating shift schedule.

This chapter explains in details the various modules supporting Roster-based Shift Management in COSWIN.

A Roster List is the core to the Roster-based Shift Management. Therefore a Roster List must first be created before system allocation of employees can be performed.

However, before a roster can be created, the followings must be defined:

- Shif
- o Company's Shift Pattern
- Employee's Shift Pattern

Note:

To make use of Roster List for automatic employee allocation to work orders, the parameter "Use Default Shift Management" in COSWIN Configuration's Maintenance / Roster module must NOT be selected.

Users can always choose to perform manual employee allocation and there are no constraints restricting which employee can be selected during the manual allocation.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 36

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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3.1 DEFINE SHIFT

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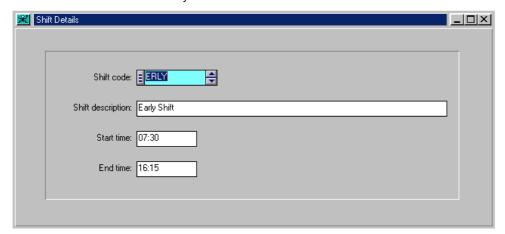
Path: Maintenance / Resources / Shift

The shift module is used to define the basic shift information. The information stored in the shift is:

- o Shit Reference code like: M(orning), E(arly), A(fternoon), N(ight)
- Short description of the shift
- Start hour of the shift
- End hour of the shift

Select from COSWIN menu Maintenance / Resources / Shift to launch the Shift Details module.

The Shift Details window looks by default as follows:



Detailed Field Descriptions:

Shift Code

This is the shift reference code, a mandatory information of maximum 6 alphanumeric characters. The shift code must be unique among all Maintenance Shifts.

Shift Description

This is the short description of the maintenance shift, an optional information of maximum 40 alphanumeric characters.

Start Time





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756

Page: 37 Date: 21 August 200221 August 200221 August 20023 June 2002

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

Reference:

KSC Version: <u>2.12.12.1</u>2.0

This is the starting hour of the shift, a mandatory information.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 38

Date: 21 August 200221 August 200221 August 20023 June 2002

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End Time

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This is the ending hour of the shift, a mandatory information.

3.1.1 To Add a New Shift

Minimum information required to add a new maintenance shift is:

- o Code
- Start Hour
- o End Hour

Click on the icon to launch the ADD window.

3.1.2 To Modify a Shift

The information that can be modified is:

- Description
- o Start Hour
- o End Hour

3.1.3 To Delete a Shift

Maintenance shifts cannot be deleted if:

- o They are the preferred shift of an equipment job
- o They are the planned shift of a planned job
- o They are the planned shift of a work order
- o They are referred by daily shifts
- o They are referred by assigned shifts

Click on the icon to delete the current Shift.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 39

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 Formatted: Font: 10 pt, Font color:

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KSC Version: <u>2.12.12.1</u>2.0

3.2 DEFINE SHIFT PATTERN

Path: Maintenance / Resources / Shift Pattern

The module is used to manage the weekly shift patterns, their daily shifts and resource requirements. A weekly shift pattern is built upon a combination of the daily shifts over one week.

Information stored in each daily shift includes the number of leaders, number of assistants and ordinary staff per each shift of a day and the necessary resource requirements. These resource requirements will be used as matching criteria when assigning employees to roster during roster creation.

A resource may be required:

- Globally for the whole shift pattern (each daily shift in the pattern will inherit it)
- For a specific daily shift
- o For both the whole shift pattern and a daily shift

Resources required both global and specific are added when the resource requirement is computed for the daily shift.

The system checks that the resource requirements are not greater than the staff available in the daily shift pattern:

Leaders + Assistants + Staff = SUMOF required shift pattern resources + SUMOF required daily shift resources

Select from COSWIN menu *Maintenance / Resources / Shift Pattern* to launch the Shift Pattern Details module.





C756

Reference:

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KSC Version: 2.12.12.1

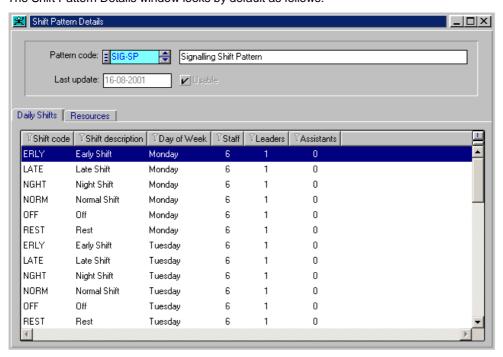
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 40 Date: 21 August 200221 August 200221 August 20023 June 2002

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The Shift Pattern Details window looks by default as follows:



Detailed Field Descriptions:

Pattern Code

This is the shift pattern identifier, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all Shift Patterns.

A selector trigger button (or F2 key) linking to Shift Pattern Selector is available.

Description

This is the shift pattern's description, a mandatory information of maximum 40 alphanumeric characters.

Last Update

This is the shift pattern creation or last updating date, a read-only information automatically managed by the system.

Usable

This check box specifies if the current shift pattern can be adopted by the company entities.





Keppel Ste	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 41
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
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DAILY SHIFTS TAB:

Double click on the any of the displayed Daily Shifts in the list box will present the selected record in the **Shift Pattern Daily Shift Details** window.

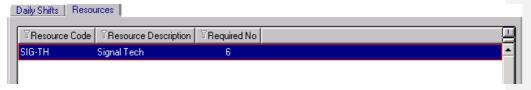
Daily Shifts List Box

This list box displays all the shifts defined against each day for the shift pattern.

Shift Code	This is the shift reference code.	
Shifts Description	This is the shift description.	
Day of week	This is the index of the day in the week for which the daily shift is defined.	
Staff	This is the number of employee in the daily shift.	
Leaders	This is the number of team leaders in the daily shift.	
Assistants	This is the number of assistants in the daily shift.	

RESOURCE TAB:

The Resource Tab of Shift Pattern Details window looks by default as follows:



Global Resources Requirements List Box

This list box displays the resources required globally for the entire shift pattern.

Resource Code	This is the resource reference code.	
Resource Description	This is the resource short technical description.	
Required	This is the number of resources required for the daily shift or the shift pattern.	

3.2.1 To Add a New Shift Pattern

Minimum information required to add a shift pattern, is:

- o Shift pattern code
- o Shift pattern description
- o At least one daily shift

All created shift patterns are usable.

Click on the icon to launch the ADD window.





C756 Page: 42 MAINTENANCE MANAGEMENT SYSTEM

Date: 21 August 200221

August 200221 August 20023 June 2002

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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

3.2.2 To Modify a Shift Pattern

Once the shift pattern has been adopted by a company entity, the only information that can be modified is

COSWIN WORKCOSWIN WORK

Shift pattern description

3.2.3 To Delete a Shift Pattern

A shift pattern cannot be deleted, if:

o It is adopted by a company entity

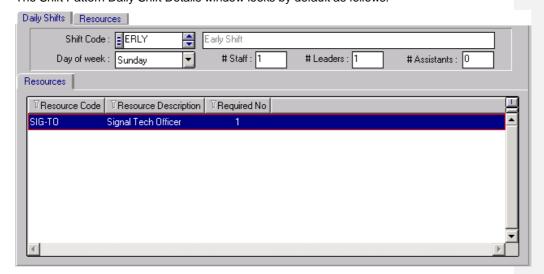
Deleting a shift pattern will result in the followings:

- o All shift pattern daily shifts are deleted
- All shift pattern resource requirements are deleted

Click on the icon to delete the current Shift Pattern.

3.2.4 Shift Pattern Daily Shifts Details

The Shift Pattern Daily Shift Details window looks by default as follows:



Detailed Field Descriptions:

Shift Code

This is the shift code, a mandatory information. It must exist in the directory of Shifts.

A selector trigger button (or F2 key) linking to Shift Selector is available.

Right-mouse click (or F7 key) will activate the Shift Details window for the current code.





Keppel Steria Consortium (KSC) C756 Page: 43 MAINTENANCE MANAGEMENT SYSTEM 756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Description

Reference:

This is the shift description, a read-only information automatically managed by the system.

Day of week

This is the index of the day in the week for which the daily shift is defined. It is a mandatory integer information in the interval 1 to 7. The value 1 corresponds to Monday and the value 7 corresponds to Sunday.

Staff

This is the number of employee in the daily shift. It is mandatory and must be a positive integer.

Leaders

This is the number of team leaders in the daily shift. It is mandatory and must be a positive integer. Default value of 1 is proposed when a new daily shift is added.

Assistants

This is the number of team leaders assistants in the daily shift. It is mandatory and must be a positive integer. Default value of 0 is proposed when a new daily shift is added.

RESOURCE TAB:

Specific Resources Requirements List Box

This list box displays the resources required specifically for the particular daily shift.

Resource Code Resource	This is the resource reference code This is the resource short technical description
Description Required	This is the number of resources required for the daily shift or the shift pattern

3.2.4.1 To Add a Daily Shift to a Shift Pattern

Minimum information required to add a daily shift to a shift pattern, is:

- Shift Code
- Day of week
- Staff 0
- 0 Leaders
- o Assistants

The pair of shift code and day of week is unique among the daily shifts of a shift pattern.

Daily shifts can be added only to shift patterns that have not been adopted by company

Click on the icon to launch the ADD window.

3.2.4.2 To Modify a Daily Shift of a Shift Pattern

The information that can be modified in a daily shift of a shift pattern, is:





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 44
Date: 21 August 200221
August 200221 August 20023 June 2002

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KSC Version: 2.12.12.12.0

o Day of week

- Staff
- Leaders
- Assistants

The pair of shift code and day of week is unique among the daily shifts of a shift pattern.

Daily shifts can be modified only if they are attached to shift patterns not adopted by company entities.

3.2.4.3 To Delete a Daily Shift from a Shift Pattern

Daily shifts can be removed from shift patterns not adopted by a company entity.

The specific resource requirements of the daily shift are deleted together with the daily shift.

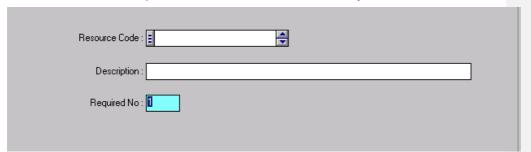
Click on the icon to delete the current Daily Shift.

3.2.5 Shift Pattern Global/Specific Resource Details

Global Resource Requirement refers to the resource required by the entire shift pattern. It is captured under the Resource tab of Shift Pattern Details window.

Specific Resource Requirement refers to the resource required by a particular daily shift of the shift pattern. It is captured under the Resource tab of Daily Shift Detail tab of Shift Pattern Details window.

The Shift Pattern Global/Specific Resource Details window looks by default as follows:



Detailed Field Descriptions:

Resource Code

This is the resource code, a mandatory information. It must exist in the directory of Resources.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Right-mouse click (or F7 key) will activate the Resource Details window for the current code.

Resource Description





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KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 45 Date: 21 August 200221 August 200221 August

August 200221 Augu 20023 June 2002

This is the resource description, a read-only information automatically managed by the system.

Required No

This is the number of resources required for the daily shift/shift pattern, a mandatory positive integer. The default value of 1 is proposed when a resource requirement is added.

3.2.5.1 To Add a Global/Specific Resource Requirement

Minimum information required to add a resource requirement, is:

- Resource code
- o Required

The resource code is unique among the global resource requirements of a shift pattern or among the specific resource requirements of a daily shift.

Global and specific resource requirements can be added only to shift patterns not adopted by any company entities.

Click on the Di icon to launch the ADD window.

3.2.5.2 To Modify a Global/Specific Resource Requirement

The only information that can be modified to a resource requirement, is:

o Required

Global and specific resource requirements can be modified only to shift patterns not adopted by any company entities.

3.2.5.3 To Delete a Global/Specific Resource Requirement

Global and specific resource requirements can be deleted only from shift patterns has not been adopted by any company entities.

Click on the icon to delete the current Resource Requirement.





Keppel Steria Consortium (KSC)

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PMP/8029e/KSC Version: 2.12.12.12.0

MAINTENANCE MANAGEMENT SYSTEM
COSWIN WORKCOSWIN WORK
Date: 21 August 200221
August 200221 August 200221 August 200221 August 200223 June 2002

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3.3 ATTACH SHIFT PATTERN TO A COMPANY ENTITY

Path: Maintenance / Reference Directories / Company Hierarchy / Entities

To create a shift roster for a company entity, the company entity must have adopted at least one shift pattern.



3.3.1 To Add a Shift Pattern to a Company Entity

The following rules apply when assigning a Shift Pattern to a Company Entity:

- Company can have only one Shift Pattern active at any point in time
- The Start and End dates of all the adopted shift patterns to Company Entity cannot overlap

Click on the icon to launch the ADD window:

All the information in the window is mandatory.

Addresses Contacts Structure	Equipments Employees	Stores Stock Items Shift Pat. Hist.	Roster List
Shift pattern :	Ā		
Start date : 14-09-2001	End date :	∠ In Use	

Detailed Field Descriptions:

Shift Pattern





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Page: 47
Date: 21 August 200221
August 200221 August

August 200221 August 20023 June 2002

This is the identifier of the Shift Pattern to be adopted. It must exist in the directory of Shift Patterns.

A selector trigger button (or F2 key) linking to Shift Patterns Selector is available.

Right-mouse click (or F7 key) will activate the Shift Pattern Details window for the current code.

Start date

This is the begin date of the period that the shift pattern will be used by the company entity. The period between the Start date and the End date cannot be less than 6 weeks.

End data

This is the end date of the period that the shift pattern will be used by the company entity. The period between the Start date and the End date cannot be less than 6 weeks.

In Use

If checked, indicates that the shift pattern will be in used.

3.3.2 To Modify the details of an Adopted Company Shift Pattern

The only information can be modified in an Adopted Shift Pattern is:

- Start Date
- End Date

3.3.3 To Detach an Adopted Shift Pattern from a Company Entity

To detach the adopted Shift Pattern from the Company Entity, the following criteria applies:

- o The Shift Pattern must be expired more than 1 years.
- o The Shift Pattern must not be in use.





MAINTENANCE MANAGEMENT SYSTEM | Page: 48

COSWIN WORK Date: 21 August 200224
August 200221 August

August 200221 August 20023 June 2002

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3.4 DEFINE EMPLOYEE'S SHIFT PATTERN

Path: Maintenance / Resources / Employee

The employee's shift pattern tab defines the cyclic pattern of daily shifts adopted by the employee:



3.4.1 To Add a New Employee Shift Pattern

Minimum information required to add the employee shift pattern, is:

o Shift Code

Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

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The pattern always begins with index 0.

Click on the icon to launch the ADD window.

3.4.2 To Modify an Employee Shift Pattern

The information that can be modified is:

o Shift Code

3.4.3 To Delete an Employee Shift Pattern

There is no restriction for deleting employee shift pattern.

Click on the 🔯 icon to delete the current Employee Shift.





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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 49 Date: 21 August 200221 August 200221 August

20023 June 2002

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3.5 CREATE SHIFT ROSTER FOR A COMPANY ENTITY

Path: Maintenance / Reference Directories / Company Hierarchy / Roster

This module generates, displays and updates the roster list (roster) for each company entity. System uses the schedule in the roster list to auto-allocate employees to work orders.

The roster list contains the assignments of the employee to the different daily shifts in the roster interval. From the roster list, it is possible to find out the availability of employee in the various shifts over the roster interval.

The roster algorithm will match the employee to the adopted shift pattern as follows:

- Employees must belong to the specified company entity
- Available employee of required resources will be allocated whenever possible. The employee's calendar is referenced for the employee's availability.
- When employees of a different than required resource are allocated they are flagged accordingly

Roster lists are used to allocate employee to work orders. Therefore the roster lists cannot be deleted while it is active (system date is between start and end date). Assigned shifts and assignments are not deleted individually. All assigned shifts and assignments are deleted when the roster list is deleted.

The Roster Details window looks by default as follows:





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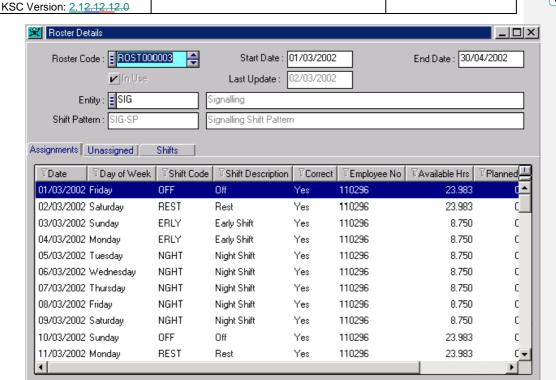
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 50 Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Roster code

This is the reference code of the roster list. It is automatically generated by the system when new roster lists are drawn for company entities. The roster code is unique among the roster lists generated in the system.

Start date

This is the start date of the roster interval (interval for which the roster list is drawn). It is a mandatory information.

Fnd date

This is the end date of the roster interval (interval for which the roster list is drawn). It is a mandatory information.

The roster interval shall be a multiple of one week interval and must not be less than 6 weeks. It must not exceed the adoption interval of the currently adopted shift pattern of the company entity.

In use

This check box specifies if the module shall display the roster list information.

Last Updated





Keppel Ste	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 51
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

20023 June 2002

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This is the creation date of the roster list or the date of the last modification of the roster list assignments. It is a read-only information automatically managed by the system.

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This is the code of the company entity for which the roster list is drawn. It is a mandatory information. The company entity code must exist in the directory of the Company Entities.

A selector trigger button (or F2 key) linking to Company Entity Selector is available.

Entity description

This is the description of the company entity for which the roster list is drawn. It is a readonly information automatically managed by the system.

Shift pattern

This is the code of the adopted shift pattern of the company entity for the period within the Start and End Date. It is a read-only information automatically managed by the system.

Shift pattern description

This is the description of the currently adopted shift pattern by the company entity. It is a read-only information automatically managed by the system.

Assignments List Box

This tab displays the list of employees being assigned to the shift requirements of the company entity.

Date	This is the date of the assignment. This is the date of the assignment		
Day of Week	This represents the day of week		
Shift	This is the shift code		
Shift Description	This is the shift description		
Correct	This flag specify if the employee was assigned to a shift respecting the shift pattern and daily shift resource requirements.		
Employee	This is the employee identifier		
Available Hrs.	Hrs. This is the employee number of hours allocated for planned maintenance in the assignment		
Planned Hrs.	This is the number of hours already planned for the employee (allocated for work orders) in the assignment.		
Employee Name	This is the employee name		

<u>Unassigned Tab:</u>
This tab displays the list of shift requirements of the company entity not able to be assigned with employees.





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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 52 Date: 21 August 200221

August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

∏ Date	▼Day of Week	■Shift Code	Shift Description	▼Required No.	▼Resource Code	▼Resource Descrip
01/03/2002	Friday	ERLY	Early Shift	6	SIG-STH	Signal Snr Tech
01/03/2002	Friday	ERLY	Early Shift	1	SIG-TO	Signal Tech Officer
01/03/2002	Friday	LATE	Late Shift	6	SIG-STH	Signal Snr Tech
01/03/2002	Friday	LATE	Late Shift	1	SIG-TO	Signal Tech Officer
01/03/2002	Friday	NGHT	Night Shift	6	SIG-STH	Signal Snr Tech
01/03/2002	Friday	NGHT	Night Shift	1	SIG-TO	Signal Tech Officer
01/03/2002	Friday	NORM	Normal Shift	6	SIG-STH	Signal Snr Tech
01/03/2002	Friday	NORM	Normal Shift	1	SIG-TO	Signal Tech Officer
01/03/2002	Friday	OFF	Off	6	SIG-STH	Signal Snr Tech
01/03/2002	Friday	REST	Rest	6	SIG-STH	Signal Snr Tech
01/03/2002	Friday	REST	Rest	1	SIG-TO	Signal Tech Officer

Unassigned Shift List Box

Date	This is the date of the assignment. This is the date of the assignment	
Day of Week	This represents the day of week	
Shift	This is the shift code	
Shift Description	escription This is the shift description	
Required No.	ired No. This is the required number of the specified resource	
Resource	This the resource required	
Resource Description	The is the description of the research	

Shifts Tab

This tab displays the shift requirements of the company entity under the specific pattern at the specified period.

Double click on any of the Shifts displayed will activate the Roster Shift Details window.





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 53

COSWIN WORKCOSWIN WORK

Date: 21 August 200221

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20023 June 2002

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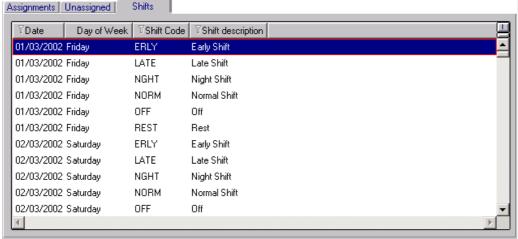
[Assignments | Unassigned

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Reference:

PMP/8029e/-



Shift List Box

Date	This is the date of the assignment. This is the date of the assignment		
Day of Week	This represents the day of week		
Shift	This is the shift code		
Shift Description	This is the shift description		

3.5.1 To Generate a Roster

COSWIN shall allow definition of unlimited number of company entities.

Minimum information to generate a roster list is:

- o Roster code automatically generated if necessary
- Start date of roster interval
- End date of roster interval

The roster interval represented by the start and end date cannot be less than six weeks. The same shift pattern is used to generate the roster list independent of the length of the roster interval.

To create a new Roster:

Click on the cicon and a ADD window appears.

Hit the **Tab** key for system to automatically issue a Roster code or you may specify an unique code.

Specify the start date and the end date of the roster to be created.

Select the company entity for which the Roster is to be generated.

The adopted shift pattern of the selected entity will automatically be displayed in the Shift Pattern Field.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 54

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

Click on the 🔲 icon to create the roster.

NOTE: The Start and End dates specified must be within the date range of the adopted Shift Pattern of the entity.

3.5.2 To Modify a Roster

The only information that can be modified is

o In use

In use property can be only turned off when

- The current date is outside the roster interval, and
- More than 12 months have passed from the last modification of the roster list

3.5.3 To Delete a Roster

Roster lists cannot be deleted, if:

- Their roster interval is not ended, or
- o They are still in use

Deleting a roster list will result in the followings:

- All assigned shifts and their assignments are deleted
- All assigned employee are deleted

Click on the icon to delete the current Roster List.

3.5.4 Roster Shift Details

The Roster Shift Details window looks by default as follows:



Detailed Field Descriptions:

Shift

This is the shift code, a mandatory information. It must exist in the directory of Shifts.

Shift Description

This is the shift description, a read-only information automatically managed by the system.





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Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 55	
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221	
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Day of Week

This is the day of week associated to the shift.

Date

This is the date of the assignment, a mandatory information. This is the date of the assignment.

Employee Tab:

This tab displays the list of employees being assigned to the specified shift.

Employee Code	This is the identifier of the employee assigned to the shift	
Employee Name	e This is the name of the employee assigned to the shift	
Correct	This flag specify if the employee was assigned to a shift respecting the shift pattern and daily shift resource requirements	
Planned Hrs	This is the number of hours already planned for the employee (allocated for work orders) in the assignment.	
Available Hrs	This is the employee number of hours allocated for planned maintenance in the assignment	

3.5.5 Roster Shift Employee Details

The Roster Shift Employee Details window looks by default as follows:



Detailed Field Descriptions:

Employee Identifier

This is the employee identifier, a mandatory information. It must exist in the directory of employee.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Employee Name

This is the employee name, a read-only information automatically managed by the system.

Correctly





shift resource requirements. It is automatically computed by the system.

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 56 Date: 21 August 200221 August 200221 August

20023 June 2002

This flag specify if the employee was assigned to a shift respecting the shift pattern and daily

Planned hours

This is the number of hours already planned for the employee (allocated for work orders) in the assignment. The information is read-only and managed by the system. The default value proposed is 0. The value should be less than or equal to the employee number of available hours in the assignment.

Available hours

This is the employee number of hours allocated for planned maintenance in the assignment, a mandatory information. The system proposes by default the employee's available hours.

3.5.5.1 To Add a New Employee to a Roster Shift

Minimum information to add a new employee assignment in a generated assigned shift is:

- Identifier
- Available hours

The rest of the information is automatically retrieved by the system from the generated assigned shift to which the new employee assignment is added.

The assignment date must be later the current date.

Click on the icon to launch the ADD window.

3.5.5.2 To Modify Employee Details in a Roster Shift

The only information that can be modified is the number of available hours for planned maintenance.

The assignment date must be later the current date and the number of planned hours of the assignment must remain greater than the modified number of available hours.

3.5.5.3 To Delete an Employee from a Roster Shift

To be confirmed.





Keppel Steria Consortium (KSC)

Reference:

MAINTENANCE MANAGEMENT SYSTEM
756/PMP/8029e/A756/PMP/8

COSWIN WORKCOSWIN WORK
Date: 21 August 2002

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Date: 21 August 200221 August 200221 August 20023 June 2002

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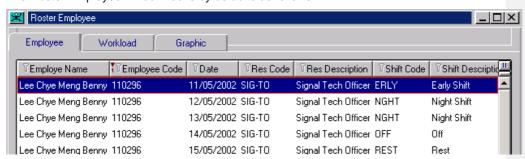
3.6 WORKLOAD

Path: Maintenance / Resources / Workload

This module is used to display the total available resources according to roster lists created in the system, and the employee allocation summary as well as a graphical representation of employee allocation by day or week.

Select from COSWIN menu *Maintenance / Resources / Workload* to launch the Roster Employee module.

The Roster Employee window looks by defaults as follows:



EMPLOYEE TAB

This tab displays the list of employees that are working at the plant, as per defined in roster list.

Roster Employee List Box

Employee Name	This is the employee name	
Employee Code	This is the employee identifier	
Date	This is the date of assignment	
Res Code	This is the resource identifier	
Res Description	This is the description of the resource	
Shift Code	This is the shift identifier	
Shift Description	Description of the shift	
Available Hours	This number indicates the available hours	
Planned Hours	This number indicates the plan hours	
Allocated Hours	This number indicates the allocated hours	
Authority	This is the company authority	
Authority Desc	Description of the authority	





Keppel Ste	eria Consortium (KSC)	C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 58
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
KSC Version: 2.12.12.12.0		

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Week This is indicating week of period

WORKLOAD TAB:

This tab displays the allocation of employee from plan onto work order:



Allocation	This is the resource of the employee being allocated.	
Date	This is the date that employee is allocated to work on the job.	
Allocated hours	This is the number of hours of the employee's work hours being allocated to perform the job	
Plan ID	This is the plan ID from which the work order is created and employee allocated.	
Eqp Code	This is equipment identifier	
Eqp Description	This is the description of the equipment	
Planner ID	This is the planner identifier	
Job ID	This is the Job ID of the equipment job in the work order.	
Job Description	This is the description of the job of the work order.	
Job type	This is the type of job being displayed	
Supervisor	This is to the name of the supervisor	
Work Order ID	This is the Work Order Identifier.	
Work Status	This is status of the work order	



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

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Page: 59

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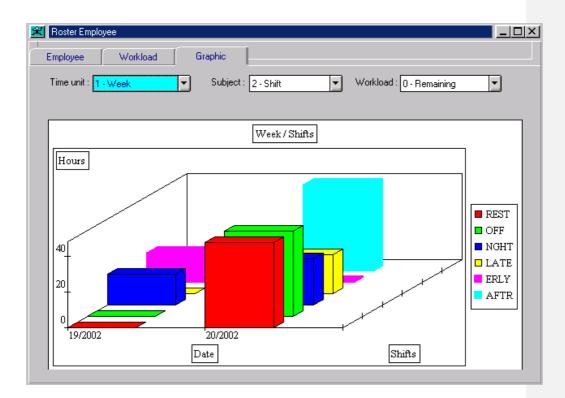
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Reference:

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This is the graphical representation of workload allocation. The graphical view may be changed according to the selected Time Unit, Subject or Workload fields.

Time Unit

0 – Day	To display workload in terms of days.
1 – Week	To display workload in terms of workweeks.

Subject

0 – Employee	To display workload over all employees.
1 – Resource	To display workload over all resources.
2 – Shift	To display workload over all shift codes.

Workload

0 – Remaining	To display un-allocated workload.	
1 – Allocated	To display allocated workload.	
2 – Planned	To display planned workload.	
3 - Total	To display all workload.	





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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 60 Date: 21 August 200221 August 200221 August 20023 June 2002

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 61

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4. UNPLANNED MAINTENANCE

Unplanned Maintenance refers to works performed for breakdown or corrective maintenance.

A *Work Order* is the written instruction to perform a maintenance job on specific equipment. *Feedback* is the action of providing data concerning the work performed to accomplish the tasks of the work order.

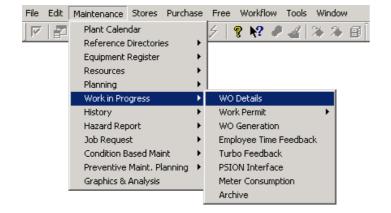
Work orders in the system have been categorised as follows

- Planned work orders created by planning and release modules. These are work orders that have been planned in advance and therefore do not cause disruption to production activities.
- Unplanned work orders created in Work Order Details Module for breakdown/corrective maintenance.
- o Other work order performed for project maintenance jobs.

Work orders for unplanned maintenance are created in Work Order Details module.

This chapter will explain the procedure to creating of unplanned Work Order. The subsequent chapter *Work In Progress* will explain in details on how feedback can be provided to the Work Order.

Select from COSWIN menu *Maintenance / Work In Progress / Work Order Details* to launch the Work Order Details module.





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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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4.1 TO CREATE AN UNPLANNED WORK ORDER

COSWIN recognizes four stages of broadly defined transitions through which the status of a work order progresses:

- **0 Not Started** the work order has been generated but the work to accomplish the tasks has not been started.
- 1 In Progress the work to accomplish the tasks has been initiated against the work order but has not been completed.
- 2 Finished work against work order has been completed but feedback is not yet over.
- **3 Archivable** work is completed and necessary feedback has been provided, i.e. the work order can be archived and moved to history.

These statuses are known as the System Status. COSWIN allows users to define their own statuses against the System statuses. This can be established through the COSWIN Configuration's Maintenance / Work Order / Status.

Examples of user-defined status are as follows:

▼User Status	₹Sys Status	▼Description
0	0	Not Started
1	1	In progress
2	2	Finished
3	3	Archivable
l w	1	Waiting for spares
×	3	Canceled

It is possible to create a work order with any of the system status: 0-Not Started, 1-In Progress, 2-Finished or 3-Archivable.

The Work Order Details window looks by default as follows:





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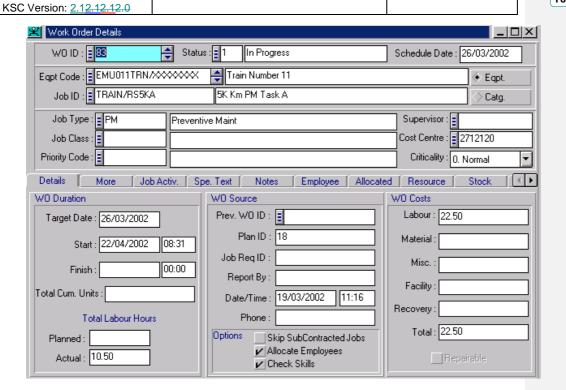
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 63 Date: 21 August 200221 August 200221 August 20023 June 2002

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The minimum information required to create a work order, is:

If an existing job is used

- o Equipment for which the work to be performed upon
- o Job for which the work order is made

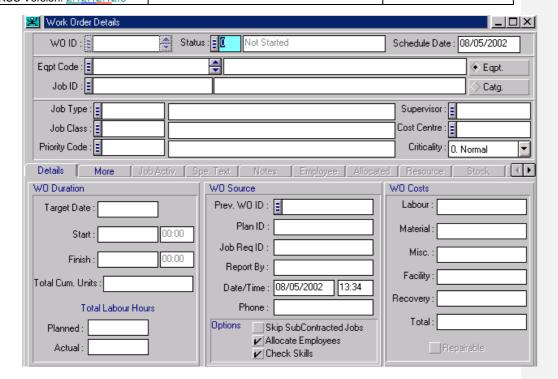
If not using existing job

- o Equipment for which the work to be performed upon
- o Job description
- Job type

Click on the icon on the COSWIN toolbar to activate the ADD window:



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4.1.1 List of fields to Define during Work Order Creation

The followings describe all the fields in the main section, Details tab and More tab of the Work Order Details window. The fields are listed in the appearance order from top to bottom, left to right.

Status

This is the work order *user status*, a mandatory information of 1 alphanumeric character. It must be one of the already defined Work Order User Statuses.

A selector trigger button (or F2 key) linking to Status List Selector is available.

Status description

This is the work order user status description, a read-only information automatically managed by the system.

Schedule date

This is the date when the work against the work order is to begin, a mandatory information.

The schedule date should not be earlier than one year from the work order creation or feedback date.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 65

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

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Equipment

This is the equipment/group identifier for which the work order is generated, a mandatory information. The ultimate purpose of a work order is to operate, in a way or another (mainly repairing), upon an equipment.

It must exist in the directory of Equipment or Groups of equipment.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Equipment description

This is the description of the equipment selected for the work order, a read-only information automatically provided by the system once the equipment identifier is assigned.

Job

This is the work order job identifier, i.e. the code of the maintenance job that is to be accomplished. It is a mandatory information of maximum 16 alphanumeric characters.

There are namely two kinds of jobs: Planned or Unplanned.

Planned jobs are jobs defined for planned/preventive maintenance. They are to be performed on regular basis (according to their behaviour). The planning process usually uses planned jobs to generate planned work orders. Planned jobs are created using Job Guidelines Module.

Unplanned jobs are defined for breakdown/corrective maintenance. They are created together with the work order in Work Order Details Module.

If the job is not specified or if the specified job does not already exist, the system will create the job as an unplanned job. If the job identifier is not specified, COSWIN will assign an identifier with prefix 'UNPL' and a running number suffix. If the specified job identifier represents an already existing job, but defined for another equipment, then a job with the same identifier will be created for the current equipment. In this situation, the following information will be taken from the existing job and proposed as default:

- Job description
- Job type and job type description

If the job was already defined for the work order's equipment, then the following information will be taken from the existing job and proposed as default, in addition to the above:

- Job class and job class description
- Supervisor
- Cost centre
- Meter
- Contract
- Project
- Cost type

A selector trigger button (or F2 key) linking to either Equipment Job Selector or Category Job Selector (depending on the Job Selection Criteria radio button) is available.

Right-mouse click (or F7 key) will activate the Job Guidelines Details window for the current code.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 66

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

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Job description

This is the job description, a mandatory information of maximum 40 alphanumeric characters. This field is accessible to the user only if the job identifier is not specified or a non-existing job identifier was specified.

Job selection criteria (Eqp. / Catg.)

This radio button represents the source of job selection (see paragraph Job). The available options are:

Equipment This selection specifies that work order's job will be selected wise from the current equipment's list of jobs

Category wise This selection specifies that work order's job will be selected

from the current equipment's category list of jobs

Type

This is the job type, a mandatory information of maximum 6 alphanumeric characters. It must exist in the directory of Job Types. Job Types are defined through COSWIN Configuration's Maintenance / Job / Type.

If the work order's job is an existing equipment job in the database, then the system will automatically propose job type of the equipment job as default during the work order creation.

A selector trigger button (or F2 key) linking to Job Types Selector is available.

Type description

This is the description of the job type, a read-only information, automatically provided by the system once the Job Type is assigned.

Supervisor

This is the work order's supervisor identifier, i.e., the person who supervises the work order's execution. It is an optional information of maximum 6 alphanumeric characters. It must exist the directory of Supervisors.

If the work order's job is an existing equipment job, then system will propose the supervisor defined in the equipment job as the default value.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Right-mouse click (or F7 key) will activate the Supervisor Details window for the current code.

Class

This is the job class identifier, an optional information of maximum 6 alphanumeric characters.

If the work order's job is an existing equipment job, then system will propose the job class defined in the equipment job as the default value.

If a work order progresses to 3-Archivable status without Job Class being assign, then system will propose the Default Job Class established in COSWIN Configuration as the job class of the work order.

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Class description





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 67

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

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This is the job class description, a read-only information, automatically provided by the system once the Job Class is assigned.

Cost centre

This is the work order's cost centre identifier, which specifies the costing point to which the cost incurred on the work order should be posted. It is a mandatory information. It must exist in the directory of Cost Centres.

During the creation of work order, the system proposes the cost centre of the work order's equipment as the default cost centre. If the cost centre of the work order's job is different from the cost centre of the equipment, then the cost center of the equipment will be updated as the cost centre of the job.

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Maintenance Cost Centre Details window for the current code.

Priority

This is the Priority of Work assigned to the work order, an optional information. It must exist in the directory of Priority of Work.

Priority description

This is the priority description, a read-only information, automatically managed by the system.

Criticality

This indicates the criticality of the work order. The valid options are: 0-Normal, 1-Major and 3-Critical. System will propose 1-Normal as the default value.

Fields under the Details tab:

Target date

This is the date when the work order is supposed to be finished. It is a mandatory information. If not specified, system will propose current date.

Start date

This represents the date when the work against the work order starts. It is an optional information.

If employee time usage feedback has been provided, the default start date proposed by the system is internally computed as the earliest date on which the employee worked against the work order.

If employee time usage feedback has not been provided, but the work order's finish date was already provided, then the start date is computed from the work order finish date and the job duration with the following formula:

Start date = Finish date - job duration + 1

Otherwise, the current date is proposed as work order's start date.

The work order start date cannot be later than current date.

Start time





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.12.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 68 Date: 21 August 200221 August 200221 August

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20023 June 2002

This represents the time when the work against the work order started. It is an optional information.

If employee time usage feedback has been provided, the default start time is internally computed by the system from the time inputs, otherwise the system proposes the current time as default work order's start time.

Finish date

This represents the date when the work against the work order was completed.

It is only accessible as well as mandatory for work order with system status equal 2 -Finished or 3 - Archivable.

If employee time usage feedback has been provided, the default finish date proposed by the system is internally computed as the latest date on which the employee worked against the work order.

If employee time usage feedback has not been provided, but the work order start date has already been provided, then the finish date is computed from the start date and the job duration with the following formula:

Finish date = Start date + job duration - 1

If the both the work order's start date and finished date are not specified (for work orders progress from status '0 - Not Started' to '2 - Finished' or '3 - Archivable' directly), then the current date is proposed as default finish date and the work order's start date is computed based on the finish date and the job duration.

Finish time

This represents the time when the work against the work order was finished.

If employee time usage feedback has been provided, the default finish time is internally computed by the system from the time inputs, otherwise the following rules apply to the default value of work order's finish time proposed by the system:

- The work order's finish time is the same as work order's start time when the start date is different from the finish date.
- The work order's finish time is one hour later than the work order's start time when the start date and the finish date are the same.
- In case the start time is not specified, the start time is considered the current time.

Total cumulative units (T. Units)

This represents the cumulative units of the job's meter at the end of work order's execution. The total cumulative units is an read-only information, automatically provided by the system when the work order is progressed to archival status.

The Total cumulative units (TCU) is computed using the following formula:

new TCU = old TCU + (LMRV - PMRV)

where: LMRV is the last meter reading value

PMRV is the previous before last meter reading value

Total planned hours

This information represents the number of resource hours required to accomplish the work order job (from the resources requirement specified for the work order). It is an optional numeric information.





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-KSC Version: 2.12.12.12.0 MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 69

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Date: 21 August 200221 August 200221 August 20023 June 2002

If the work order's job is an existing equipment job, then system will propose the total labour hour of the equipment job as the default value for this information.

This information represents the actual number of worked hours against the work order. It is an information not accessible to the user, automatically derived by the system from the employee time usage feedback.

Previous work order

This is the previous work order identifier, an optional positive numeric integer value. The entered value must exist in the directory of Work Orders. It specifies the identifier of the work order from which the current work order is created.

This field will be automatically updated by system in those work orders created using the non-standard button operation Create Work Order. Like in the case of repairable management, a second work order is created from the first work order to move the faulty unit to the repair yard.

In all the other cases, the previous work order has no relevant significance, although it can be assigned when work order is at 1 – In Progress or 2 – Finished status.

A selector trigger button (or F2 key) linking to Work Order Selector is available.

Plan No

This is the plan number under which the work order was released. It is a read-only information automatically updated by the system for work orders generated from Release Jobs Module.

Job Request ID

This is the Job Request number under which the work order was released. It is read-only information automatically updated by the system for work orders generated in Planner Review Module.

Report by

This is the name of the person who requested for the maintenance job to be carried out. It is an optional information of maximum 13 alphanumeric characters. If the work order is generated from the Planner Review module, then the system automatically assigns the person who raised the job request as the work order's reporting person.

Reporting date

This is the date when the work order is first requested, a mandatory information. If the work order is generated from the Planner Review module, then the system automatically propose the job request's date as work order's reporting date. Otherwise, the system will propose the current date as work order's reporting date.

Reporting time

This is the time when the work order is first requested, an optional information.

If the work order is generated from the Planner Review module, then the system automatically propose the job request's time as work order's reporting time. Otherwise, the system will propose the current time as work order's reporting date.

Reporting phone

This is the phone number from where the work order was reported (see paragraph Report by). It is an optional information of maximum 13 alphanumeric characters.





Page: 70 MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

Reference:

PMP/8029e/-KSC Version: 2.12.12.12.0 COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August

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C756

20023 June 2002

If the work order is generated from the Planner Review module, then the system automatically propose the job request's phone as work order's reporting phone.

Skip SubContracted Jobs

When checked, system will disable the release of work orders whose jobs are subcontracted. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

Allocate Employees

When checked, system will automatically allocate employees to the work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters. The system allocates employees to the work order based on:

- The resource requirements of the planned job
- The preferred employee of the equipment job
- The available roster list
- The planned shifts of the planned job released in Work in Progress.

The system allocates the job's preferred employees to the work order whenever possible (employees are available in the shift and not overloaded).

Check Skills

When checked, system will automatically check the skills of the employees allocated against the equipment job skill requirements. The system flags the allocated employee as REJECTED when none of its skills does not match any of the equipment job skill requirements.

The default status of the check box is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

Actual labour costs (Lab.)

This is the total manpower cost (labour cost) incurred against the work order. It is a positive numeric value automatically computed by the system, on the basis of employee time usage feedback.

The information is accessible to the user only in case of work orders having contract jobs with third parties. For those work orders the user will be allowed to specify the cost of contracted labour hours.

The formula used to compute the value is:

$$CCLH + \sum_{E} (FR_{E} + \sum_{A} (H_{A} * R_{A}))$$

Where:

- CCLH is the cost of contracted labour hours
- FR is the fixed rate of the employee E
- H is the number of hours worked by employee E to perform the activity A
- R is the rate under which employee E performed the activity A

Actual material costs (Mat.)



C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 71 Date: 21 August 200221 August 200221 August

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20023 June 2002

This is the total material cost incurred against the work order. It is a positive numeric value automatically computed by the system, on the basis of stock usage feedback and the issues against work order.

The information is accessible to the user only in case of work orders having contract jobs with third parties. For those work orders, the user will be allowed to specify the cost of materials provided by the sub-contractor.

The formula used to compute the value is:

$$CM + \sum_{S} (QTY_{S} * UP_{S})$$

Where:

- CM is the cost of materials provided by the sub-contractor
- QTY is the quantity used (issued) of the spare S
- UP is the unit price of the spare S

Actual miscellaneous costs (Misc.)

This information specifies the miscellaneous costs that may have been incurred against the work order. It is an optional positive numeric value. It can be accessed only for work orders with system status not equal to '0 - Not Started'.

Actual recovery costs

This information specifies any other costs as adjustments (recovery costs) that may have been incurred against the work order. It is an optional positive numeric value. It can be accessed only for work orders with system status not equal to '0 - Not Started'.

For example, if a replaced component has some value as it can be repaired and reused, then certain costs of the component can be specified as recovery.

Actual total costs

This information specifies the total work order costs. It is a read-only information, automatically computed by the system, using the following formula:

Total costs = Labour costs + Material costs + Miscellaneous costs - Recovery costs

Repairable

This information specifies whether the work order is a repairable one, i.e. the work order is made against a repairable equipment using the non-standard button operation Create Work Order. It is not accessible to the user.



C756 Page: 72

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

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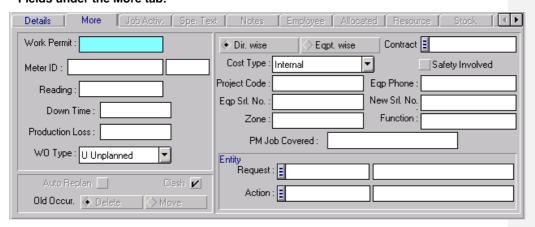
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Fields under the More tab:



Work Permit

This is the identifier of the work permit raised under the work order. It is a read-only information, automatically provided by the system when work permit is created for the work

order (using the Create Work Permit operation of the non-standard button

Meter ID

This is the identifier of meter specified in the work order's job. It is a read-only information, automatically managed by the system.

Reading

This is the meter reading observed at the time of work order completion. This information can be accessed and is mandatory only for work orders made for meter based jobs. It is an optional numeric information.

When the work order progresses to '3 – Archivable' status, the system computes and proposes a default value for the reading based on the meter's forecast. However, user is still able to update it if actual value differs from the computed one.

Meter unit

This is the measurement unit for the meter reading a read-only information automatically provided by the system.

Down time (D/Time)

This is the time interval (in hours) when the equipment was down because of the work against the work order. It is an optional numeric value, accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Production loss (P/Loss)

This is the number of hours the production has stopped because of the work against this work order. This is an optional numeric information, accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Work order type





MAINTENANCE MANAGEMENT SYSTEM | Page: 73

C756

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- COSWIN WORK COSWIN WORK

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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KSC Version: 2.12.12.12.0

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This is the work order's type, i.e. the way the work order was created. It is a mandatory information. The available types for the work orders are:

Planned - when they are created in Release Jobs Module and work order's job is not under a maintenance project

Unplanned - when they are created in Work Order Details Module or in Planner Review Module

Other - when they are created in Release Jobs Module and work order's job is under a maintenance project

Auto Replan

This information specifies whether the planned jobs, created in Plan Jobs Module for the work order's job, should be updated or not based on the work order execution.

The option to automatically re-plan the existing planned jobs of the job is available only for work orders created for jobs having the behaviour '1' or '2'.

The information is accessible to the user when the work order is progressed to '3 – Archivable' status.

Clash

This information specifies whether planned jobs generated by other planners should be taken into account or not during the synchronisation of planned jobs with the current work order. The information is accessible to the user only when Auto Replan is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of planned jobs with the current work order. The available actions are:

Delete The system will delete the delayed jobs

Move The system will move the delayed jobs to future dates,

according to the equipment job's periodicity

This information is accessible to the user only when Auto re-plan is set.

Contract Selection Criteria (Dir. wise / Eqpt. wise)

It represents the source of job contract selection (see paragraph Contract). The available options are:

Directory This selection specifies that the job contract will be selected

wise from the list of all open contracts

Equipment This selection specifies that job contract will be selected from

wise the current job list of open contracts

Contract

This is the identifier of the job contract under which the work order is to be performed. It is an optional information, accessible to the user when the work order is at '1 - In Progress', '2 – Finished' or '3 – Archivable' system status. The entered value must exist in the directory of Contracts.

A selector trigger button (or F2 key) linking to Contract Selector is available.

Right-mouse click (or F7 key) will activate the Contract Details window for the current code.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 74

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.12.0 Costs type

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This is the type of the work order's costs. The available cost types are:

Internal when the work order is performed by the local team

External when the work order is performed by a third party

The following rules are applied to establish the default proposed costs type during work order creation:

- o The internal costs type is considered first
- If the work order's job is already defined for the work order's equipment, then the job's costs type are considered
- If a contract is specified for the work order, the system will automatically change the costs type to external

The information is accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Safety Involved

This flag specifies if the corrective maintenance covered by the work order involve safety. The system automatically set this flag to false when the work order is created.

Project

This is the maintenance project under which the work order's job is performed. It is an optional information of maximum 10 alphanumeric characters. If the work order's job is an existing equipment job, then the equipment job's project is proposed as default value during the work order creation. This field is accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Equipment phone

This is the work order's equipment nearest phone number, an optional alphanumeric information of maximum 13 alphanumeric characters. The equipment phone is proposed by the system as default value during work order creation. This field is accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Equipment serial number

This is the equipment serial number valid at the work order's creation for any work order made for repairable equipment, a read-only field automatically managed by the system.

In order to repair an item, two work orders are to be generated: one for replacing the item with defects, and the other that actually repairs the work order. This serial number keeps track of the item that is replaced.

New serial number

This is the serial number of the item issued from the stock to replace the one with defects, a read-only field automatically managed by the system.

Zone

This is the zone identifier of the work order's equipment, a read-only field automatically read and updated by the system.

Function

This is the function identifier of the work order's equipment, a read-only field automatically read and updated by the system.





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 756/PMP/8029e/A756/PMP/8
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 75

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Request Authority

KSC Version: <u>2.12.12.1</u>2.0

This is the company entity that is requesting the job, an optional information. The provided value of authority must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.

Action Authority

This is the company entity that is supposed to perform the work, an optional information. The provided value of authority must exist in the directory of Company Entities.

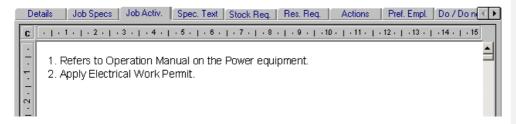
A selector trigger button (or F2 key) linking to Company Entities Selector is available.

4.1.2 To Save the Work Order

During creation of an unplanned work order, only the information in the Details and More tabs can be input. To specify details for the other tabs, the work order must first be saved.

Click on the \blacksquare icon on COSWIN toolbar and system will assign a new work order number to the newly created work order.

4.1.3 To Specify the Job Activities of the Work

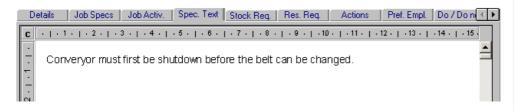


Job Activity tab contains the details instructions pertaining to the maintenance job in general. It is maintained in the Job Activity tab of both the Job Directory as well as the Job Guidelines module of the same job code.

For unplanned jobs, user is able to specify the detailed activities to be performed for the work order under this tab of the Work Order Details window.

Otherwise, for planned jobs, this tab displays the activities specified in the equipment job (in Job Guidelines module) and is not editable by the user.

4.1.4 To Specify the Specific Text pertaining to the Equipment







C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 76
Date: 21 August 200221
August 200221 August 20023 June 2002

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Specific Text tab contains the specific instructions pertaining to the particular equipment job. It is maintained in the Job Guidelines module of the same equipment and job code.

For unplanned jobs, user is able to specify some specific information, regarding the equipment on which the work is to be performed, under this tab of the Work Order Details window.

Otherwise, for planned jobs, this tab displays the specific text specified in the equipment job (in Job Guidelines module) and is not editable by the user.

4.1.5 To Allocate Employee to the Work Order

Employees can be allocated only to work order at status '0 – NOT STARTED'.

User may either let system assigns employees to the work order according to the resource requirement specified and available roster, or manually pick the employee from the Employee Directory to assign to the work order.

Auto Employee Allocation:

To automatically allocate employee to work order, the following must be specified in the Work Order Detail:

- The checkbox option Allocate Employees under the Detail tab must be checked
- o The resource requirement for the work order must be defined under the Resource tab.

The system allocates employees to the work order based on:

- o The resource requirements of the work order 's equipment job
- o The preferred employee of the equipment job
- The available roster list
- o The planned shifts of the work order.

Click on the non-standard Alloc. Emp. button at COSWIN Toolbar. COSWIN will automatically assign employee to the work order based on the currently in-use company roster.

Manual Employee Allocation:

1) Select the **Allocated Tab** and click the icon. The following screen will appear:





C756 Page: 77

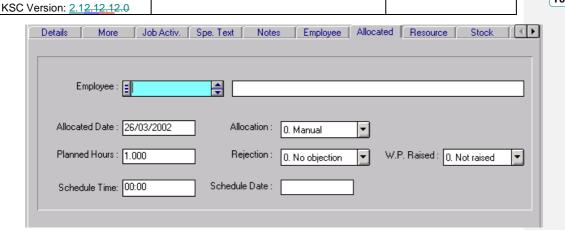
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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2) Enter the details of the allocated employee as follows:

Employee

This is the allocated employee, a mandatory information. It must exist in the directory of Employees and should be unique among the employees allocated to a work order.

Name

This is the name (description) of the allocated employee, a read-only information automatically provided by the system when the employee identifier is selected.

Allocated Date

This is the date when allocation was performed, a read-only integer information automatically managed by the system

Allocation

Specify if the allocation was 0 - manual or 1 - Automatic. It is a read-only information automatically managed by the system.

Planned Hours

This is the number of hours allocated to the employee to accomplish the work, a mandatory strictly positive numeric information.

Rejection

Specify if the allocated employee was initially rejected due to lack of skills. It is a read-only integer information automatically managed by the system.

Work Permit Raised

Specify if the work permit request was raised or not for the allocated employee. It is a readonly information automatically managed by the system.

Schedule Time

This is the time that the employee is schedule to perform the job.

Schedule Date





C756

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0 MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 78 Date: 21 August 200221 August 200221 August 20023 June 2002

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This is the date that the employee is scheduled to perform the job.

3) Save the record by clicking on the \blacksquare icon.

4.1.6 To Generate Work Permit Request

The following conditions must apply when generating a work permit request from work order module:

- It must be an unplanned work order
- The status of the work order must be 0-NOT STARTED
- Employee must have been allocated to the work order

Click the non-standard Create WP button on COSWIN toolbar and the Work Permit Request will be generated.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 79

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

Reference:

KSC Version: 2.12.12.1

5. PLANNED MAINTENANCE

Work orders that are created by Planning and Release modules are categorized as PLANNED by the system. These are work orders planned in advance and therefore do not cause disruption to production activities (downtime is zero).

COSWIN provides two types of planned maintenance jobs, namely Time based and Meter based job.

In Time based job, the maintenance work will be performed periodically per certain time interval.

In Meter based job, the maintenance work will be performed periodically per certain meter value interval.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 80

Date: 21 August 200221 August 200221 August 20023 June 2002

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029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.12.0

756/PMP/8029e/A756/PMP/8

Reference:

5.1 DEFINE METERS

Some equipment has a counter to measure and record equipment usage. In the real world, this counter can take various forms:

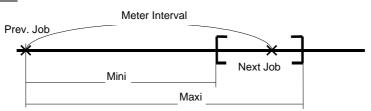
- A simple counter to indicate the number of units produced
- A speedometer to record the number of kilometres a vehicle had run
- · A clock which indicates the cumulative usage of the equipment

For such equipment, planned maintenance jobs are often dependent on the usage of the equipment. Therefore, planned maintenance jobs are based on some values related to the associated meters. For the above examples, these will be the number of units produced, the number of kilometres run and the cumulative usage of the equipment.

Meters fall within the framework of planned maintenance. Jobs can be regularly launched by means of either time intervals (number of days or weeks), meter units intervals or the combination of both.

Subsequently, three hypothesis are involved:

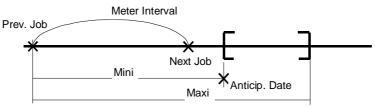
HYPOTHESIS 1:



In this case, the date of the next job is to be anticipated in the plan at the

Date = Previous Job + Meter Interval, because the date of the **Next Job** is included in the minimum and maximum intervals.

HYPOTHESIS 2:



In this case, the date of the next job is to be anticipated in the plan at the

Date = Previous Job + Mini Interval.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Maxi

C756 Page: 81

Anticip. Date

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1 HYPOTHESIS 3:

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Reference:

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Meter Interval Prev. Job Next Job

In this case, the date of the next job is to be anticipated in the plan at the

Mini

Date = Previous Job + Maxi Interval.

5.1.1 Types of Meters

There are three types of meter available in COSWIN:

- Cumulative Total meter
- Cumulative Increment meter
- Non-cumulative meter

Cumulative meters always accumulate the reading values. A typical example is the mileage recorder of a car.

Cumulative meters can add readings in two ways:

- As total value (the user has to specify the total value of the meter at the reading date)
- As incremental value (the user must specify only the difference from the previous reading value).

Non-cumulative meters read the value of the meter for the meter frequency unit (a day or a week). A typical example is the number of hours an air-con unit runs per day. Meter Consumption Feedback cannot be captured for non-cumulative meters.

5.1.1.1 Cumulative Total Meter

A Cumulative Total meter accumulates the meter reading value and receives the consumption feedback in term of the total reading value of the meter.

As each consumption feedback is provided, the cumulative value will be re-computed as follows:

NEW cumulative value = OLD cumulative value +

(latest reading value - previous reading value)

At the same time, system will compute a consumption forecast according to the following formula:



Keppel Steria Consortium (KSC) C756 Page: 82 MAINTENANCE MANAGEMENT SYSTEM Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK August 200221 August

Date: 21 August 200221 20023 June 2002

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For the computation of the forecasted consumption rate of cumulative meters, a **CONSTANT** value, indicating the relative weight to be given to the latest reading against the first meter readings, must be defined. It must be in range 0.00 and 1.00, and the default proposed by COSWIN is 0.5.

F= [(LV-NLV)/ΔT]*ct + [(LV-FV)/ΔT)]*(1-ct)	LV:	Last Value.
	NLV:	Next to last value.
	FV:	First Value
	ΔT :	Time Interval.
	ct:	Constant

READING	Time in Secs	Time period
First on 10/01/96 (FV)	100	ΔT (for LV-FV) = 3
Second on 12/01/96 (NLV)	200	ΔT(pour LV-NLV) = 1
Last on 13/01/96 (LV)	400	

If ct (constant) =	0 0.5		1
Forcase (F) =	100	150	200

System uses this forecast to estimate future reading value of the meter so as to plan the next schedule dates for the meter-based maintenance jobs.

5.1.1.2 Cumulative Increment Meter

Cumulative Increment meter behaves very similarly to the Cumulative Total meter. It accumulates the meter reading value but receives the consumption feedback in term of the increment of value since the last feedback, instead of the total cumulated reading of the

As each consumption feedback is provided, the cumulative value will be re-computed as follows:

NEW cumulative value = OLD cumulative value + Incremented value

System will compute consumption forecast as per that in the Cumulative Total meter.

5.1.1.3 Non Cumulative Meter

Non-Cumulative meter is like a periodic counter with a fixed consumption rate. Therefore it is usually not necessary to provide feedback to such meters except on those days that the consumption differs from the default rate.

Non-Cumulative meter have a straightforward formula to forecast the consumption, that is, the Default Rate x number of days, taking into consideration any feedback updated.





 Keppel Steria Consortium (KSC)
 C756

 Reference:
 756/PMP/8029e/A756/PMP/8
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 83
 Date: 21 August 200221

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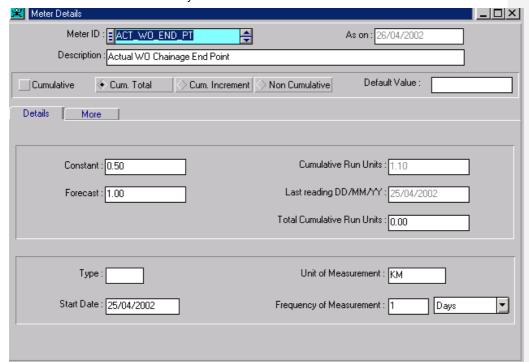
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KSC Version: <u>2.12.12.1</u>2.0 **5.1.2 Meter Details**

Select from COSWIN menu *Maintenance / Reference / Meter* to launch the Meter Details module:



The Meter Details window looks by default as follows:



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 84

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.1

Reference:

Detailed Field Descriptions:

Meter ID

This is the Meter identifier, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all Meters.

A selector trigger button (or F2 key) linking to Meters Selector is available.

As on

This is the Meter creation or last updated date, a read-only information automatically managed by the system.

Description

This is the Meter description, an optional information of maximum 40 alphanumeric

Meter Type Selection (Cum. Total, Cum. Increment, Non Cumulative)

This radio button specifies whether the Meter is a Cumulative Total Meter, Cumulative Increment, or Non Cumulative.

Default value

This is the Default Meter reading value, for the periods when no Meter readings were defined.

This information is a mandatory positive numeric one for non-cumulative Meters. Otherwise, it is an inaccessible information.

Constant

This is a constant value that defines the relative weight to be given to the latest reading against the first meter readings. This is used to compute the forecasted consumption rate of the meter. For cumulative meters, it is a mandatory positive numeric data between 0.00 and 1.00. COSWIN automatically proposes a value of 0.5. For non-cumulative meters, it is not

If a value greater than 0.50 is specified, the new forecast rate of consumption will respond quickly to the latest meter readings.

A value less than 0.50 would make the new forecast respond to the first meter readings.

The default value of 0.50 gives equal weight to the first meter readings and the latest meter readings.

Cumulative Run Units

This is the last meter reading, a read-only information automatically managed by the system.

Forecast

This is the forecasted rate of meter consumption per measurement frequency stated. For cumulative meters, it is a mandatory positive numeric information. For non-cumulative meters, it is not accessible.

After the cumulative Meter is created, this information will be computed and maintained by COSWIN based on the subsequent meter readings feedback and the constant value.





C756

Reference: 756/PMP/8029e/A756/PMP/8

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/- MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 85
Date: 21 August 200221
August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

The formula for computing the forecast is:

LV = (latest reading value - previous reading value) /

(latest reading date - previous reading date)

PV = (latest reading value - first reading value) /

(latest reading date - first reading date)

Forecast = LV * Constant + PV * (1 - Constant)

If the Meter is a non-cumulative one, this is a read-only information automatically managed by the system.

Last reading DD/MM/YY

This is the Meter's last Reading date, a read-only information automatically managed by the system.

Total Cumulative Run Units

This is the value of the meter from which COSWIN starts to maintain cumulative run units. It is an optional positive numeric information, whose default value is assumed to be 0.

Type

This is the Meter Type identifier, an optional information of maximum 2 alphanumeric characters. It reflects a user-defined classification for the Meter.

Unit of Measurement

This is the Meter Unit of Measurement identifier, an optional information of maximum 5 alphanumeric characters.

Start Date

This is the date, on which the meter was installed or started running. It is an optional information, automatically proposed by COSWIN as the current date.

Frequency of Measurement

This is the Frequency of Measurement, i.e. how often the meter readings have to be taken, an optional positive integer numeric information.

Frequency Unit

This is the measurement unit for Frequency of Measurement. It must either be "Days" or "Weeks".

The More tab of Meter Details window looks by default as follows:



The purpose of this window is to display the reading feedback of the Meter.





Keppel Steria Consortium (KSC)		C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 86
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

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Readings List Box

KSC Version: 2.12.12.12.0

Reading Date This is the Meter Reading date.	
Reading Time This is the Meter Reading type.	
Meter Value This is the Meter Reading value.	

It is used to capture the feedback for non-cumulative meters

NOTE: Feedback on the meter readings for cumulative meters can only be captured through COSWIN *Maintenance / Work In Progress / Meter Consumption* module. See the chapter on Work In Progress for details.

5.1.2.1 To Add a New Meter

Minimum information required to add a Meter, is:

- o The Meter identifier
- o The Constant and the Forecast, if the Meter is a cumulative one
- o The Default Value of Meter Readings, if the Meter is a non-cumulative one
- o The initial meter reading

Click on the icon to launch the ADD window.

5.1.2.2 To Modify a Meter

The information that can be modified, is:

- The Meter description
- The Meter user-defined Type
- The Meter Start Date (must be less than current date)
- o The Meter Unit of Measurement
- o The Meter Reading Default Value, if the Meter is a non-cumulative one
- The Meter Constant, if the Meter is a cumulative one
- o The Meter Forecast, if the Meter is a cumulative one
- The Meter Frequency of Measurement, if the Meter is a cumulative one

5.1.2.3 To Delete a Meter

A Meter cannot be deleted if there are Equipment Jobs or Technical Specifications defined on it.

Click on the icon to delete the current Meter.

5.1.2.4 To Initialize the Meter Readings

Modify the latest meter reading under the More tab of Meter Details window, will initialise the meter to new input value. This will result in all past readings except the newly modified one being deleted.





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

KSC Version: <u>2.12.12.1</u>2.0

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

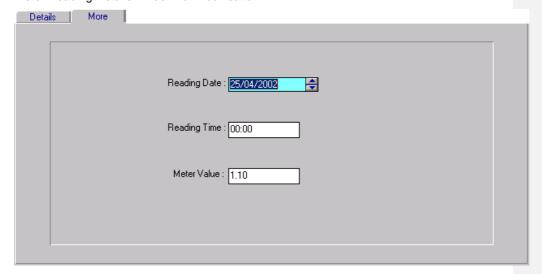
Page: 87 Date: 21 August 200221 August 200221 August

20023 June 2002

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Double click on the latest reading in the Reading List Box of the More tab to activate the Meter Reading Details window for modification:



Detailed Field Descriptions:

Reading Date

This is the date of the Meter Reading, not later than the current date, a mandatory information automatically proposed by COSWIN as the current date.

Reading Time

This is the Time of the Meter Reading, an optional information. Its default value is 0.

Meter Value

This is the Value of the Meter Reading, a mandatory positive numeric information.





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

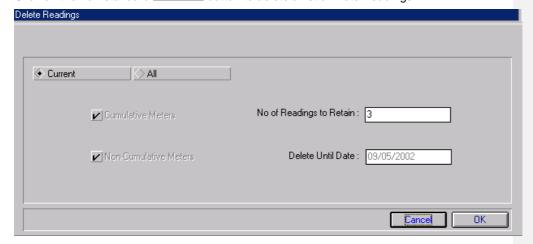
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK Page: 88
Date: 21 August 200221
August 200221 August 20023 June 2002

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5.1.2.5 To Delete a List of Meter Readings

Click on the non-standard Del Read button to delete a list of meter readings:



Detailed Field Descriptions:

Target (Current / All)

This radio-button specifies which readings will be deleted:

Current For the current Meter

All For all Meters

Cum.

This check box specifies whether Cumulative Meter Readings are to be deleted, or not.

Non Cum.

This check box specifies, whether Non-Cumulative Meter Readings are to be deleted, or not.

No of Readings to retain

This is the number of readings to retain for cumulative meters, an optional positive integer information, not less than 3, automatically proposed by COSWIN as its minimum value (3).

Delete Until Date

This is the Meter Readings last updating date until which readings will be deleted for non-cumulative meters, an optional information automatically proposed by COSWIN as the current date.

There must be minimum 3 readings to be retained from deletion.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 89

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/PMP/8029e/-

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KSC Version: <u>2.12.12.1</u>2.0

5.2 DEFINE JOB GUIDELINES FOR EQUIPMENT

An equipment job is a maintenance job applied to specific equipment.

The equipment jobs may be:

- Planned equipment jobs these equipment jobs are considered during maintenance planning, i.e. are performed on regular basis
- Unplanned equipment jobs these equipment jobs are performed occasionally

The Job Guidelines module allows the user to define planned equipment jobs. Every time a new equipment job is created, the system checks the existence of the general job. If the general job does not exist, the system automatically creates a general job from the new created equipment job.

The general jobs can be defined through the Jobs module under COSWIN menu Maintenance / Reference Directories / Jobs. (Refer to chapter Maintenance References under COSWIN ASSET volume for details.)

5.2.1 Concept on Job Behaviours

The equipment job behaviour defines the scheduling mechanism applied to the equipment job.

COSWIN provides 6 types of behaviours for equipment jobs, namely:

Type 0 - Just On Time

Type 1 - Start Date Based

Type 2 - Finish Date Based

Type 3 - Fixed Interval

Type 4 - Shutdown

Type 5 - Regular

Type 0

Just On Time (to be performed only once at user-specified date)

J1

The equipment job has to be performed only once at the user-specified date. These equipment jobs have no time interval and once completed are not scheduled again until the user specifies again the date of the next occurrence. These equipment jobs cannot be part of a job structure.

Type 1

Start Date Based (Repetitive)





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 90 August 200221 August

Date: 21 August 200221 20023 June 2002

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The equipment jobs have to be performed on a regular interval. Their next occurrence is set on start date of last occurrence delayed by job interval (scheduling of these equipment jobs is governed by the start date of last job occurrence). These equipment jobs can be time based, meter based or time & meter based.

Time based or Meter based job:



If the first operation is postponed, the others will be postponed too.

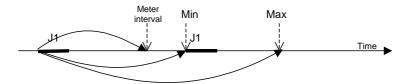
The starting date is known after a WO feedback (WO status >=1)

Time and Meter based job:

Case 1:

Meter value increases too quickly and reaches the specified meter interval earlier than the specified Min time interval, then

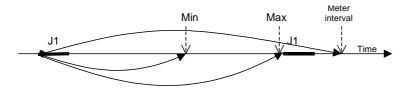
Next job start date = last job starting date + Min Interval



Case 2:

Meter value increases too slowly and reaches the specified meter interval later than the specified Max time interval, then

Next job start date = last job starting date + Max Interval



Case 3:

Meter value increases per expectation and reaches the specified meter within the specified Min and Max time interval, then





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Reference:

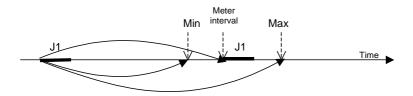
756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK Page: 91 Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002 Formatted: Font: 9 pt

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KSC Version: <u>2.12.12.1</u>2.0

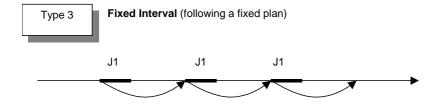
Next job start date = last job starting date + Meter Interval



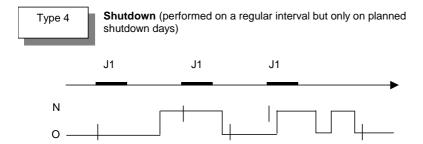
Type 2

Finished Date Based (Repetitive, similar to Type 1 – Start Date Based)

The equipment jobs have to be performed on a regular interval. Their next occurrence is set on finish date of last occurrence delayed by job interval (scheduling of these equipment jobs is governed by the finish date of last occurrence of job). The equipment jobs could be time based, meter based or time & meter based.



The equipment jobs have to be performed at a fixed interval independent of their last occurrence. Such equipment jobs are only time based. The minimum/maximum interval will not be used.



The equipment jobs have to be performed on a regular interval but only on planned shut down days (as defined in the plant/equipment calendar). The equipment jobs can be time based, meter based or time & meter based. Such equipment jobs are scheduled similar to equipment jobs having behaviour code 2 - Finished Date Based, except that their occurrence date is adjusted to a shutdown day indicated by the equipment calendar.

Keppel Steria Consortium (KSC)

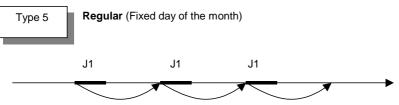
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PMP/8029e/KSC Version: 2.12.42.12.0

KSC Version: 2.12.42.12.0

COSSIN WORKCOSWIN WORK

Page: 92
Date: 21 August 200221
August 200221 August 200221
Auto
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The equipment jobs have to be performed on a fixed day of the month (say 3rd of every month) independent of their last occurrence. Such equipment jobs are only time based. The time interval will not be used.

5.2.2 List of Fields to Define in Job Guidelines

Select from COSWIN menu *Maintenance / Equipment Register / Job Guidelines* to launch the Job Guidelines Details module.





C756 Page: 93

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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The Job Guidelines window looks by default as follows:



C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 94 Date: 21 August 200221 August 200221 August 20023 June 2002

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Eqpt Code: AFCALB17/	AC-DC Converter	modified 06/05/2002
Job ID : 868-3	PM	71 (************************************
Job Type: PM	Preventive Maint	Behaviour: 1. Start date
Job Class :		Duration: 1 Days
ost Centre : 2714300	Supervisor:	Priority : 3
W.P. Type:	Priority Code :	
Details Job Specs ob Structure		s. Req. Actions Pref. Empl. Do / Do n
Details Job Specs	Job Activ. Spec. Text Stock Req. Re	s. Req. Actions Pref. Empl. Do / Do n
Details Job Specs ob Structure	Job Activ. Spec. Text Stock Req. Re Level: 3 Multiplicity:	
Details Job Specs ob Structure requency Interval: 1	Job Activ. Spec. Text Stock Req. Re Level: 3 Multiplicity: eeks Take into account working days only:	Job Occurence Lm. action : COSWIN
Details Job Specs ob Structure requency Interval: 1 W	Job Activ. Spec. Text Stock Req. Re- Level: 3 Multiplicity: eeks Take into account working days only: seeks Shift / Day:	Job Occurence Lm. action : COSWIN Last DD/MM/YY :
Details Job Specs ob Structure requency Interval: 1 W	Job Activ. Spec. Text Stock Req. Received: 3 Multiplicity: Each Take into account working days only: Shift / Day:	Job Occurence Lm. action : COSWIN Last DD/MM/YY : Meter Value :



Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756

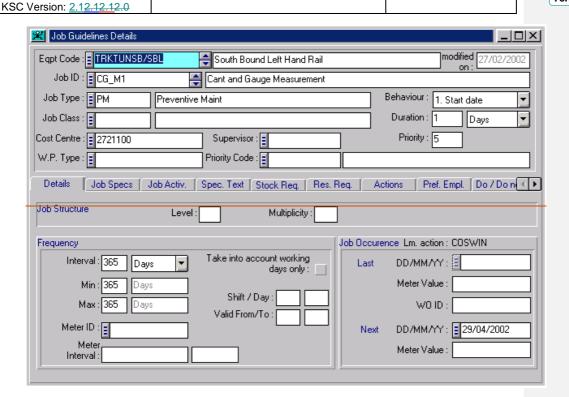
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COSWIN WORKCOSWIN WORK

Page: 95 Date: 21 August 200224 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Eqpt Code

This is the equipment/group identifier on which the job is to be performed, a mandatory information. It must exist in the directory of Equipment or Groups of equipment.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Equipment description

This is the description of the equipment selected for the work order, a read-only information automatically provided by the system once the equipment identifier is assigned.

Modified On

This is the Job creation or last updating date, a read-only information automatically managed by the system.

Job ID

This is the Job identifier, a mandatory information of maximum 16 alphanumeric characters. It must be unique among all the Job identifiers defined for the current equipment.

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Jobs Directory window for the current code.





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 96
Date: 21 August 200221
August 200221 August 20023 June 2002

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Job description

This is the Job description, a mandatory information of maximum 40 alphanumeric characters. If the Job ID is selected from the existing equipment jobs then this description will be automatically provided by the system.

Job Type

This is the Job Type identifier, used to categorise the equipment jobs, a mandatory information of maximum 6 alphanumeric characters. It must exist in the directory of job types. Job Types are defined through COSWIN Configuration's Maintenance / Job / Type.

A selector trigger button (or F2 key) linking to Job Type Selector is available.

Type description

This is the Job Type description, a read-only information automatically managed by the system.

Behaviour

This combo box is used to select the Job Behaviour, a mandatory information values from 0 to 5. Refer to the previous section on Concept on Job Behaviours for detailed explanation.

During ADD mode, COSWIN will propose the behaviour defined in the selected Job Type as the default.

Job Class

This is the Job Class identifier, an optional alphanumeric information that can take up to 6 alphanumeric characters. It must exist in the directory of Job Class. Job Classes are defined through COSWIN Configuration's Maintenance / Job / Class.

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Class description

This is the Job Class description, a read-only information automatically managed by the system.

Duration

This is the estimated duration of the job, a mandatory positive numeric information.

It may be specified in days or weeks. The minimum job duration is one day.

Duration unit

This combo box is used to define the measurement unit for the job duration in terms of DAY or WEEK.

Cost Centre

This is the identifier of the Cost Centre to which the cost of the job is to be allocated, a mandatory alphanumeric information. It must exist in the directory of Cost Centres.

When an equipment job is added, the system proposes by default the equipment's cost centre as the job's cost centre.

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Maintenance Cost Centre Details window for the current code.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 97

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8

Reference:

Supervisor

This is the identifier of the supervisor responsible for this job, an optional alphanumeric information, which can take up to 6 alphanumeric characters. The provided value must exist in the directory of Supervisors.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Right-mouse click (or F7 key) will activate the Supervisor Details window for the current code.

Priority

This is the priority of the job for Equipment Job planning, a mandatory numeric information (from 0 to 9, with 9 being lowest priority). During ADD mode, COSWIN will propose the behaviour defined in the selected Job Type as the default.

W. P. Type

This is the type of work permit requested by default for the equipment job. It is an optional information. The provided value of work permit type must exist in the directory of Work

A selector trigger button (or F2 key) linking to Work Permit Type Selector is available.

Right-mouse click (or F7 key) will activate the Work Permit Type Details window for the current code.

Priority Code

This is the priority of work defined for the equipment job. It will be assigned by default to the work orders released against this equipment job. It is an optional information. The provided value must exist in the directory of Priority of Work.

A selector trigger button (or F2 key) linking to Priority Selector is available.

Right-mouse click (or F7 key) will activate the Priority Details window for the current code.

Priority Description

This is the description of the priority of work, a read-only information automatically managed by the system.

Under Details Tab:

Job Structures (Read-Only Information):

1.1.01			
Job Structure	Level:	Multiplicity:	

Level

This is the Job level identifier of the job, in the Job structure. It is a read-only numeric information automatically managed by the system. This information is defined in Jobs Directory module under COSWIN menu Maintenance / Reference Directories / Jobs.

Multiplicity





C756
Page: 98

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

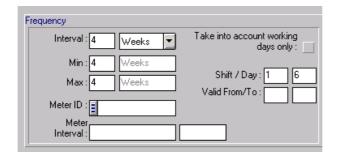
Date: 21 August 200221 August 200221 August 20023 June 2002

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This is the Job's multiplicity, a read-only positive numeric information automatically managed by the system. If the Job is a parent job in a Job Structure, the multiplicity represents the parent Job periodicity divided by the child Job periodicity. This information is defined in Jobs Directory module under COSWIN menu *Maintenance / Reference Directories / Jobs*.

Frequency:



Interval

This specifies the average time interval between the previous occurrence and the next occurrence of the job. A job (with behaviour not equal to 0) can have its interval defined based on time or meter or a combination of both. For behaviour codes equal to 1, 2 or 4, it is compulsory to define either time interval or meter interval. For behaviour code 3, it is compulsory to define a Time interval. It is a positive numeric information.

Interval Unit

This is the measurement unit for the time interval in terms of DAY or WEEK. It is a mandatory information if the job frequency is time-based.

Min

This is the minimum time interval between two successive occurrences of the equipment job, an optional numeric information not greater than job interval. This data item is relevant for jobs which have interval based on the combination of time and meter and for shutdown jobs (behaviour code equal 4).

Min Interval Unit

This is the measurement unit for the job minimum interval in terms of DAY or WEEK. It is a read-only information, equal to the average time interval unit.

Max

This is the maximum interval between two successive occurrences of the equipment job, an optional numeric information not smaller than job interval. This data item is relevant for jobs which have interval based on the combination of time and meter and for shutdown jobs (behaviour code equal 4).

Max Interval Unit

This is the measurement unit for the job maximum interval in terms of DAY or WEEK. It is a read-only information, equal to the average time interval unit.

Take into account working days only





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 99

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

This check box specifies whether only working days are to be taken into account for job planning (if checked), or to include the weekly off days for job planning (if unchecked).

Shift

Reference:

This is the identifier of the shift in which the Job is to be executed an optional positive integer information.

Day

For behaviour = 1, 2 or 4, this is the day of the week in which the particular job is to be scheduled an optional integer information (1=Monday, 2=Tuesday, ..., 7=Sunday). The jobs will first be scheduled based on the interval defined. If the preferred day is specified, then the job is scheduled again (within that week) for the indicated day of the week. For behaviour = 5, this is the day of the month (values 1 to 31) that the job will be scheduled.

Meter ID

This is the identifier of the meter to which the job is linked, an optional alphanumeric information that can take up to 10 alphanumeric characters. The provided value must exist in the directory of Meters.

Any equipment jobs with the behaviour code 3 cannot have an associated meter identifier as their periodicity is only time-based.

A selector trigger button (or F2 key) linking to Meter Selector is available.

Right-mouse click (or F7 key) will activate the Meter Details window for the current code.

Meter Interval

Specify the consumption expected on the meter in order for the job to be scheduled. It is a mandatory information if the job is meter-based. Otherwise, it should be blank.

Meter Unit

This is the measurement unit for the meter readings, a read-only information automatically managed by the system.

Valid From

This is used to specify jobs applicable only for certain seasonal period. It is an optional numeric information.

For job behaviour 1, 2 or 3, this is the validity start week of the Job for a specified period during any calendar year.

For job behaviour 5, this is the validity start month of the Job for a specified period during any calendar year.

Valid To

This is used to specify jobs applicable only for certain seasonal period. It is an optional numeric information.

For job behaviour 1, 2 or 3, this is the validity end week of the Job for a specified period during any calendar year.

For job behaviour 5, this is the validity end month of the Job for a specified period during any calendar year.





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 100
Date: 21 August 200221
August 200221 August 20023 June 2002

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Job Occurances Occurrences:

Job Occurence Lm. action : COSWIN		Job Occuren	ce Lm. action : COSWIN
Last	DD/MM/YY:	Last	DD/MM/YY:
	Meter Value :		Meter Value :
	W0 ID :		WO ID :
Next	DD/MM/YY: 12/06/2002	Next	DD/MM/YY: 20/04/2002
	Meter Value :		Meter Value :

Last DD/MM/YY

This is the last occurrence of the job, a read-only information automatically managed by the system.

This information is automatically updated when a Work Order, created for this equipment job, is passed to archival status during Feedback operations (for example in Work Order Details, Employee Feedback or Turbo Feedback Modules).

If nothing is displayed, it means that the equipment job has not been executed since creation.

Last Meter Value

This is the reading value of the meter at the time of last occurrence of the job, a read-only information automatically managed by the system. This information is updated only if the job periodicity is based on a cumulative meter. The value displayed here is the value of the Meter Reading given when the most recent Work Order created for this equipment job was passed to archival status during Feedback operations.

If nothing is displayed, but the job is based on a cumulative meter, it means that the job has not been executed since creation.

Last WO ID

This is the last Work Order executed for the Job, a read-only information automatically managed by the system.

Next DD/MM/YY

This is the next job occurrence date.

This information is skipped for jobs based on a cumulative meter. It is automatically computed after entering a valid next meter level, based on the meter forecast.

Otherwise, it is a mandatory information and cannot be less than the current date. By default, the current date is proposed as the next occurrence of the job.

Next Meter Value

This is the next meter level, a mandatory numeric information for jobs based on a cumulative meter. Otherwise, it is read-only and empty. Based on this value, the next job date is computed, using the meter forecast.

Job Specification Tab:

The Job Specification tab of Job Guidelines window looks by default as follows:





Keppel Steria Consortium (KSC) MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8

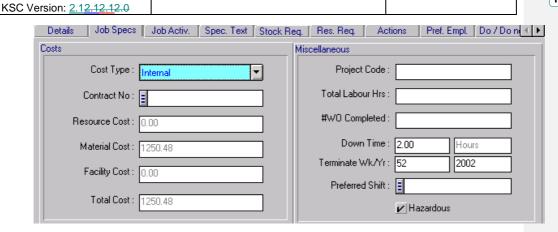
COSWIN WORKCOSWIN WORK

Page: 101 Date: 21 August 200221

August 200221 August 20023 June 2002

C756

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Detailed Field Descriptions:

Cost Type

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This is the Job's Cost Type: Internal or External.

By default, the cost type is internal, if the job is not sub-contracted and external, if the job is performed based on a Contract.

Contract No

This is the Contract identifier, if the Job is to be executed on a Contract basis (e.g. with another plant). It is an optional information of maximum 10 alphanumeric characters. The provided value must exist in the directory of Contracts.

A selector trigger button (or F2 key) linking to Contract Selector is available.

Right-mouse click (or F7 key) will activate the Contract Details window for the current code.

Resource Cost

This is the total cost planned for the equipment job's resources (specified under the Resource Requirement tab), a read-only information automatically managed by the system.

Standard resource cost for manpower requirements is computed with the following formula:

(#Worker * RFR)+ (#PH * RDR)

where:

#Worker - the required number of workers of a given resource R

RFR - resource R fixed rate

#PH - number of planned hours

RDR - resource R default rate

Material Cost

This is the total cost planned for the equipment job's stock (specified under the Stock Requirement tab), a read-only information automatically managed by the system. Standard material cost for stock requirements is computed with the following formula:

#ST * UP





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 102

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.12.0

where:

#ST - the required number of spare/tool S

UP - spare/tool's unit price

NOTE: Planned material cost is computed with the unit price from Spare/Tool module. However this cost may be outdated and obsolete due to new stock receipts and issues. Thus COSWIN has provided a 'Reconcile' function under the Spare/Tools module to update the material unit price and job cost according to latest material cost from STORE module.

Facility Cost

This is the total cost planned for the equipment job's facility (specified under the Facility Requirement tab), a read-only information automatically managed by the system.

Standard cost for facility requirements is computed as follows:

#PT * CTU

where:

#PT - number of time units planned to use the facility

CTU - cost of use of facility per time unit

Total Cost

This is the Job's Total Cost (sum of Resource, Material and Facility Costs), a read-only information automatically managed by the system.

Project Code

This is the identifier of the project to which the Job belongs, an optional information of maximum 10 alphanumeric characters.

Total Labour Hrs

The total labour hours is computed by the system based on resource (personnel) requirement defined for the equipment job (under the Resource Requirement tab). It is a read-only information automatically managed by the system.

#WO Completed

This is a counter that specifies how many Work Orders have been completed using this equipment Job.

Down Time

This is the downtime (in hours) of the equipment due to the Job's last Work Order, a readonly information automatically managed by the system.

Down Time Unit

This is the down time measurement unit (days or hours).

Terminate Wk

This is the equipment Job's expiry week date, an optional numeric information.

The purpose of this information is to periodically review the job definition and has no impact on job planning.

Terminate Yr

This is the equipment Job's expiry year date, an optional numeric information.





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

COSWIN WORKCOSWIN WORK

Page: 103 Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

The purpose of this information is to periodically review the job definition and has no impact on job planning (the equipment job will still be considered for planning even if the current

Preferred Shift

date has exceeded the terminate date).

This is the preferred shift code to perform the job, an optional information. This will be default shift during job planning unless stated otherwise by the planner. The provided value must exist in the directory of Shift.

A selector trigger button (or F2 key) linking to Shift Selector is available.

Hazardous

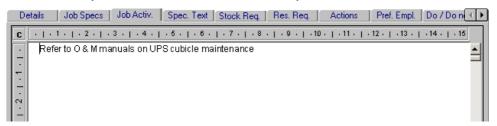
This flag specify if the job involve the use of hazardous materials. It is a mandatory information. The system proposes FALSE as the default value for the new jobs.

Job Activity Tab:

Job activities allow the user to record the detail steps of work to be performed during the job. The entry of this information is optional. It is possible to print the activity details both in Job Guidelines and in the work order.

All equipment jobs with identical job identifier will have the same Job activity data defined.

The Job Activity tab of Job Guidelines window looks by default as follows:

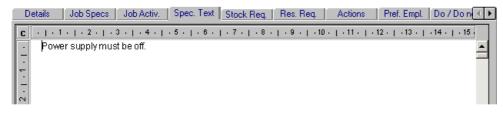


The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.

Specific Text Tab:

This window records the details of the job related to the equipment itself. It is possible to print the specific text both in Job Guidelines and in Work Order.

The Specific Text tab of Job Guidelines window looks by default as follows:







C756 Page: 104

Reference: 756/PMP/8029e/A756/PMP/8 MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.12.0

The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.

Stock Requirement Tab:

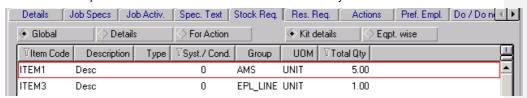
The stock requirement selector manages the spare/tools (stock) requirements of planned equipment job. It specifies the stocked items needed to perform an equipment job.

Stock requirements can be defined:

- o For the job (GLOBAL), not linked to any equipment job action
- For a job action (SPECIFIC), linked to a specific equipment job action and to the equipment job in the same time

Requirements for the same stock cannot be global and specific in the same time. Since a stock requirement may be attached to different equipment job actions the system computes and displays the list of TOTAL stock requirements.

The Stock Requirement tab of Job Guidelines window looks by default as follows:



Double click on any of the displayed stock requirement will activate the Stock Requirement Details window.

Detailed Field Descriptions:

Stock As radio button (Global / Details / For Action)

This radio button specifies that the list of items in the list box to be seen as:

Global

The overall list of stock items required for the job. Each item appears once in the list, regardless whether the item is allocated for the Job itself or distributed on certain Job Actions.

It will be the default selection if the list is opened from Job Guidelines toolbox, and the current Job has no actions defined.

The overall list of stock items required for the job, where items can appear more than once, depending on their allocation: globally for the Job or by Action allocation.

It will be the default selection if the list is opened from Job Guidelines toolbox and the current Job has actions.

For Action





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 105

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

Reference:

KSC Version: 2.12.12.1

The list of items for Job's current Action, that is, items that belong to the current selected Job Action.

It will be the default selection if the list is opened from a Job Action; it is active and selectable only in this case.

Item Source radio button (Kits details / Egpt. wise)

This radio button specifies the source from where the items are to be selected to the current Job or current Job Action.

Kits details

Items are to be added from a kit, using the Kit Items Selector

Eqpt wise

Items are to be added from the equipment spares, using the List of Spares Selector.

Stock List Box

Item Code This is the identifier of the item. Description This is the description of the item. **Type** The required quantity of the item.

Syst. / Cond. This column specifies if the item is to be replaced

systematically (0) or depending on certain constraints (1).

Group The spare/tool group identifier.

UOM This is the unit of measurement of the stock item.

Total Qty. This is the total quantity of the item required for the job (in

global mode only).

Resource Requirement Tab:

The Resource Requirement Selector is used to manage the manpower requirements of planned equipment job. It specifies the amount of human resources required to perform an equipment job.

Manpower requirements can be defined:

- o For the equipment job (GLOBAL), not linked to any equipment job action
- For a job action (SPECIFIC), linked to a specific equipment job action and to the equipment job in the same time

Requirements for the same manpower cannot be global and specific at the same time. Since a manpower requirement may be attached to different equipment job actions the system computes and displays the list of TOTAL manpower requirements.

The Resource Requirement tab of Job Guidelines window looks by default as follows:





Keppel Steria Consortium (KSC) C756 Page: 106 MAINTENANCE MANAGEMENT SYSTEM 756/PMP/8029e/A756/PMP/8

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Double click on any of the displayed resource requirement will activate the Resource Requirement Details window.

Detailed Field Descriptions:

Resource As radio button (Global / Details / For Action)

This radio button specifies that the list of resources in the list box to be seen as:

Global

Reference:

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029e/A756/PMP/8029e/A756/

The overall list of resources required for this job. Each resource appears only once in the list, regardless whether the resource is allocated for the Job itself or distributed on certain Job Actions.

It will be the default selection if the list is opened from Job Guidelines toolbox and the current Equipment Job has no actions defined.

The overall list of resources required for this job, where resources can appear more than once, depending on their allocation: globally for Job or by Action allocation.

It will be the default selection if the list is opened from Job Guidelines toolbox and the current Job has actions.

For Action

The list of resources for Job's current Action, that is, resources allocated to the current selected Job Action.

It will be the default selection if the list is opened from Job Actions (Selector or Details); it is active and selectable only in this case.

Resource List Box

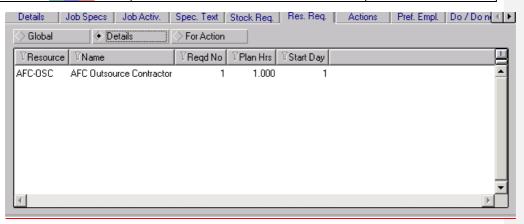
Resource	This is the identifier of the resource	
Name	This is the name (description) of the resource	
Total Hrs	This is the total number of planned hours for this kind of resource (only in global mode)	

Once the control is passed back to the radio button, the screen changes as follows:





| Reference: | MAINTENANCE MANAGEMENT SYSTEM | Page: 107 | Date: 21 August 200221 | August 20023 | June 2002 | Formatted: Font: 9 pt | Formatted: Formatted: Formatted: Formatted: Formatted: Formatte



Resource List Box

Resource	This is the identifier of the resource
<u>Name</u>	This is the name (description) of the resource
Regd No	The number of Resource required for this Job
Plan Hrs.	The total number of hrs planned for this Resource
Start Day	The Day when the Resource has to start the Job. This depends on the duration of the job and the Start Day must be less than or equal to the Duration.

Actions Tab:

Actions are subdivisions of the Job, that is, a collection of more specific operations that activates upon a sub-equipment of the equipment, or, upon a device of the sub-equipment. They are very much like Jobs, but usually are shorter and their behaviour falls under the Job's general directions and specifications.

As like for the Job, an Action can be allocated with:

- o Resources
- o Stock items /Spares/Tools

The actions of a Job can have the same periodicity as the job (i.e. they will be performed exactly once when a Job is executed), or they can have a smaller periodicity, which must be a sub-multiple of the Job periodicity. In this second case, the action will be performed many times during the Job's execution.

Actions that belong to a Job have a sequence number within that Job; this sequence number specifies the order in which Actions are to be performed.

The Actions tab of Job Guidelines window looks by default as follows:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 108

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8

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Reference:



Double click on any of the displayed Actions will activate the Job Action Details window.

Detailed Field Descriptions:

Actions List Box

Seq. No. This is the sequence number of the Action in the Job's list of

Actions

Sub Equipment This is the identifier of the equipment for which the Action was

generated.

Action Code This is the identifier of the Action.

Action This is the Action's description.

Description

Element This is the description of the specific element in the sub-

equipment upon which the action is to be performed.

Equipment This is the equipment status for the equipment for which the **Status** Action was generated.

Duration This is the estimated duration of the action activity.

Interval This is the action's time interval, a sub-multiple of job's time

interval

Interval Unit This is the measurement unit for the Action time interval.

Operation Type This is the description of a manual which in turn explains how

to complete such an action on the equipment.

Device This is the equipment's device identifier, upon which the

selected Action activate.

Action Kind This is the Action's kind identifier

Action Kind This is the Action Kind's description.

Description

Sub Equipment This is the description of the equipment for which the action

Description was generated

Meter Interval This is the job action's meter periodicity, which must be a sub

multiple of job's meter periodicity.

Limit 1 During action's execution, there can be certain parameters that

must restrict to certain values. Two such restricted values can be defined for an action. This is the first restricted value.

Unit 1 This is the measurement unit for the first restricted value.

Limit 2 This is the second restricted value.





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756
Page: 109

Date: 21 August 200221

August 200221 August 20023 June 2002

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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

Unit 2

Text

This is the measurement unit for the second restricted value

This information field provides supplementary information on

the job's action. It is an optional information.

COSWIN WORKCOSWIN WORK

Click on the non-standard Resource button will open the Resource Requirement tab and display the list of resources allocated for the selected Action.

Click on the non-standard button will open the Stock Requirement tab and display the list of stock items allocated for the selected Action.

Preferred Employee Tab:

The Preferred Employee Selector is used to manage the preferred employees for the planned equipment job. It specifies the planned hours required for the preferred employees to perform the job.

The Preferred Employee tab of Job Guidelines window looks by default as follows:



Double click on any of the displayed preferred employees will activate the **Preferred Employee Details** window.

Detailed Field Descriptions:

Preferred Employee List Box

Employee No This is the identifier of the preferred employee for this

equipment job.

work on this job.

Employee Name This is the name of the preferred employee for this

equipment job.

Do / Don't Tab:

The Do / Don't selector is used to manage the lists of indications and restrictions for equipment job.





Page: 110 MAINTENANCE MANAGEMENT SYSTEM

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August

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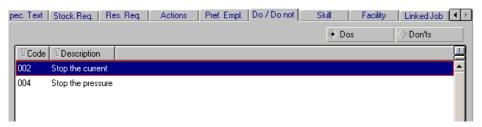
C756

20023 June 2002

KSC Version: 2.12.12.12.0

Codification representing indications and restrictions (defined in Codification module) can be used to build the lists of indications and restrictions for equipment job. The lists of indications and restrictions defined at the level of the equipment are automatically inherited at the level of equipment job. The user can update these lists and print them on demand when work orders are released against the equipment job and when work permits are requested for work orders.

The Indication and Restriction tab of Job Guidelines window looks by default as follows:



Double click on any of the displayed indications/restrictions will activate the Job Indication and Restriction Details window.

Detailed Field Descriptions:

Codification Type As radio button (Dos / Don'ts)

This radio button specifies that the list of codifications in the list box to be seen as:

Dos

The list of indications defined for this job will be displayed.

Don'ts

The list of restrictions defined for this job will be displayed.

Do / Don't List Box

Code This is the reference code of the indication/restriction. Description This is the description of the indication/restriction.

Skill Requirement Tab:

The module is used to manage the skill requirements of planned equipment job. The module specifies the number of employee having certain skills required to perform an equipment job.

The skills are checked when employees are allocated to the work orders released for the equipment job. The skill requirements will be checked globally, i.e., the skills of the group of employee allocated to a work order have to cover skills requirements of the equipment job. In case an allocated employee's skills do not match any of the skill requirements of the equipment job (at the allocation moment), the employee will be flagged accordingly.





 Keppel Steria Consortium (KSC)
 C756

 Reference:
 756/PMP/8029e/A756/PMP/8

 029e/A756/PMP/8029e/A756/PMP/8029e/ MAINTENANCE MANAGEMENT SYSTEM

 029e/A756/PMP/8029e/A756/PMP/8029e/ COSWIN WORKCOSWIN WORK

 PMP/8029e/ August 200221 August 200221 August 20023 June 2002

 KSC Version:
 2.12.12.12.0

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The Skill Requirement tab of Job Guidelines window looks by default as follows:



Double click on any of the displayed skill requirement will activate the **Skill Requirement Details** window.

Detailed Field Descriptions:

Skills Requirement list-box

Skill Code	This is the reference code of the skill.	
Skill Description	This is the description of the skill.	
Required No	This is the required number of workers having the skill to accomplish the job.	
Level	This is the level of proficiency required for the skill.	

Facility Requirement Tab:

The Facility Requirement Tab is used to manage the facility requirements of planned equipment job. The module specifies the amount of time the generic facilities are used and the standard (planned) cost of facilities to be used to perform the equipment job.

Every time the list of required facilities is updated the system computes and updates the standard facility cost at the level of the equipment job.

The Facility Requirement tab of Job Guidelines window looks by default as follows:



Double click on any of the displayed facility requirement will activate the **Facility Requirement Details** window.

Detailed Field Descriptions:

Facility Requirement list-box

Facility	This is the reference	e code of the generic facility.
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Keppel Sto	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 112
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
KSC Version: 2.12.12.12.0		

Description	This is the description of the generic facility.
Planned Time	This is the number of time units planned to use the facility for the job.
Time Unit	This is the unit of measure for the time planned to work by the facility against the equipment job
Rate	This is the cost of use of facility per time unit.
Planned Cost	This is the planned cost of use of facility.
Start Day	This is the first day on which the facility is needed (if the job extends on more than one day).
Total Time	This is the total time (in time units) worked time by facilities against work orders released against equipment job.

Linked Job Tab:

The linked job specifies whether another equipment job is to be performed after the equipment job being defined.

It is specified using the following information:

- o The equipment/group code on which equipment jobs are to be performed onto;
- The equipment job identifier specifies an unplanned equipment job not linked to another job and with the behaviour = 0 - JUST IN TIME
- An interval specified in days or weeks which is used to plan the linked job when the parent equipment job is closed (a work order referring the equipment job is promoted to Archival status)

Rules applied to linked equipment jobs:

- o The following type of linked jobs hierarchy is valid: J1 can be linked to J2 which can be linked to J3, which can be linked to J1 which can be linked to J1.
- The linked equipment job is scheduled (the next job date is updated) when the parent equipment job is closed in Work in Progress modules.
- o During the period when the linked equipment job is not activated, its next job date has the value 7/51/2049 (day/week/year) or 26/12/2049 (day/month/year), which means not scheduled. This information will be updated only when the parent equipment job is closed in Work in Progress (a work order against the equipment job is promoted to Archival status). In that moment the interval of the linked equipment job has to be added to the finish date of the parent job and the next job date has to be updated for the linked equipment job.
- o One equipment job can only be linked to one equipment job.





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C756 Page: 113

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

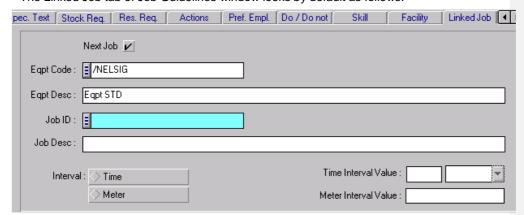
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The Linked Job tab of Job Guidelines window looks by default as follows:



Detailed Field Descriptions:

Next Job

This check box, if checked, specifies that the details in this window refer to the Job that is to follow the current Equipment Job. If unchecked, the link with specified Job (if any) is deleted and all the other information in this window becomes inaccessible.

Eqpt Code

This is the linked Job's Equipment identifier, a mandatory information. It must exist in the directory of Equipment and it must have at least one associated Job.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Eqpt Desc

This is the linked Job's Equipment description, a read-only information automatically managed by the system.

Job ID

This is the Linked Job identifier, a mandatory information. It must be an existing equipment job and it mustn't be already linked to another Job.

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Job Desc

This is the Linked Job description, a read-only information automatically managed by the system

Link radio button (Time / Meter)

This is the Job link criterion:

Time The Linked Job has time periodicity

Meter The Linked Job has meter periodicity, available only if the primary

Job has a meter specified





C756 Page: 114

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.12.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Time Interval Value

This is the time interval used to plan the linked job when the parent job's Work Order is passed to archival status, an optional numeric information. It is added to the finish date of the parent job to compute the next job date for the linked job.

Value Interval Unit

This is the measurement unit for the linked job interval (days or weeks).

Meter Interval Value

If the primary job is meter-based and the link criterion is set to 'Meter', the interval has to be defined by a meter value. Otherwise, the meter value is empty.

This is the consumption of the meter between the end of the primary job and the beginning of the linked job.

5.2.3 To Add a New Job to an Equipment

Minimum information required to add a job to an equipment is:

- Job identifier
- Job description
- Job type
- Job behaviour 0
- Job duration
- Job cost centre
- Time and/or meter periodicity, if the job behaviour is not 0 («just in time»)
- The next meter level, if the equipment job is based on a cumulative meter.
- The next job date, if the equipment job is time based. System will the current date as default.

To add a new equipment job:

- 1. Select the equipment for which the job to be created at the equipment field of the Job Guidelines Details window.
- 2. Click on the icon to launch the ADD window.

(to furnish details in selecting jobs.)

5.2.3.1 When the New Job belongs to a Job Structure

When the new job selected belongs to a Job Structure, COSWIN will prompt whether to create new equipment jobs for the entire structure:



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 115

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

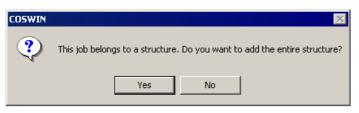
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KSC Version: <u>2.12.12.1</u>2.0

Reference:



If YES option is selected, equipment jobs for the rest of the jobs in the job structure against the current equipment will also be created into the Job Guidelines.

The job interval in the job guidelines for the rest of jobs in the job structure will be computed by the system according to the Multiplicity specified in each parent job in the job structure.

However, if there already exists an equipment job in the Job Guidelines defined for this job against some other equipment, system will propose the Interval defined in that equipment job as default interval.

Whenever the interval of one equipment job is modified, system will re-compute the interval for the rest of the job in structure according to the Multiplicity specified.

5.2.4 To Auto-Generate Equipment Jobs

COSWIN provides an option to allow users to create many similar Jobs (destination Jobs) for the same equipment from an existing Equipment Job.

This option allows users to

- Create one or more identical equipment jobs from an existing equipment job (using 'From current job' mode), or
- Create one or more identical equipment jobs from a blank job guideline template whose details to be specified by user (using the 'Create pattern' mode)

To use the Auto-Generation option, the Job Prefixes must first be defined in COSWIN Configuration's Maintenance / Job Identifiers.

From the Job Guidelines Details window, click on the non-standard Autogen. button and the following window appears:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 116

Date: 21 August 200221 August 200221 August 20023 June 2002

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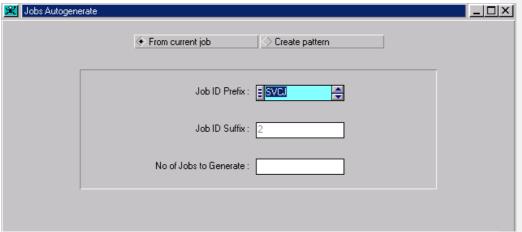
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Detailed Field Descriptions:

Generation Criteria (From current job / Create pattern)

This radio button specifies the source of the destination Jobs:

From current job Current Job

Create pattern From a new Job that is to be created

Job ID prefix

This is the destination Jobs prefix identifier, a mandatory information of maximum 4 alphanumeric characters. It must be one of the existing Job Prefixes.

A selector trigger button (or F2 key) linking to Job ID Selector is available.

Job ID suffix

This is the destination Jobs suffix start number, a read-only numeric information automatically managed by the system.

Jobs to generate

This is the number of destination Jobs to generate, a mandatory positive numeric information greater than 0.

After fill in the criteria to generate equipment jobs, click on the non-standard to activate the generation:



If **From current job** mode is selected, a few new identical equipment jobs will be created with exact quantity dictated by the value stated in *Job to generate* field. All new jobs created will have the prefix equal to that stated in the *Job Prefix* field, and their suffix begin with the number displayed in the *Job Suffix* field.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 117

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

If **Create pattern** mode is selected, then a blank Job Guidelines window will appear for user to specify the details for the new jobs to be created. After specifying the details for the jobs, click on the licon to proceed with the job generation.

5.2.5 To Modify an Equipment Job

The only information that cannot be modified, is:

- o Equipment identifier
- Equipment description
- Job identifier
- Structure information
- Last Job Date
- o Last Meter Reading
- Last work order number

5.2.6 To Delete an Equipment Job

An equipment job cannot be deleted if:

- o It has been referenced for planning (See Planning module)
- There are work orders on this equipment job that are still in Work In Progress (that is not been archived yet)
- o There are job requests raised on this equipment job
- There are measurement points defined for it (See Condition Based Maintenance modules)
- o The job is included in a job structure and it has a parent

Only the job occurrence for the specified equipment will be deleted; the jobs with the same identifier, but for different equipment, will not be affected by the deletion.

However, if there are no other equipment jobs with that identifier, the user may choose to delete the general job too.

Click on the icon to delete the current equipment job.

5.2.7 To Release Work Order from an Equipment Job

COSWIN provides an option to release a Work Order into work in progress from an equipment job.

Select the equipment job, on which the work order is to be released, from the Job Guidelines Details window.

Click the non-standard Release button and the following window will be prompted:



C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 118
Date: 21 August 200221
August 200221 August
20023 June 2002

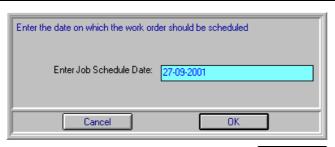
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KSC Version: 2.12.12.12.0



Specify the schedule date of the work order and click on the order will then be generated.

5.2.8 To Reset the Next Due Date of the Equipment Job

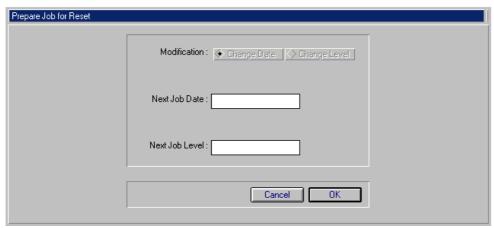
COSWIN provides an option to reset the Next Due Date of an equipment job.

The due date of a job can only be reset, if

- o There are no Work Orders for the equipment job still in Work-In-Progress, and
- o There are no plan exists on this equipment job.

Select the equipment job, whose next due date order is to be reset, from the Job Guidelines Details window.

Click the non-standard Reset button and the following window will be prompted:



Specify the next due date of the job in the *Next Job Date* field and click on the button. The equipment job's due date will be modified accordingly.





C756 Page: 119

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

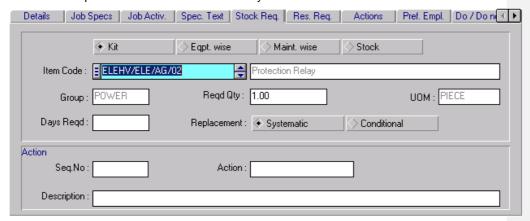
Date: 21 August 200221 August 200221 August 20023 June 2002

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5.2.9 Stock Requirement Details

The Stock Requirement Details window looks by default as follows:



Detailed Field Descriptions:

Item source (Kit / Eqpt wise / Maint wise / Stock)

This radio button specifies which item selector will be used to choose the item identifier:

Kit Items Kit Items Selector
Eqpt wise List of Spares

Maint. Wise Spares/Tools Selector Stock Stock Items Selector

Item Code

This is the identifier of the stock item that is to be allocated, a mandatory information. It must exist in the directory of spares/tools or in the stock item register.

A selector trigger button (or F2 key) linking to Item Selector or Spare/Tools Selector, depending on the item source radio buttons selected, is available

Right-mouse click (or F7 key) will activate the Stock Items Details window or Spare/Tools Details window, depending on the item source radio buttons selected, for the current code.

Item description

This is the description of the item, a read-only information automatically managed by the system.

Group

This is the identifier of the group to which the item belongs, a read-only information automatically managed by the system.

Required Quantity





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

KSC Version: 2.12.12.12.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 120 Date: 21 August 200221

Formatted: Font: 10 pt, Font color:

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August 200221 August 20023 June 2002

This is the stock item required quantity, in order to perform the Job, a mandatory positive numeric information.

This represents the measurement unit defined for the specified item, a read-only information automatically managed by the system.

Days Required

This information represents the number of days for which the tool is required, if the item refers to a tool, otherwise is meaningless. It is an optional positive numeric information, which cannot be greater than the Job's duration.

Replacement (Systematic / Conditional)

This radio button specifies the way in which the item should be replaced when a work order based on the job is performed:

Systematic

Always

Conditional

Depending on certain conditions

Sequence No

This is the Action's sequence number. It will only be used if the stock item is to be allocated against a job action.

Action

This is the Action identifier, if the stock item is to be allocated against a job action. It is a read-only information automatically managed by the system.

Description

This is the description of the Action, if stock item is to be allocated for a job action. It is a read-only information automatically managed by the system.

5.2.9.1 To Add a New Stock Requirement to an Equipment Job

Minimum information required to ADD a stock item is:

- o Item identifier
- Required Quantity

Select the Stock Requirement tab and click on the icon to launch the ADD window.

5.2.9.2 To Copy Stock Requirement to another Equipment Job

COSWIN provides an option to copy the Stock Requirement from a source Equipment Job (the one from which the window is opened) to a destination Equipment Job (the one specified in the Copy window).

In order to copy stock items from one Job to another, the source Job must not have Actions attached, and the user must have selected one or more of the Job's stock items. Otherwise,

the non-standard

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button will not be enabled.





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 121

Date: 21 August 200221 August 200221 August 20023 June 2002

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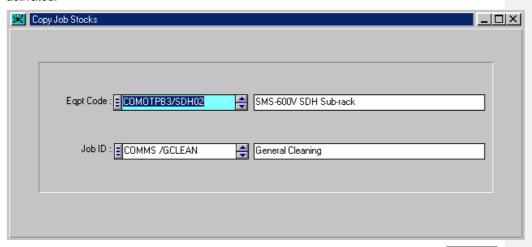
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Reference:

Under the Stock Requirement tab of the source Equipment job, select the stock items to be copied and click on the non-standard button. The following window will be activated:

COSWIN WORKCOSWIN WORK



Specify the destination Equipment Job in the window and click on the non-standard button to confirm the copy.

5.2.9.3 To Modify a Stock Requirement of an Equipment Job

The only information that can be modified is:

- Required Quantity
- Days Required
- Replacement
- o Action Sequence Number (only if the Job has actions defined)

5.2.9.4 To Delete a Stock Requirement from an Equipment Job

A stock item allocated to an Equipment Job or to an Equipment Job Action can be deleted without restrictions.

Click on the 🔯 icon to delete the current Stock Requirement.

5.2.10 Resource Requirement Details

This window provides details on the resources required for the current Equipment Job or for the current Equipment Job Action.

In the Equipment Job context, a resource can be allocated:

o In a "global" manner, i.e. it is allocated for the Equipment Job itself





Keppel Steria Consortium (KSC)

Reference: MAINTENANCE MANAGEMENT SYSTEM

Page: 122

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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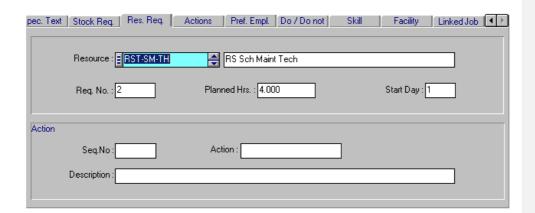
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 In a "by action" manner, i.e. it is allocated for one or more of the Equipment Job's Actions (only if the equipment job has actions defined)

The following rules apply when allocating resource to an equipment job:

- A resource cannot be allocated both to the Equipment's Job and to one of the Equipment's Job's Actions (i.e. cannot be, in the same time, allocated as "global" and as "by action")
- A resource, can be, however, allocated to more than one of the Equipment's Job Actions
 The Resource Requirement Details window looks by default as follows:



Detailed Field Descriptions:

Resource

This is the Resource identifier, a mandatory information. It must exist in the directory of resources.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Right-mouse click (or F7 key) will activate the Resource Details window for the current code.

Resource description

This is the description of the resource, a read-only information automatically managed by the system.

Req. No

This is the number of resources required for the Job or for the Job Action, a mandatory numeric integer value, greater than 0.

Planned Hours

This is the number of planned hours for the resource, a mandatory numeric positive value.

Start Day





Keppel Steria Consortium (KSC) C756 Reference: MAINTENANCE MANAGEMENT SYSTEM Page: 123

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

COSWIN WORKCOSWIN WORK

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Date: 21 August 200221 August 200221 August 20023 June 2002

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This is the index of day from which the resource begins its work on the Job, counting from the Job start date, a mandatory integer and positive value. The default value is 1 (the first day of the job).

Sequence No

This is the Action's sequence number. It will only be used if the resource is to be allocated against a job action.

Action

This is the Action identifier, if the resource was allocated for an Action. It is a read-only information automatically managed by the system.

Description

This is the description of the Action, if resource was allocated for an Action. It is a read-only information automatically managed by the system.

5.2.10.1 To Add a New Resource Requirement to an Equipment Job

Minimum information required to add a resource, to an Equipment Job or to an Equipment Job Action, is:

- o Resource identifier
- Required number
- o Planned hours
- Start Day

Select the Resource Requirement tab and click on the icon to launch the ADD window.

5.2.10.2 To Copy Resource Requirement to another Equipment Job

COSWIN provides an option to copy the Resource Requirement from a source Equipment Job (the one from which the window is opened) to a destination Equipment Job (the one specified in the Copy window).

In order to copy resources from one Job to another, the source Job must **not** have Actions attached, and the user must have selected one or more of the Job's resources. Otherwise,

the non-standard button will not be enabled.

Under the Resource Requirement tab of the source Equipment job, select the resources to

be copied and click on the non-standard Copy button. The following window will be activated:



C756 Page: 124

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Specify the destination Equipment Job in the window and click on the non-standard button to confirm the copy.

5.2.10.3 To Modify a Resource Requirement under an Equipment Job

The only information that can be modified, is:

- Required number
- o Planned hours
- o Start Day
- Action Sequence number (only if the Job has actions defined)

5.2.10.4 To Delete a Resource Requirement from an Equipment Job

A resource allocated for an Equipment Job or Equipment Job Action can be deleted without restrictions.

Click on the 2 icon to delete the current Resource Requirement.

5.2.11 Job Actions Details

The Job Actions Details window looks by default as follows:





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

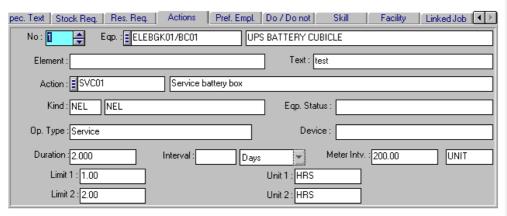
KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK Page: 125 Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Seq. No

This is the sequence number of the Action within the Equipment Job, a mandatory integer. Its value ranges from 1 to the number of actions within the Job.

Equipment

This is identifier of the equipment / sub-equipment for which the Action is generated, a mandatory information.

It must exist in the directory of Equipments. It has to be:

- o A sub-equipment of the job's equipment, if the job was made for an equipment, or
- An equipment belonging to the job's group, if the job was made for a group of equipment

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Equipment description

This is the description of the equipment / sub-equipment, a read-only information automatically managed by the system once the equipment/sub-equipment is selected.

Element

This is the description of the specific element in the sub-equipment upon which the Action is to be performed, an optional alphanumeric information of maximum 20 alphanumeric characters.

Text

This information field provides supplementary information on the Job's Action. It is an optional alphanumeric information of maximum 20 alphanumeric characters.

Action

This is the identifier of the Action, a mandatory information. It must exist in the directory of Actions.

The pair action identifier – sub-equipment has to be unique within the actions of a job.

A selector trigger button (or F2 key) linking to Actions Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 126

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

Reference:

KSC Version: 2.12.12.12.0

Right-mouse click (or F7 key) will activate the Action Details window for the current code.

Action description

This is the description of the Action, a read-only information automatically managed by the system once the action is selected.

Kind

This is the kind of the Action, a read-only information automatically managed by the system once the action is selected.

Kind description

This is the description of the Action's kind, a read-only information automatically managed by the system.

Equipment Status

This is the description of the status in which the equipment is, during the Action's execution upon the equipment. It is an optional information of maximum 20 alphanumeric characters.

Operation Type

This is the description of a manual identifier, which in turn explains how to complete such an Action on the equipment. It is an optional information of maximum 20 alphanumeric characters.

This is the description of the device with which the Action is to be executed an optional information of maximum 20 alphanumeric characters.

This is the planned duration of the Action, a positive numeric value. It is an optional information.

Time Interval

This is the Job Action's Time periodicity, which must be a sub multiple of Job's Time periodicity, a mandatory positive numeric information, if the Job (to which the Action belongs) has Time periodicity, otherwise a read-only information automatically managed by the system.

Time Interval Unit

This combo box defines Job Action's Time periodicity measurement unit (days or weeks). It is available only if the Job (to which the Action belongs) has Time periodicity, otherwise a read-only information automatically managed by the system.

Meter Interval

This is the Job Action's Meter periodicity, which must be a sub multiple of Job's Meter periodicity, a mandatory positive numeric information, if the Job (to which the Action belongs) has Meter periodicity, otherwise a read-only information automatically managed by the system.

Meter Interval Unit

This is the Job Action's Meter periodicity measurement unit, a read-only information automatically managed by the system.

Limit 1





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 127

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- COSWIN WORKCOSWIN WORK

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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KSC Version: 2.12.12.1

During Action's execution, there can be certain parameters that must restrict to certain values. Two such restricted values can be defined for an Action. This is the first restricted value, an optional numeric information.

Unit 1

Reference:

This is the measurement unit for the first restricted value, an optional alphanumeric information that can take up to 6 characters.

Limit 2

This is the second restricted value, an optional numeric information. See also Limit 1Limit 1.

Unit 2

This is the measurement unit for the second restricted value, an optional alphanumeric information that can take up to 6 characters.

5.2.11.1 To Add a New Action to an Equipment Job

Minimum information required to add an Action to a Job, is:

- o Action sequence number
- Equipment identifier
- o Action identifier
- Time interval (if the job is time-based)
- o Meter interval (if the job is meter-based)
- Planned Hours

Select the Actions tab and click on the icon to launch the ADD window.

5.2.11.2 To Modify an Action of an Equipment Job

The only information that cannot be modified, is:

- o Action identifier
- o Action description
- o Action Kind
- Action Kind description
- Meter Interval unit

5.2.11.3 To Delete an Action from an Equipment Job

A Job Action cannot be deleted, if:

- o It has allocated resources
- It has allocated stock items

Click on the 2 icon to delete the current Action.





Keppel Steria Consortium (KSC) Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 128

Date: 21 August 200221 August 200221 August 20023 June 2002

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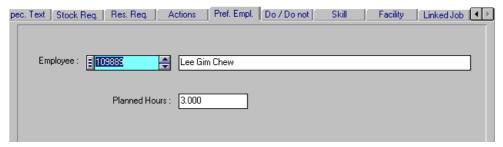
5.2.11.4 To View Resource/Stock Requirement on an Action of an Equipment Job

Click on the non-standard Resource button will open the Resource Requirement tab and display the list of resources allocated for the selected Action.

Click on the non-standard button will open the Stock Requirement tab and display the list of stock items allocated for the selected Action.

5.2.12 Preferred Employee Details

The Preferred Employee Details window looks by default as follows:



Detailed Field Descriptions:

Employee

This is the preferred employee identifier, a mandatory information. It must exist in the directory of Employees. The preferred employee should be unique at the level of equipment

Description

This is the description of the preferred employee, a read-only information automatically managed by the system.

Planned Hours

This is the number of planned hours for the preferred employee to accomplish the job, a mandatory numeric positive value.

5.2.12.1 To Add a New Preferred Employee to an Equipment Job

Minimum information required to add a preferred employee to an equipment job is:

- Employee identifier
- Planned hours

Select the Preferred Employee tab and click on the Di icon to launch the ADD window.

5.2.12.2 To Modify a Preferred Employee of an Equipment Job

The only information that can be modified, is:





 Keppel Steria Consortium (KSC)
 C756

 Reference:
 756/PMP/8029e/A756/PMP/8

 029e/A756/PMP/8029e/A756/PMP/8029e/A
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 129
 Date: 21 August 200221

 August 200221 August 200221 August 20023 June 2002
 August 200221 August 200221 August 20023 June 2002

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o Planned hours

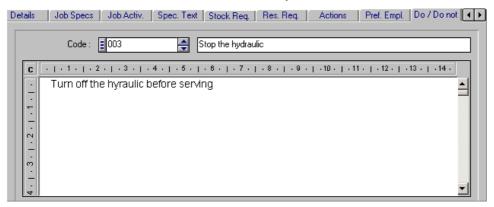
5.2.12.3 To Delete a Preferred Employee from an Equipment Job

A preferred employee for an equipment job can be deleted without restrictions.

Click on the 🔯 icon to delete the current Preferred Employee.

5.2.13 Indication and Restriction Details

The Indication and Restriction Details window looks by default as follows:



Detailed Field Descriptions:

Indication/Restriction code

This is the reference code of the to do codification, a mandatory information. The reference code of to do codification should be unique at the level of equipment job. The reference code of to do codification should exist in the directory of Do/Do Not codification.

Description

This is the description of the to do codification, a read-only information automatically managed by the system.

Indication/Restriction text

This OLE multi-line enables the user to provide supplementary information about the indication/restriction. The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.

5.2.13.1 To Add a New Indication/Restriction to an Equipment Job

Minimum information required to add a indication/restriction to an equipment job, is:

o Codification Code





Keppel Steria Consortium (KSC)

Reference: MAINTENANCE MANAGEMENT SYSTEM

COSWIN WORK COSWIN WORK

Page: 130 Date: 21 August 200

Date: 21 August 200221 August 200221 August 20023 June 2002

C756

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

Select the Do / Do Not tab and click on the icon to launch the ADD window.

5.2.13.2 To Modify an Indication/Restriction of an Equipment Job

The only information that can be modified, is:

o Indication/Restriction text

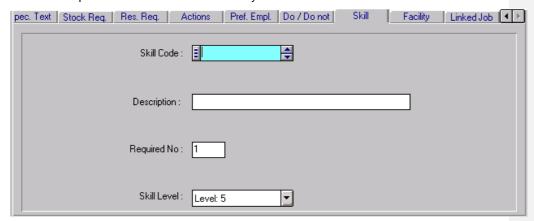
5.2.13.3 To Delete an Indication/Restriction from an Equipment Job

A job indication / restriction defined for an equipment job can be deleted without restrictions.

Click on the icon to delete the current Job Indication/Restriction.

5.2.14 Skill Requirement Details

The Skill Requirement Details window looks by default as follows:



Detailed Field Descriptions:

Skill Code

This is the reference code of the skill, a mandatory information. It must exist in the directory of Skills and shall be unique at the level of equipment job.

A selector trigger button (or F2 key) linking to Skill Selector is available.

Right-mouse click (or F7 key) will activate the Skill Details window for the current code.

Description

This is the description of the skill, read-only information automatically managed by the system.

Required No

This is the required number of workers having the skill to accomplish the job, a mandatory strictly positive integer value.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 131

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

756/PMP/8029e/A756/PMP/8

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Skill Level

Reference:

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This is the level of proficiency required for the skill, a mandatory integer value in the interval [1 - 10].

5.2.14.1 To Add a New Skill Requirement to an Equipment Job

Minimum information required to add a skill requirement to an equipment job, is:

- o Skill
- Required Number
- o Level

The default values proposed by the system are:

- o Required Number = 1
- Level = 5

Select the Skill Requirement tab and click on the Dicon to launch the ADD window.

5.2.14.2 To Modify a Skill Requirement under an Equipment Job

The only information that can be modified, is:

- o Required number
- o Level

5.2.14.3 To Delete a Skill Requirement from an Equipment Job

A skill requirement can be deleted without restrictions.

Click on the icon to delete the current Skill Requirement.

5.2.15 Facility Requirement Details

The Facility Requirement Details display the facility requirement and allow facility requirement definition through the following information.

The Facility Requirement Details window looks by default as follows:





C756 Page: 132

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

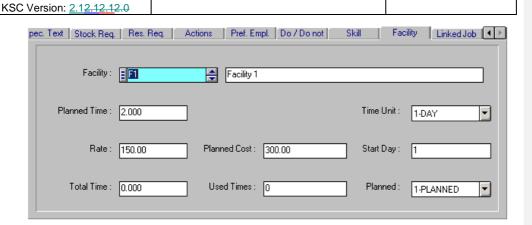
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Facility

This is the reference code of the generic facility, a mandatory information. The facility reference code should be unique at the level of job. The facility reference code should exist in the directory of Maintenance Facilities.

A selector trigger button (or F2 key) linking to Facility Selector is available.

Right-mouse click (or F7 key) will activate the Facility Directory window for the current code.

Description

This is the description of the generic facility, read-only information automatically managed by the system.

Planned Time

This is the number of time units planned to use the facility for the job, mandatory positive numeric information.

Time Unit

This is the unit of measure for the time planned to work by the facility against the equipment job. It is mandatory integer information that can take the following values: 0-HOUR, 1-DAY or 2-WEEK

Rate

This is the cost of use of facility per time unit, mandatory positive information. It is used to compute the cost of facility usage against the job.

Planned Cost

This is the planned cost of use of facility, read-only information automatically computed by the system as the product between the planned time and the rate.

Start Day

This is the first day on which the facility is needed (if the job extends on more than one day), mandatory information.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 133

Date: 21 August 200221 August 200221 August

20023 June 2002

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Reference:

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This is total time in terms of hours that the facility has been used against the equipment job. This is a read-only information automatically updated by system upon archival of associated work order (provided the option 'Update Facility Requirement'

Used Times

This is the.

Planned

This flag indicates if the facility requirement is '0 – Not Planned' or '1 – Planned'. System proposes the '1 – Planned' as default.

5.2.15.1 To Add a New Facility Requirement to an Equipment Job

Minimum information required to add a facility requirement to an equipment job is:

- Facility
- Planned Time
- Rate
- o Time Unit
- Start Day

The system will propose the rate and the time unit of the generic facility as default values for the facility requirement rate and time unit.

The system computes the cost of the facility requirement and updates the standard facility cost of the equipment job with the cost of the newly defined facility requirement.

Select the Facility Requirement tab and click on the icon to launch the ADD window.

5.2.15.2 To Modify a Facility Requirement under an Equipment job

The only information that can be modified, is:

- Planned Time
- o Rate
- Time Unit
- o Start Day

Whenever the Planned Time or the Rate is modified the system updates the cost of the facility requirement and the standard facility cost of the equipment job with the modified facility requirement cost.

5.2.15.3 To Delete a Facility Requirement from an Equipment Job

The facility requirements can be deleted from an equipment job without restrictions.

Click on the icon to delete the current Facility Requirement.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 134

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

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5.3 JOB PLANNING

Jobs involved in preventive maintenance are usually are periodical jobs. The job is performed repeatedly on an interval basis or a number of meter units. To automate this process the concept of plan was developed. A plan consists of occurrences of planned jobs. The planned jobs are instances of equipment jobs whose due dated are computed based on job behaviour and fall in a given interval (planning interval).

5.3.1 Concept of Planning in COSWIN

Multiple Plans

Different planners can create their plan by giving their Search Criteria and maintain their respective plan data simultaneously. Each plan is identified by a unique running serial number, which is generated by COSWIN. In addition, each plan is associated with a planner-id, a short identification of person generating the plan. There is no restriction on number of plans that one planner can generate and maintain simultaneously.

Multiple plans can exist for the following reasons:

- In a large plan, there could be several planners, each responsible for maintenance of a specific area. Thus each planner will plan for his area of responsibility by defining suitable Search Criteria. In this case, there will be one plan for each planner.
- A planner may like to plan for future periods in addition to the plan for the current period.
 Both current and future plans can co-exist together.
- Plans can be generated for future periods (e.g.: Next Quarter) for the purpose of estimating resource and stock requirements and for estimating the cost of planned maintenance jobs. Such plans fall under the category of 'Simulation' exercises as against plans that are generated to 'Release' jobs for actual execution.

Thus, for any of the above reasons, you may generate several plans and release jobs from any plan.

Consistency in Planning

Since several planners could be planning for their areas of responsibility simultaneously, there are possibilities of conflicts when a planner (through his Search Criteria) intends to plan a job on equipment, for which another planner has already planned jobs. In such a situation, you have the option to resolve these conflicts in any one of the following manners, by selecting or clearing the corresponding Clash option:

- Not selected Plan for the job even though it has been planned under a different planner (in this case, the job is planned only beyond its existing plans).
- Selected Skip the job if it has already been planned by another planner (This is the option by default).

EXAMPLE:

A planner P1 creates a plan for the job J1 on the equipment E1 for the week 12 and 13. The job J1 has a time interval of 1 week.





C756 Page: 135 MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

His job chart shows:

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

P1

Reference:

Week 12	Week 13	Week 14
J1 _o	J1 ₁	

Subsequently, planner P2 creates a plan on the same job J1 on the equipment E1 for the week 12 and 14.

If P2 checks the CLASH box option (selected), his job chart will be:

P2
P2

	Week 12	Week 13	Week 14
Ī			

If P2 uncheck the CLASH box option (unselect), his job chart will be:

P2	

Week 12	Week 13	Week 14
		J1 ₂

In neither case can a job be planned two twice for the same period.

Association of an equipment and job with its planner is maintained only until the plan jobs are released to Work-in-Progress. Once the plan jobs are released to WIP, an equipment job is free to be planned by any planner.

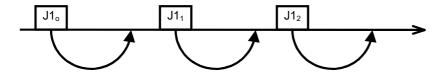
Auto Re-planning of Jobs

There are situations where planned jobs will need to be re-planned due a job occurrence is moved.

In such situations, you have the option to re-plan the jobs, by selecting or clearing the corresponding Auto Replan Jobs option, thus making the plan more dynamic.

EXAMPLE:

If the first job J1_o is delayed in the plan, then the subsequent jobs J1₁ and J1₂, already specified in the plan, will be shifted accordingly.



This applies to all plans with the option Auto Replan Job selected.





Keppel Steria Consortium (KSC) C756 MAINTENANCE MANAGEMENT SYSTEM Page: 136 756/PMP/8029e/A756/PMP/8

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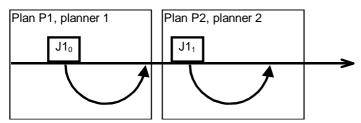
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KSC Version: <u>2.12.12.1</u>2.0

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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If J1 o is shifted back or forth, then J1 will be shift accordingly too.

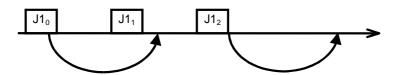
COSWIN provides 2 options to handle the delayed jobs due to re-planning, namely Old Occurrence option:

Delete - The system will delete the delayed jobs.

Move - The system will move the delayed jobs to future dates, according to the equipment job's periodicity.

EXAMPLE:

The first occurrence of job J1, that is, J1 $_0$ is moved further than the second occurrence J1 $_1$: Using Delete option, J1₁ will be deleted and J1₂ will be shifted



Using Move option, both J1₁ and J1₂ will be shifted.

Planned Job Priority

The priority of a planned job is dependent on the following four factors:

- A. Job Priority
- B. Equipment Priority
- C. Number of Times Missed
- D. Labour Hours/Day

You can customise the priority computation formula by assigning suitable weighting factors to each of them. Weighting can be between 0 and 9, 9 being the highest weighting. Any of the above factors can be excluded from calculation by assigning zero weighting. Nevertheless, at least one of the above factors must have non-zero weighting.

C756 Page: 137 MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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PMP/8029e/-KSC Version: 2.12.12.1

Reference:

The formula used to compute the priority of job is:

```
EquipmentPriorityWeight * (9 - EquipmentPriority) +
JobPriorityWeight * (9 - JobPriority) +
LaborHourPriorityWeight * LaborHourPriority +
MissedPriorityWeight * MissedPriority
```

(EquipmentPriorityWeight + JobPriorityWeight + LaborHourPriorityWeight +

MissedPriorityWeight)

Effect of Work Orders on Planning

Existing incomplete Work Orders have an effect on planning of jobs. It is so because the Last Occurrence Date of job in 'Job Guidelines' is based on the Work Orders that have been completed and for which feedback has been completed (Archival Status). However, for a job there could be Work Orders, who are either not yet over, or for which feedback is yet to come. The system takes into account such Work Orders, by estimating their completion dates. The highest of the completion dates (from Work Orders and Job Guidelines) is taken as the Last Occurrence Date of a job for its next planning.

Effect of Existing Plans on a New Plan

COSWIN provides the facility to plan for several future periods, while retaining current plan data. Thus, you may generate plans 1, 2 and 3 for periods A, B and C and maintain them simultaneously.

In view of this feature, the system has to take into account all existing plan jobs when generating a new plan. Therefore, while generating a plan, the system determines the highest date up to which a job is already planned. All new occurrences of a job are computed by taking this highest date as the Last Occurrence Date of the job.

Backlog Job Adjustment

Jobs, which are due earlier than the plan start date (after considering Work Orders and planned jobs), are 'Backlog Jobs'. These jobs have been missed in the past and therefore must be taken up in the current plan. To ensure their early execution, all Backlog jobs are scheduled on the first day of the plan period.

Two Types of Planning

System allows the following two types of plans:

- Theoretical Planning for 'Simulation'
- Practical Planning for 'Release' (Job release to WIP)





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 138

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

Normally, plans are generated to 'Release' jobs to 'Work in Progress' for their execution. However, at times, there is a need to generate a plan for future periods to estimate resource and stock requirements. It may also be used to estimate the cost of planned maintenance jobs for any desired period. Such exercises can be useful in planning Maintenance department's budget, manpower requirements, shut down period planning and for adjustments in preventive maintenance. For accurate estimations, such plans include only those jobs, which are due in the Study Period.

Ignoring all existing plans and backlog jobs generates simulation plans. Therefore, you can generate several 'Simulation' plans by giving different options. You cannot release jobs from a 'Simulation' plan and, once their purpose is over, these plans should be deleted through Plan Summary module.

Release Job Flag Setting

A Release Flag associated with each occurrence of planned job determines whether a job can be released into WIP or not. The flag value can be one of the following:

- Y Planned job can be released to WIP (there are no unfinished Work Orders in WIP for this job and no Planned job is scheduled prior to it).
- **N** Planned job cannot be released to WIP (there are unfinished Work Orders in WIP but no Planned job is scheduled prior to it).
- X Planned job cannot be released to WIP (there are occurrences of Planned jobs scheduled prior to it).

Use of Calendar data in Planning

Calendar data is used to schedule 'Start date based Jobs'; 'Finish date based Jobs' and 'Shutdown Jobs'. System maintains a calendar at plant level and you can optionally add calendars at equipment, zone and function level. To schedule a job of a previous mentioned type, the system accesses various calendars in the following sequence, until it finds one:

- · Equipment Calendar
- · Parent Equipment Calendar
- System Calendar
- Function Calendar
- Zone Calendar
- Plant Calendar

Jobs, which have been specified to take into account calendars, can occur only in working days. In addition, Shutdown jobs of more than one day duration are scheduled at the beginning of such a Shutdown period which provides a continuous Shutdown equal to (or more than) Job duration. This facility allows Shutdown jobs to be fitted at a time when they can be completed without disrupting production.

Suggestions for Planning





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 139

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

Delete all unwanted previous Plans. If there are 'Simulation' or 'Release' Plans which are no longer required, these should be deleted. As each 'Release' type plan has to scan existing plans, time would be wasted unnecessarily if such plans exist when generating a new plan.

5.3.2 Create a Job Plan

The Planning module is used to create a sequence of maintenance jobs that will be due in a user-defined period of time. It uses the jobs already defined in Job guidelines along with their Last occurrence date and periodicity data. In a given plan, a job may occur once or several times depending upon the plan period, job periodicity, behaviour and its last occurrence.

Using Search Criteria, the user can define lower and upper limits on several important fields to generate plans suiting his/her specific requirements. Thus, only the equipment and jobs, which meet the Search Criteria, are considered for planning. The user can define Search Criteria on the following fields:

- Zone 0
- Function 0
- Cost Centre
- System 0
- Equipment / Group
- Job Identifier
- Job Type 0
- Job Class
- Job Priority
- Resource 0
- Job Supervisor

Facility is provided to include wild card characters (*) and (?) in lower and upper limits to make the search definition flexible and powerful. Pick list facility is also available for Zone, Equipment/Group, Job Type and Resource fields to 'mark' and select specific values of these fields for which a plan is to be generated. This facility allows the user to search on specific Zones, Equipment, Job Types and/or Resources as against search for a range of values provided by lower and upper limits.

Select from COSWIN menu Maintenance / Planning / Plan Jobs to launch the Plan Jobs module:

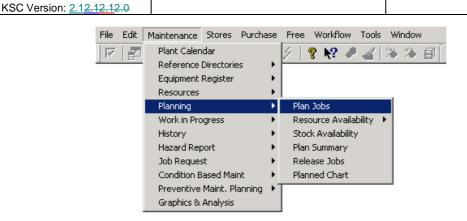


Keppel Steria Consortium (KSC) C756 Page: 140 MAINTENANCE MANAGEMENT SYSTEM 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK Date: 21 August 200221

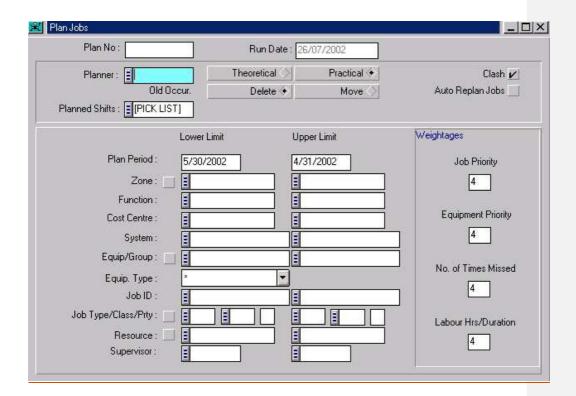
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August 200221 August 20023 June 2002

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The Plan Jobs Details window looks by default as follows:



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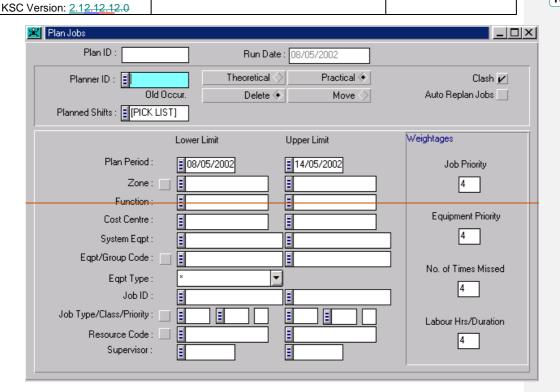
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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK Page: 141
Date: 21 August 200224
August 200221 August
20023 June 2002

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Detailed Field Descriptions:

Plan ID

It is a system-generated serial number, which uniquely identifies a plan. It is not accessible by the user.

After a plan is generated, right-mouse click (or F7 key) will activate the Release Jobs module to review on the newly created plan.

Run Date

This information is the current system date, not accessible to the user and automatically generated by the system.

Planner ID

This information indicates the abbreviated name of the planner, a mandatory information of maximum 6 alphanumeric characters. For each planner, the same abbreviation should be used whenever a new plan is to be generated.

A selector trigger button (or F2 key) linking to Planner Codes Selector is available.

Planning type (Theoretical / Practical)

This information specifies whether to generate a 'Theoretical' or 'Practical' plan. The default option is 'Practical'.

Theoretical It is a simulation type of plan. Jobs planned cannot be released into





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 142

WORK Date: 21 August 200221
August 200221 August

August 200221 August 20023 June 2002

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KSC Version: 2.12.12.12.0

756/PMP/8029e/A756/PMP/8

WIP

Practical Jobs planned can be released into WIP and will include backlog jobs.

Clash

This checkbox specifies whether to take into account or to skip, when planning, a job already planned by another planner. The default value is selected, meaning to skip an already planned job.

Auto Re-plan Jobs

This information specifies whether to set or not the automatically re-plan flag for the current generated plan.

Old Occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of planned jobs. The available actions are:

Delete The system will delete the delayed jobs.

Move The system will move the delayed jobs to future dates,

according to the equipment job's periodicity.

Plan Period

This is the plan start and end dates, a mandatory information. By default, the proposed start date is the current date, and the proposed end date is the seventh day from plan start, thus setting a plan period of one week automatically.

If the planner has already created some plans, then the default plan start and plan end are exactly the week following the last plan's end date.

System checks for the existence of plant calendar for the plan period and error message will be displayed if the plant calendar does not exist.

Zone

Enter the lower and upper limits of the Equipment Zone identifiers (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Zones Selector is available.

Function

Enter the lower and upper limits of the Equipment Function identifiers (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Functions Selector is available.

Cost Centre

Enter the lower and upper limits of the Cost Centre identifiers (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

System Eqpt

Enter the lower and upper limits of the System Equipment identifiers (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 143

Date: 21 August 200221 August 200221 August

20023 June 2002

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Reference:

Eqpt/Group Code

Enter the lower and upper limits of the Equipment identifiers (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Job ID

Enter the lower and upper limits of the Job identifiers (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Job type

Enter the lower and upper limits of the Job type identifiers (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Job Type Selector is available.

Job class

Enter the lower and upper limits of the Job class identifiers (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Job priority

Enter lower and upper limits of the Job priority (one digit).

Resource

Enter the lower and upper limits of the Resource identifiers (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Resource Selector is available.

Supervisor

Enter the lower and upper limits of the Job supervisor identifiers (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Weight Factors

The default priority weights are displayed and you can enter new values, which should be used for the current plan run. However these weights are not saved. Weights can be between 0 and 9, 9 being the highest. All four weights cannot be zeros.

Job Priority

Enter Job priority weight (one digit: 0...9).

Equipment Priority

Enter Equipment priority weight (one digit: 0...9).

Number of Times Missed

Enter Times Missed weight (one digit: 0...9).

Labour Hours/Duration

Enter Labour Hrs/Duration weight (one digit: 0...9).





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 144

Date: 21 August 200221 August 200221 August 20023 June 2002

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Execute After specifying the selection criteria, user can click on the non-standard button to start planning process.

Once the planning starts, a pop-up form is displayed indicating the number of Equipment/Jobs scanned and number of plan jobs created. Even at this stage, the plan creation process can be aborted by pressing the Abort button.

Once the plan is created successfully, the identifier of the newly created plan will appear under the Plan No field. User may use the right-mouse click (or F7 key) to activate the Release Jobs module to review the newly created plan.

5.3.3 Compute Resource Availability

The purpose of this module is to compute the resource availability information, for different phases of the resource status:

- Wrench Hours phase: computes wrench hours for each resource, based on employees calendars
- Work In Progress load phase: computes WIP committed hours, based on pending resources for work orders
- Free Hours phase: computes free hours for each resource, based on wrench and WIP hours using the PM jobs factor
- Plan Load phase: computes the plan hours and sets accordingly the resource availability flags for the involved plan jobs

Select from COSWIN menu Maintenance / Planning / Resource Availability / Availability Computation to launch the Compute Resource Availability module.

The Compute Resource Availability window looks by default as follows:



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 145

Date: 21 August 200221

August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8

Reference:

X Availability Computation	_ _X
Period : 5-39-2001 4-40-2001 28-09-3	2001 04-10-2001
Phase 1 - compute wrench hours	
✓ Execute	
From: 28-09-2001 To: 04-10-2001	
Phase 2 - compute WIP load	
✓ Execute	✓ Consider Backlog Jobs
From: 28-09-2001 To: 04-10-2001	
Phase 3 - compute free hours	
✓ Execute	Modify PM Jobs Factor
From: 28-09-2001 To: 04-10-2001	Resource : Fact. :
Phase 4 - compute plan load	
✓ Execute	✓ Consider Backlog Jobs
From: 28-09-2001 To: 04-10-2001	Consider Simulation Plans
Plan Factor	
Job duration : 0 %Ext. perm.: 0	Job duration: 0 %Ext. perm.: 0
Job duration : 0 %Ext. perm.: 0	Job duration : 0 %Ext. perm.:
Job duration : 0 %Ext. perm.: 0	

Detailed Field Descriptions:

Period - DWY

Enter here the start and finish dates (Day/Week/Year format) of the period for which resource computation should be run. By default, the proposed start date is the current date and the proposed end date is the seventh day from period start, thus setting a period of one week automatically.

The ending date of the plan period cannot be greater than 75 days from the current date if not specified otherwise through Parameters at installation. This restriction holds for the plan period of all four phases.

Period - DMY

This information display the period limits in Day/Month/Year format, automatically generated by the system, not accessible to the user.

Phase 1 - Compute Wrench Hours

Execute

This checkbox indicates whether or not to compute wrench hours. This flag is marked by default.

Wrench (From ...To ...)





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 146

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color: Formatted: Font: 9 pt

KSC Version: 2.12.12.12.0

756/PMP/8029e/A756/PMP/8

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Reference:

PMP/8029e/-

These are the start and finish dates (Day/Week/Year format) of the period for which wrench hours computation should be run. The plan period dates are proposed by default.

Phase 2 - Compute WIP Load

Execute

This checkbox indicates whether or not to compute WIP load. This flag is marked by default.

WIP (from ...To ...)

These are the start and finish dates (Day/Week/Year format) of the period for which WIP load computation should be run. The plan period dates are proposed by default.

Consider Backlog Jobs

This checkbox indicates whether or not to consider backlog WIP jobs for WIP load computation. This flag is marked by default.

Phase 3 - Compute Free Hours

Execute

This checkbox indicates whether or not to compute free hours. This flag is marked by default.

Free (From ...To ...)

These are the start and finish dates (Day/Week/Year format) of the period for which free hours computation should be run. The plan period dates are proposed by default.

Modify PM Jobs Factor

This checkbox denotes whether to modify the PM jobs factor of all the resources at the time of computing free hours. This enables the user to increase or decrease the PM job factor of one or more resources selectively and see the effect on the release flag, without using the resource module.

Resource Code

It is a read-only field. It shows the resource that is currently being processed during the free hour computation phase.

Factor

This information displays the PM job factor of the resource that is currently being processed during the free hour computation phase.

Phase 4 -Compute Plan Load

Execute

This checkbox indicates whether or not to compute plan load. This flag is marked by default.

Plan (From ...To ...)

These are the start and finish dates (Day/Week/Year format) of the period for which plan load computation should be run. The plan period dates are proposed by default.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 147

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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KSC Version: <u>2.12.12.1</u>2.0

756/PMP/8029e/A756/PMP/8

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Consider Backlog Jobs

This checkbox specifies whether to consider backlog planned jobs while computing plan load. This flag is marked by default.

Consider Simulation Plans

This checkbox specifies whether to consider one or more simulation (theoretical) plans while computing plan load. This flag is unchecked by default.

Plan Factor

Reference:

PMP/8029e/-

The user can indicate here the percentages by which job duration can be extended for resource availability computation purposes. The user has to key in values, which result in the extension of the job duration by at least one day.

The job duration should be in ascending order starting from the first row.

If simulation plans are to be considered, a pick list is displayed showing all the simulation type plans whose plan period overlaps with the user defined plan period. The user can then pick one or more plans.

Job duration 1

Enter first job duration level, an integer between 0 and 999.

%Ext. perm 1

Enter first percentage by which the job duration can be extended, an integer between 0 and 999.

Job duration 2

Enter second job duration level, an integer between 0 and 999.

%Ext. perm 2

Enter second percentage by which the job duration can be extended, an integer between 0 and 999.

Job duration 3

Enter third job duration level, an integer between 0 and 999.

%Ext. perm 3

Enter third percentage by which the job duration can be extended, an integer between 0 and 999.

Job duration 4

Enter fourth job duration level, an integer between 0 and 999.

%Ext. perm 4

Enter fourth percentage by which the job duration can be extended, an integer between 0 and 999.

Job duration 5

Enter fifth job duration level, an integer between 0 and 999.

%Ext. perm 5

Enter fifth percentage by which the job duration can be extended, an integer between 0 and 999.





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 148
Date: 21 August 200221
August 200221 August

August 200221 Augu 20023 June 2002 Formatted: Font: 10 pt, Font color:

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Click on the non-standard button to activate the computation. The system then executes the Resource Computation phases for which the indicator is checked. A window is displayed for each of these phases indicating the status of execution. The user can abort the process at any time by pressing (ESC) key or the Abort button.

The four status pop-up associated with each of the phases is briefly described below.

Phase I (Compute Wrench Hours) status window indicates the total number of resources and the number of resources processed.

Phase II (Compute WIP Load) status window indicates the total number of times the Work Orders should be scanned and the current run number.

Phase III (Compute Free Hours) status window indicates the total number of resources and the number of resources processed.

Phase IV (Compute Plan Load) status window indicates the current job priority, current job date, jobs processed, jobs flagged 'Yes', jobs flagged 'No' and jobs skipped. The current job priority field can have a value between '0' and '9'. The system first processes all planned jobs with priority '0', then priority '3' and so on up to '9'.

At the end of the process, the system displays a message informing the completion of the process.

5.3.4 Display Daily Resource Availability

This option allows you to review the summary results of Resource Availability Computation run. The function of Resource Availability Computation module is to compute Wrench Hours, Work Load Hours committed to WIP Jobs, Work Load due to Planned Jobs and to flag Plan Jobs which can be carried out considering availability of resources.

Using this module, you can review the Wrench Hours, WIP Load, Free Hours, Plan Job Hours and Total Plan Job Hours for any resource. Comparison and ratio analysis of these hour fields representing resource availability and resource requirements will help you in resource management, job prioritisation and short/long term planning of maintenance personnel requirements of different trades/skills.

Select from COSWIN menu *Maintenance / Planning / Resource Availability / Resource Display (day)* to launch the Daily Resource Availability Display module.

The Daily Resource Availability window looks by default as follows:





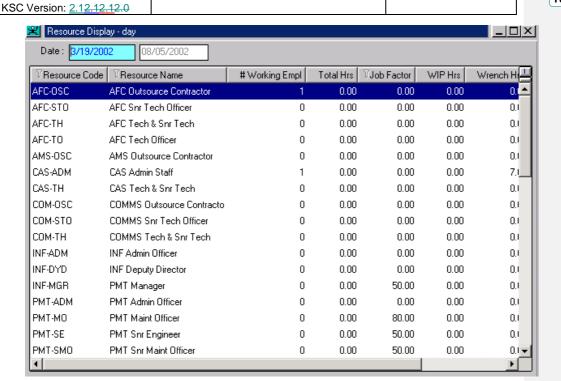
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 149

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Date - DWY

Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

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Enter date (Day/Week/Year format) on which you want to display resources.

Date - DMY

This information is the date for which resources are displayed, in Day/Month/Year format, automatically generated by the system, not accessible to the user.

Resource list box

Resource code This is a 6-character data field displaying the code used to

identify the resource.

Resource name This is a 40-character data field displaying the description

of the resource code.

Working Manpower This data field displays the number of employees working

under this resource code.

PM Job Factor Preventive Maintenance Job Factor defines in percentage

the portion of Wrench Hours that is available for PM Jobs

for the resource.

Wrench Hrs It is the total availability hours considering the Wrench

Hours of all employees of current trade after discounting weekly off, leaves, holidays and planned absences as





Keppel Steria Consortium (KSC) C756 Page: 150 MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK Date: 21 August 200221 029e/A756/PMP/8029e/A756/ August 200221 August 20023 June 2002 PMP/8029e/-

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indicated on Employee Calendar.

WIP Hrs It is the total hours of workload arising from the Work Orders in WIP module. These hours are computed based on remaining hours for each trade for all those Work Orders

which are 'Not Started' or 'In Progress'.

Free Hrs It is the total free hours available for planned jobs, after

making provision for WIP hours.

Free Hours = PM Jobs Factor *

(Wrench Hours - WIP Hours).

Zero or negative free hours indicate complete or over booking of the resource for current WIP jobs. You can increase or decrease free hours by changing PM Job factor.

Plan Hrs It is part of the planned jobs load (jobs in plan file) which

have been assigned to the resource. Plan Hours will always be less than or equal to Free Hours. This represents workload for plan jobs flagged as 'Y' in Resource Availability

Total Hrs It is the total planned jobs load (jobs in plan file) for the

> resource. This represents total workload for the resource, including plan jobs flagged as 'Y' and 'N' in resource

availability run.

5.3.5 Display Weekly Resource Availability

This option allows you to review the summary results of Resource Availability Computation run. The function of Resource Availability Computation module is to compute Wrench Hours, workload Hours committed to WIP Jobs, workload due to Planned Jobs and to flag Plan Jobs, which can be carried out considering availability of resources.

Using this module, you can review the Wrench Hours, WIP Load, Free Hours, Plan Job Hours and Total Plan Job Hours for any resource. Comparison and ratio analysis of these hour fields representing resource availability and resource requirements will help you in resource management, job prioritisation and short/long term planning of maintenance personnel requirements of different trades/skills.

For a given resource you can see the availability data for a week from a given day, week and vear.

Select from COSWIN menu Maintenance / Planning / Resource Availability / Resource Display (week) to launch the Weekly Resource Availability Display module.

The Weekly Resource Availability window looks by default as follows:

KSC Version: 2.12.12.12.0



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 151

Date: 21 August 200221 August 200221 August 20023 June 2002

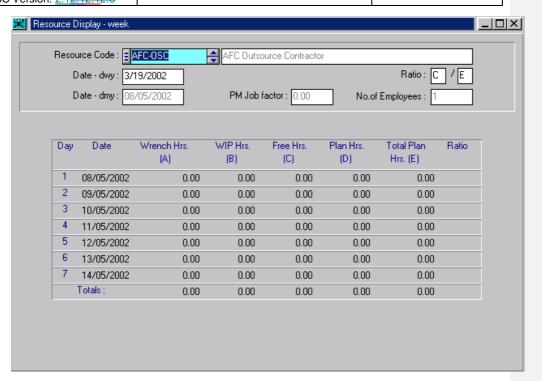
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KSC Version: <u>2.12.12.1</u>2.0

Reference:



Detailed Field Descriptions:

Resource Code

Enter or select a valid resource code whose availability hours you want to view, a mandatory field that must exist in the directory of Resources.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Right-mouse click (or F7 key) will activate the Resource Details window for the current code.

Description

This is the description of the resource, an information automatically managed by the system.

Date - DWY

Enter the day, week and year from which you want to see one week's availability data for the given resource.

Ratio dividend

Here you have to introduce the ratio dividend, which is any Hour field (from A to E). By default, system displays C - Free Hours.

Ratio divisor





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 152

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color: Auto

Formatted: Font: 9 pt

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

Here you have to introduce the ratio divisor, which is any Hour field (from A to E). By default, system displays E - Total Plan Hours. You can get ratio between any other hour fields by changing ratio field indicators.

Date - DMY

This is the starting date (displayed as day/month/year) for the given combination of day, week, year. This is a display-only field, automatically managed by the system.

PM Job factor

The Preventive Maintenance Job Factor defines in percentage the position of Wrench Hours which would be available for PM Jobs for the resource. This is a display-only information, automatically managed by the system.

Number of Employees

This data field displays the number of employees working under this resource code. This is a display-only information, automatically managed by the system.

5.3.6 Compute Stock Availability

The process of Compute Stock Availability can be broadly classified into five stages, based on the main function they perform, as:

- 1. Setting up Item expected free quantity
- 2. Plan selection based on user-defined options
- 3. Selection of jobs
- 4. Item expected quantity computation
- 5. Stock availability check for a particular job

Setting up Item expected free quantity

Before the process of stock availability check can commence, it is necessary to estimate the free quantity for stock items, which are available for plan jobs. This is achieved by updating the following fields in the item record type as

Item free qty for stock balancing = Current Item free quantity

Last date of balanced quantity update = Current date

Plan Selection based on user-defined options

The user, on specifying a balancing period, effectively limits the total number of plans which may be taken up for stock balancing. Only those plans, which have one or more jobs falling in the specified Stock Balancing Period, are considered for Stock Balancing. The number of plans to be considered during a balancing period is restricted to 25.

Selection of Jobs

Planned jobs are accessed in the order of scheduled date and priority. A job must meet the following criteria before it is taken up for Stock Balancing:

- Scheduled date of the job must fall within the Balancing Period
- It must have one or more items falling between the limits provided by the user





C756

Reference: 756/PMP/8029e/A756/

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- KSC Version: 2.12.12.12.0 MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 153 Date: 21 August 200221 August 200221 August 20023 June 2002

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 Release flag of the job must be set to 'Y' and Resource availability flag checked according to parameter specification.

Item expected quantity computation

A particular job, after having its job stock shortlist, undergoes the expected quantity computation.

Final Item free quantity for stock balancing =

Current Item free quantity for stock balancing +

Expected Receipts against pending Purchase orders

If pending Purchase Orders are not taken into account, then the expected receipts against pending Purchase Orders is 0.

This estimated quantity is updated on to the Item free quantity available for stock balancing along with the current balancing date which denotes the exact quantity of Stock Items available for a job scheduled on that particular date. This procedure is performed for all the items shortlist for a particular job.

Stock availability check for a particular job

The estimated Item free quantity for stock balancing is now considered as the maximum quantity available for those items on that particular date. The current job is checked for stock availability of each of the shortlist items as shown below:

If the current item free quantity for balancing is greater than or equal to the quantity of item required for performing the current job, stock of that particular item for that particular job is considered to be available (that is 'Y'), or else not available.

A similar process is carried out to check the availability of all the items for that particular job. If each of the items reports 'Y' then the job is considered feasible and its stock availability is marked 'Y' else if there is a shortfall in any of the items then the job's stock availability is marked 'N'. In case of an unsuccessful job, care is taken to reverse all the prior allocation made on different items for that particular job so that the subsequent jobs have that amount available for allocation.

This procedure is performed until all the jobs scheduled on a particular day among different plans are exhausted and then the procedure is repeated for the subsequent days until the end of the balancing period.

Select from COSWIN menu *Maintenance / Planning / Stock Availability* to launch the Compute Stock Availability module.

The Compute Stock Availability window looks by default as follows:





C756 Page: 154

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

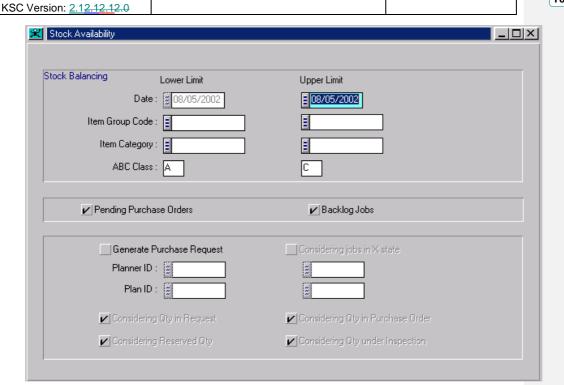
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Date DWY

These are period's beginning and ending dates (in day/week/year format) for stock balancing.

The start date is assumed as the current date by default and cannot be modified.

For the ending date, the user may provide an appropriate date (in day/week/year format) to suit his needs to accommodate the necessary jobs. This date effectively fixes the Balancing period for current execution. It is not recommended to carry out stock balancing for very long periods, as the uncertainties of stock availability will be fairly high and hence the reliability of the results is also reduced.

Date DMY

These are period's beginning and ending dates (in day/month/year format). The user cannot modify these fields.

Item Group Code

The user may enter or select the starting and ending group codes from where the items may be considered for Stock Availability. If left blank, the first and/or last groups are assumed by default and are also displayed to the user.

A selector trigger button (or F2 key) linking to Item Group Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 155

Date: 21 August 200221

August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

Formatted: Font: 9 pt

Reference: 756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.12.0

Item Category

The user may enter or select the starting and ending Category codes from where the items may be considered for Stock Availability. If left blank, the first and/or last categories are assumed by default and are also displayed to the user.

A selector trigger button (or F2 key) linking to Item Category Selector is available.

ABC Class

The user can consider items from a specific class or a set of classes. The starting and ending class codes from where the items will be considered should be entered in these fields. If left blank, 'A' and 'C' class are assumed by default.

Pending Purchase Orders

The user can consider taking into account all the pending deliveries for the items, based on the pending Purchase orders. This quantity is included in the expected stock in the system. If you wish to include them, check this option, otherwise un-check it. By default, this checkbox is checked.

Backlog Jobs

The user may consider including all the jobs prior to the starting date (Backlog jobs) during the current balancing period and compute stock availability by selecting this option. If he does not wish to include the backlog jobs, he can uncheck the box. By default, this checkbox is checked.

Generate Purchase Request

This option specifies whether to automatically generate Purchase Requests after running Stock Availability, starting from the list of missing items.

Considering jobs in X state

If this option is selected, the planned jobs in X state ("waiting") will also be considered while computing the purchase request. This information is available only when the Generate Purchase Request option is selected.

Planner ID

Enter the lower and upper limits of the Planner Identifiers (up to 6 alphanumeric characters) for which the purchase request will be computed. If left blank, the first and last Plan Identifiers are assumed by default and are also displayed to the user. This information is available only when the Generate Purchase Request option is selected.

A selector trigger button (or F2 key) linking to Planner ID Selector is available.

Plan No

Enter valid lower and upper limits for plan numbers for which the purchase request will be computed. If left blank, system automatically fills in the first and last plan numbers. This information is available only when the Generate Purchase Request option is selected.

A selector trigger button (or F2 key) linking to Plan ID Selector is available.

Considering qty. in request

This checkbox specifies whether or not to consider the quantity in Request when calculating Total Item Quantity. This information is available only when the Generate Purchase Request option is selected. By default, its status is checked.





C756

EM Page: 156

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Considering qty. in order

This checkbox specifies whether or not to consider the quantity in Order when calculating Total Item Quantity. This information is available only when the Generate Purchase Request option is selected. By default, its status is checked.

Considering reserved qty

This checkbox specifies whether or not to consider the reserved quantity when calculating Total Item Quantity. This information is available only when the Generate Purchase Request option is selected. By default, its status is checked.

Considering qty. under inspection

This check box specifies whether or not to consider the quantity under Inspection when calculating Total Item Quantity. This information is available only when the Generate Purchase Request option is selected. By default, its status is checked.

Click on the non-standard Execute button to execute the Stock Availability computation.

If the Generate Purchase Request option is selected, after performing the Stock Availability computation, the user can make a Purchase Request, starting from the list of missing items.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 157

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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KSC Version: <u>2.12.12.1</u>2.0

756/PMP/8029e/A756/PMP/8

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Reference:

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5.4 CONSULTING THE PLAN AND RELEASING JOB

The result of JOB PLANNING is a list of recommended jobs. You can visualise and print the recommended jobs in several different ways.

- a) Plan Summary: Allows to review the summary of various plans generated by each planner.
- **b) Job chart**: Allows to see/print the graphical chart of the jobs recommended by the all the plans on one period as a whole.
- c) Job releasing: Allows to list the jobs of a particular plan. Also allows to modify the data and the release flag.

5.4.1 Plan Summary

Plan Summary module is used to review the summary of various plans generated by each planner. This summary includes information like the plan numbers, plan period, number of jobs planned and number of jobs released for each plan. In addition to this, using this module you can delete complete plans, which are no longer required.

Since COSWIN allows creation of multiple plans for each planner and you can have multiple planners, this module serves as the central controlling point to review status of various plans and removal of old and/or redundant plan data.

Select from COSWIN menu *Maintenance / Planning / Plan Summary* to launch the Plan Summary module:

The Plan Summary window looks by default as follows:



Detailed Field Descriptions:

Planner ID

Enter or select the Planner Identifier (an alphanumeric field, up to 6 characters), whose plans you want to review.

A selector trigger button (or F2 key) linking to Planner ID Selector is available.





Keppel Steria Consortium (KSC) C756 Page: 158 MAINTENANCE MANAGEMENT SYSTEM 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK Date: 21 August 200221

029e/A756/PMP/8029e/A756/ August 200221 August 20023 June 2002 PMP/8029e/-KSC Version: 2.12.12.1

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Plans list

Reference:

System displays following details for each of the plans existing in the plan file for the chosen planner.

iloson planner.	
Plan ID	Plan Number, which is assigned by the system at the time of creating the plan.
Run Date	The date of Plan Creation.
From DD/MM/YY	Plan starts date.
To DD/MM/YY	Plan end date.
Jobs Planned	Number of Job occurrences created for the plan.
Jobs Released	Number of Job occurrences released so far from plan file to Work In Progress.
Jobs Remaining	Number of Job occurrences now remaining in plan file. Initially this number is same as Jobs planned. As the plan jobs are released to Work In Progress, it is reduced by jobs released or deleted from plan file.
	When the number of jobs remaining in a plan is zero, that means all the jobs are released and therefore the plan can be removed from the plan file using Delete option of this module.
T-0 P-1	This field indicates the type of plan.
	0 - Theoretical Plan (simulation plan).
	(Planned Jobs cannot be released).
	1 - Practical Plan.
	(Planned Jobs can be released to WIP).

5.4.1.1 To Delete Plans from Plan Summary

The user can delete the plan details of one or more plans created by a planner.

Select the plan to be deleted from the Plan List and click on the 🔯 icon.

Note that deletion of a plan has no effect on the job definitions that are the basis of plan creation.

Deletion of Theoretical Plan (Plan Type = 0): Deletion of theoretical plan has no effect on other plans. The purpose of theoretical plan creation is to estimate manpower and spares requirement for a specified period. Once this purpose is over, theoretical plan must be removed from plan file, as it will enable better response throughout the planning module.

Deletion of Practical Plan (Plan Type = 1): Normally, a practical plan is removed from the plan file when all the plan job occurrences have been released to Work in Progress. However, there could be situations when a practical plan that has not been completely released needs to be removed from plan file. For example, deletion of all the remaining planned jobs at the end of plan period so that in the next plan all the backlog jobs get planned at higher priority.





 Keppel Steria Consortium (KSC)
 C756

 Reference:
 756/PMP/8029e/A756/PMP/8
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 159

 029e/A756/PMP/8029e

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5.4.1.2 To Release Jobs from Plan Summary

Double click on any of the displayed plans in the plans list will activate the Release Job module for the selected plan.

5.4.2 Releasing Jobs

KSC Version: 2.12.12.1

Release Jobs module is used to review the jobs in a plan and to release jobs from a plan into Work in Progress.

Select from COSWIN menu *Maintenance / Planning / Release Jobs* to launch the Release Jobs module.

The Release Job Details window looks by default as follows:



Detailed Field Descriptions:

Planner ID

Enter the abbreviated name of the planner as used when generating the plan (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Planner ID Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 160

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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Plan ID

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029e/A756/PMP/8029e/A756/

KSC Version: 2.12.12.1

Reference:

PMP/8029e/-

Enter a valid plan number (integer number up to 99999) for the plan that you want to review. System automatically proposes the first plan number.

A selector trigger button (or F2 key) linking to Plan List Selector is available.

Plan Type

System displays the type of the plan.

- 0 Theoretical plan whose jobs planned cannot be released and their details cannot be modified.
- 1 Practical plan whose jobs planned can be released into WIP and their details can be modified before release.

Plan Period

Displays the limit dates of the period for which the plan was generated.

Action From...To

These are the lower and upper limits (in day/week/year format) of the period for which you want to view or release plan jobs. System automatically fills in the plan period. You can modify the plan period to view jobs for a specific period, which is a part of the plan period.

Planned Jobs List

The plan jobs are displayed in the order of their scheduled date and priority. A Release Flag associated with each plan job indicates whether a job can be released to Work in Progress or has to wait for the completion of earlier occurrences of this job.

Allocate Employees

This flag, when checked, automatically allocates employees to the released work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters. The system allocates employees to the work order based on:

- o The resource requirements of the planned job
- o The preferred employee of the equipment job
- The available roster list
- o The planned shifts of the planned job released in Work in Progress.

The system allocates the job's preferred employees to the work order whenever possible (employees are available in the shift and not overloaded).

Check Skills

This flag, when checked, automatically checks the skills of the employees allocated to released work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

For each allocated employee the system will check (on request) the employee skills against the equipment job skill requirements and flags them as REJECTED when none of its skills matches any of the equipment job skill requirements.

Reserve Items





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 161

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

Reference:

COSWIN WORKCOSWIN WORK Date: 21 August 200221 August 200221 August

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20023 June 2002

KSC Version: 2.12.12.1

This flag, when checked, automatically reserve stock items for released work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters. The system reserves items to the work order according to the stock requirements of the planned job

Auto generate Work Permit

This flag, when checked, automatically generate work permit request if required during release of work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Permit / General Parameters.

Skip Subcontracted Jobs

This flag, when checked, will disable the release of work orders whose jobs are subcontracted. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

Use Project Code

This flag, when checked, will assign the same project code to the released work orders.

Project Code

This is the project code, of maximum 10 alphanumeric characters, will be assigned to the released work orders when the Use Project Code flag is checked.

Plan job list

Job ID Job Identifier.

Description This is a description for Job ID

Level Level of the equipment. Eqpt/Group Code Equipment/Group code.

WOID Current WO which is in WIP for the equipment job.

Due DD MM YY You can modify the scheduled day/month/year of the plan

> job. The plan job scheduled date can be advanced, but should not be less than plan start date. The plan job can be postponed, but the new date should be such that plant

calendar exists for that year.

Release Status of Release Flag.

Y indicates job is able to be released into WIP

N indicates a WO already exists in the WIP for the same equipment job. Releasing the job again would create a redundant second WO. If you have already run the calculation Resource Availability, the N status can indicate that the available resources or spares are not enough to cover the need of the job.

X: The same equipment job is already planned at a previous date in the plan.

You can modify the flag in the following manner:

From To Υ Ν





 Keppel Steria Consortium (KSC)
 C756

 Reference:
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 162
 Date: 21 August 200221

 029e/A756/PMP/8029

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N Y X Y

Priority Total Priority of Plan Job.

KSC Version: 2.12.12.1

Eqpt Lvl Level of the equipment in the equipment structure.

R Resource Availability Flag. This flag is set by Resource Availability module.

Y indicates that all the resources required for the job will be available on the scheduled date, considering current WIP jobs and other planned jobs.

N indicates that the job cannot be taken up, as not all the resources required will be available.

BLANK indicates that either 'Resource Computation' has not been executed on this job.

Stock Availability Flag. This flag is set by Stock Availability module.

Y indicates that all the stocked spare items required for the job will be available on the scheduled date of the plan job, considering the requirements of current WIP jobs and other planned jobs.

N indicates that the job cannot be taken up, as not all the required spare items will be available.

BLANK indicates that either 'Stock Availability' has not executed on this job.

Equipment Status Flag. It indicates the status of the Equipment or plant on the scheduled job date. It can be one of the following values:

P: Peak Production day

N: Normal Production day

S: Shutdown day

H: Holiday

W: Weekly-off

The legend (P/N/S/H/W) can be modified to suit different languages, by changing a parameter record.

C Contract Job Flag.

C indicates the job is a contract job.

BLANK indicates the job is not a contract job.

Schedule Date The initial scheduled day-week-year of the plan-job.

Type Job Type.

Shift Shift for which job is scheduled.

Down Time Down time (if any) involved in the job.

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C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 163 Date: 21 August 200221

August 200221 August 20023 June 2002

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Equipment description

This field displays accordingly the description of the equipment for the current plan-job.

5.4.2.1 Release Plan Jobs to Work in Progress

Release button to release the currently selected plan job into Click on the non-standard

Work in Progress. Or, click on the non-standard Release All button to release all plan jobs with Release Flag as 'Y' into Work in Progress.

The released plan jobs are deleted from plan file. As a job is released to WIP, next occurrence of the same job in the plan file (if any) is flagged as 'N'.

This prevents another occurrence of the same job being raised as a Work Order till the current Work Order is completed.

Each Work Order is assigned with a system generated running serial number and is referred to as Work Order Number or WO ID. Work Order type of all these Work Orders is set to 'P -Planned', indicating these are planned Work Orders.

Facility is also provided to Release a part of the plan, by specifying a range of dates indicating the period for which jobs should be released. This facility allows you to plan for a long period and then release jobs progressively. For example, you can plan for the next four weeks and then at the end of each week you can release jobs for the next week.

5.4.2.2 Effect of Work Order Completion on Plan job

Whenever a work order completes and is archived to History, the Plan Job file is updated as follows:

- Next Job Release Flag is set to 'Y'
- Plan job that are not relevant will be deleted.
- When a plan job is released to WIP, the next occurrence of the same job in plan file (if any) is set to 'N'. This is to prevent another Work Order being created till current Work Order is completed. Therefore with the completion of a Work Order, Release Flag is set

In addition, if a Works Order is completed much later than its scheduled date, plan file is updated to delete such job occurrences which are not relevant due to the delayed execution.

Consider the following example of a weekly job J1 on equipment E1, which has been planned for the next four weeks as given below:

Due D-Wk-Yr 1-10-97 1-11-97 1-12-97 1-13-97 Χ Release Flag Χ X

When the jobs are released to WIP, job J1 scheduled on 1-10-97 is released as Work Order and the updated plan-file would appear as given below:

Due D-Wk-Yr 1-11-97 1-12-97 1-13-97 Release Flag Χ Χ





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 164 Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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KSC Version: 2.12.12.1

Now, in the case the Work Order scheduled on 1-10-97 is delayed and is completed on 4-12-97, the occurrences of the job J1 as on 1-11-97 and 1-12-97 are no longer valid and therefore are deleted from plan-file. The updated plan-file would appear as given below:

Due D-Wk-Yr 1-13-97

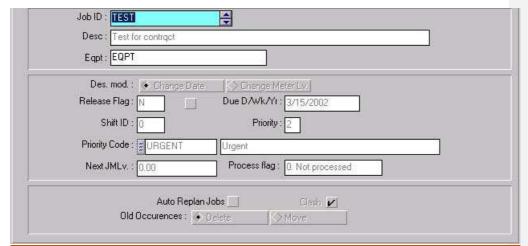
Release Flag

5.4.2.3 Release Job Details

You can modify certain details of a plan before releasing it into Work in Progress. This helps in customising a plan to your specific requirements. For example, you may decide to advance (or delay) certain jobs depending upon your production requirements and other considerations. You may also completely turn-off a job by setting its release flag to 'N'.

You can modify only 'Release' type plans (Plan Type = 1 - Practical) and modification can only be done in Release Job Details window.

Double click on any of the plan jobs in the plan job list of Release Job module will activate the Release Job Details window:







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Detailed Field Descriptions:

Job ID

This is the Planned Job Identifier, a read-only field automatically managed by the system.

Description

This is the Planned Job description, a disabled field automatically managed by the system.

Equipment

This is the Job's Equipment Code, a read-only field automatically managed by the system.

Release Flag

A Release Flag associated to each occurrence of planned job determines whether a job can be released to WIP or has to wait till the completion of earlier occurrences of this job. The flag value can be one of the following:

- Y: Planned job can be released to WIP.
 - (There are no unfinished Work Orders in WIP for this job and no Planned job is scheduled prior to it).
- N: Planned job cannot be released to WIP.
 - (There are unfinished Work Orders in WIP, but no Planned Job is scheduled prior to it).
- X: Planned job cannot be released to WIP.
 - (There are occurrences of Planned jobs prior to it).

When you invoke the 'Release' option of this module, only the jobs with 'Y' flag are carried over to WIP. This is to prevent a second Work Order being raised on equipment for the same job till the first Work Order is completed.





Keppel Steria Consortium (KSC)		C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 166
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
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However, flexibility is provided to modify these flag values to meet special requirements. For example, you may like to cut multiple Work Orders for several weeks and send these to your overseas plant. Following modifications can be made in the Release Flag setting:

<u>From</u>	<u>To</u>	<u>Remarks</u>
Υ	N	You can prevent a job being released to WIP by changing 'Y' to 'N'.
N	Υ	You can force a plan job to status 'Y' so that it can be released to WIP.
Χ	Υ	You can force a plan job to status 'Y' so that it can be released to WIP

When modifying the Release Flag of a plan job from 'X' to 'Y', all the other plan jobs, prior to the modified job whose Release Flag are also 'X', will have their Release Flags automatically set to 'Y'.

EXAMPLE:

Consider a weekly job J1 on Equipment E1:

<u>Equipment</u>	<u>Job</u>	Scheduled (D-Wk-Y)	Flag
E1	J1	1-10-97	Υ
E1	J1	1-11-97	Χ
E1	J1	1-12-97	Χ
E1	J1	1-13-97	Χ

If you modify the Release Flag of the Job occurrence 1-13-97 to 'Y', then the Release Flag of other job occurrences prior to it, viz. 1-12-97 and 1-11-97, are also set to 'Y'.

This is to maintain logical consistency in plan-jobs data.

Due D/Wk/Yr

You can advance or delay the execution of a job by modifying its scheduled date (day/week/year). You are only allowed to modify the Date/Shift of those jobs whose Release Flags setting are 'Y'.

Since the plan jobs are displayed in the order of date and priority, each time the date (or priority) is modified, the Planned jobs list window display is refreshed. Therefore, as you keep modifying the dates of jobs, the Planned jobs list window display also keeps adjusting to new sequence of jobs.

Note: The same facility to modify plan job schedule date is available in Job Chart Details module. It displays the job occurrences of all jobs on an equipment (and sub-equipment) in a graphical manner.

Shift ID

Enter shift for which job is scheduled, a positive integer 2 characters number.

To modify this field, the Release Flag should be set to 'Y'.

Priority





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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 167

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

Priority of a Plan job is computed by the system and is based on several factors (like Job priority, Equipment priority, Number of times missed, etc.). You can increase (or decrease) the priority of a plan job to ensure that all the manpower and spares resources are first allocated to this job. Zero is considered as the highest priority and nine is the lowest.

Each time priority is modified, the current screen display is refreshed and the sequence of jobs is changed to reflect the new order of jobs.

You are only allowed to modify the priority of those Plan jobs which have Release Flag setting as 'Y'.

Auto Replan Jobs

This information specifies whether to automatically update plan jobs when the current job is re-planned.

Clash

This information specifies whether planned jobs generated by other planners should be taken into account or not when updating planned jobs. The information is accessible to the user only when Auto Re-plan Job flag is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of planned jobs. The available actions are:

Delete The system will delete the delayed jobs.

Move The system will move the delayed jobs to future dates,

according to the equipment job's periodicity.

This information is accessible to the user only when Auto Re-plan Job flag is set.



MAINTENANCE MANAGEMENT SYSTEM | F

C756
Page: 168

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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6. CONDITION BASED MAINTENANCE

Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

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KSC Version: <u>2.12.12.1</u>2.0

The purpose of condition-based maintenance is to define the conditions and the measurement process over the maintained equipment. It also defines the conditions to raise alarms in case of abnormal behaviour of equipment occurs and the actions to be taken when the alarms occur.



The measurement data on various equipment is obtained as feedback in COSWIN CBM system. This feedback data is verified against the specifications defined for a measurement point. The specifications for a measurement point indicate the permissible range of a feedback data value for a safe operation of the equipment. An occurrence of a feedback data which does not meet the criteria defined by the specifications indicates the abnormal functioning of an equipment and is referred to as an alarm.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 169

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

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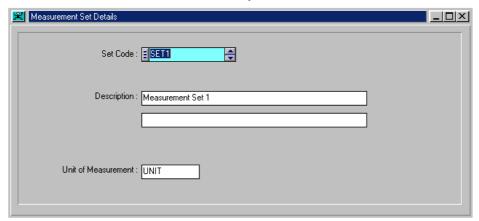
6.1 MEASUREMENT SETS DIRECTORY

Condition Based Maintenance is carried out on the equipment by monitoring measurement parameters at regular intervals of time. These parameters, reflecting the performance of equipment, can be, for example: temperature, pressure, vibrations etc. In COSWIN, these parameters are represented by a Set. Each set has a unique set code, set description and the unit of the parameter being measured. A set can be linked to any number of equipment to carry out the measurements.

The Measurement Set Directory allows the user to maintain a directory of sets. These sets are referenced in the Measurement Set module for linking to equipment.

Select from COSWIN menu Maintenance / Condition Based Maint / Directory / Set to launch the Measurement Set Details module.

The Measurement Set Details window looks by default as follows:



Detailed Field Descriptions:

Set Code

This is the Set identifier, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all Measurement Sets.

A selector trigger button (or F2 key) linking to Measurement Set Selector is available.

Set Description 1

This is the first explanatory description, a mandatory information of maximum 40 alphanumeric characters.

Set Description 2





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 170

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

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This is the second explanatory description, an optional information of maximum 40 alphanumeric characters.

Unit of measurement

This is the Set's Unit of measurement identifier, a mandatory information of maximum 6 alphanumeric characters.

6.1.1 To Add a New Measurement Set

Minimum information required to add a Measurement Set, is:

- o The Measurement Set identifier
- The Measurement Set first description
- o The Set's measurement Unit

Click on the icon to launch the ADD window.

6.1.2 To Modify a Measurement Set

The information that can be modified, is:

- o The Measurement Set first description
- The Measurement Set second description
- The Set's measurement Unit, only if the set is not defined against any measurement point

6.1.3 To Delete a Measurement Set

A Measurement Set cannot be deleted if it is has been linked to an equipment.

Click on the icon to delete the current Measurement Set.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 171

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

Formatted: Font: 9 pt

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: <u>2.12.12.1</u>2.0

6.2 MEASUREMENT NORMS DIRECTORY

The Norms Directory maintains all the Norms (ideal operating condition) established by the user along with their details.

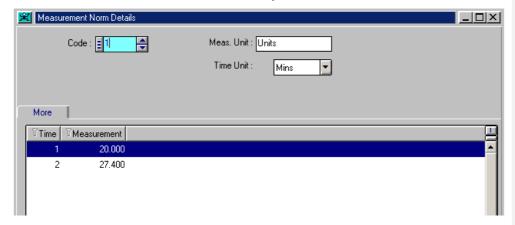
A parameter on an equipment can be measured at different physical locations on the equipment to enable a better knowledge of the operating conditions of the equipment. Each of these locations could have their own set of data representing an ideal operating condition, referred to as a *Norm*. The set of data representing the actual operating condition, called *Feedback*, will be compared against the norm.

The data for a norm consist of a series of values representing the various time periods of an operating cycle of an equipment and the corresponding norm values of the measured parameter.

The norm codes defined in this module are referenced in the Measurement Point module. It is essential to reference a norm in Measurement Point module, where the profile of the point requires it.

Select from COSWIN menu *Maintenance / Condition Based Maint / Directory / Norms* to launch the Measurement Norms Details module.

The Measurement Norms Details window looks by default as follows:



Detailed Field Descriptions:

Norm Code

This is the Norm identifier (the code used to store norms for equipment), a read-only positive integer information, automatically computed by the system in ADD mode.

A selector trigger button (or F2 key) linking to Measurement Norms Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 172

Date: 21 August 200221 August 200221 August

20023 June 2002

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Measurement Unit

756/PMP/8029e/A756/PMP/8

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KSC Version: 2.12.12.1

This is the Measurement Unit identifier, for the measured parameter, a mandatory information of maximum 6 alphanumeric characters.

Reference:

PMP/8029e/-

This is the unit of time for the norm. It is a mandatory information and it can be one of the following:

- o Minutes
- o Hours
- o Days
- o Weeks

Norm Values in More Tab:

The purpose of this window is to define a set of Norm values that will be seen as a curve of ideal behaviour of the equipment for which the set is defined. The Norm values must be provided in ascending order.

Norm List Box

Time This is the time elapsed from the start of the operation until

the time of measurement

Measurement This is the ideal value of the measured parameter

Double click on any of the displayed norms values will activate the Norms Value Details window.

6.2.1 To Add a New Measurement Norms

Minimum information required to add a Norm, is:

- o Norm measurement unit
- o Norm time unit

Click on the icon to launch the ADD window.

6.2.2 To Modify a Measurement Norms

The Norm information can be modified only if the Norm is not being used by a measurement point, in which case the only information that can be modified, is:

- Norm measurement unit
- Norm time unit

6.2.3 To Delete a Measurement Norms

A Norm cannot be deleted if it has already been defined against any measurement point.

Click on the icon to delete the current Measurement Norms.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 173

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

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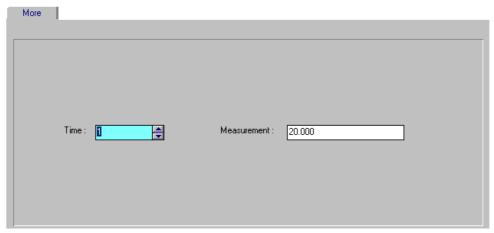
Reference:

PMP/8029e/-

6.2.4 Norm Value Details

The purpose of this window is to provide details for a Norm value belonging or to be added to a set of Norm values, set that will be seen as a curve of ideal behaviour of the equipment for which the set is defined.

The Norm Value Details window looks by default as follows:



Detailed Field Descriptions:

Time

This is the time elapsed from the start of the operation until the time of measurement, a mandatory positive numeric information, greater than 0.

Measurement

This is the ideal value of the measured parameter, an optional numeric information (positive or negative). If not specified, COSWIN automatically assumes the value 0.

6.2.4.1 To Add a New Norm Value

Minimum information required to add a Norm value, is:

o The Norm elapsed Time

Click on the icon to launch the ADD window.

6.2.4.2 To Modify a Norm Value

The only information that can be modified, is:

o The Norm ideal value

6.2.4.3 To Delete a Norm Value

There are no restrictions on deleting Norm values.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 174

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

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KSC Version: <u>2.12.12.1</u>2.0

Click on the icon to delete the current Norm values.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 175

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

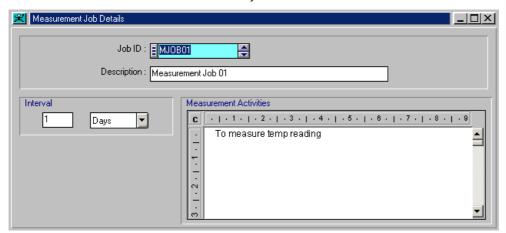
6.3 MEASUREMENT JOBS DIRECTORY

The module is used to manage the measurement jobs used in condition Based Maintenance process. The measurement jobs are used for retrieving the actual values of equipment parameters.

The entire Condition Based Maintenance process relies on the feedback data of the measured parameters. Measurements on equipment must be carried out periodically to ensure regular feedback. The task of carrying out measurements can be looked upon as a job occurrence at regular intervals.

Select from COSWIN menu Maintenance / Condition Based Maint / Directory / Measurement Jobs to launch the Measurement Job Details module.

The Measurement Job Details window looks by default as follows:



Detailed Field Descriptions:

Measurement Job ID

This is the identifier of the Measurement Job, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all Measurement Jobs.

A selector trigger button (or F2 key) linking to Measurement Jobs Selector is available.

Description

This is the Measurement Job Description, a mandatory information of maximum 40 alphanumeric characters.

Interval





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 176

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

Reference:

This is the time Interval between two occurrences of the Measurement Job, an optional positive numeric information of maximum 4 alphanumeric characters. COSWIN automatically proposes the value 1.

Interval unit

This is the interval's measurement unit, an optional information. It must be one of the following:

- o Minutes
- o Hours
- o Days
- o Weeks

COSWIN automatically proposes the first selection (minutes)

Measurement Activities

This information specifies job activity remarks. It is an optional information. The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.

6.3.1 To Add a New Measurement Job

Minimum information required to add a Measurement Job, is:

- o The Measurement Job identifier
- o The Measurement Job description

Click on the icon to launch the ADD window.

6.3.2 To Modify a Measurement Job

The information that can be modified, is:

- o The Measurement Job description
- o The Measurement Job interval, if the job is not used, yet, for a Measurement Point
- The interval unit, if the job is not used, yet, for a Measurement Point having a planned job linked to it
- o The Measurement Job Activities

6.3.3 To Delete a Measurement Job

A Measurement Job cannot be deleted, if it is actually used by a Measurement Point.

Click on the icon to delete the current Measurement Job.



Keppel Steria Consortium (KSC) C756 Page: 177 MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK Date: 21 August 200221 029e/A756/PMP/8029e/A756/

August 200221 August 20023 June 2002 KSC Version: 2.12.12.1

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6.4 EQUIPMENT MEASUREMENT SET

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The Equipment Measurement Set module lets the user create and maintain the linkages of sets against equipment.

A Set defined in the Set directory has to be linked to various equipment in order to establish the set of parameters to be measured on equipment.

Select from COSWIN menu Maintenance / Condition Based Maint / Measurement Set to launch the Equipment Measurement Set module.

The Equipment Measurement Set window looks by default as follows:



Double click on any of the displayed Set records will activate the Set Details window.

Detailed Field Descriptions:

Equipment

This is the identifier of the Equipment, whose Set information is displayed, a mandatory information. It must exist in the Equipment register or among the Groups of equipment. A selector trigger button (or F2 key) linking to Equipment Selector is available.

Description

This is the Equipment description, a read-only information automatically managed by the system once equipment is specified.

Set List Box

Set Code	The Set identifier
Description	The Set description
Work Time	This is the time that must be allocated, per day, for the Work on the Set's measurement job
Work Unit	This is the measurement unit of the Working Time
Cldr. Flag	This flag specifies whether the Working Time should be allocated based on Equipment Calendar ("Y") or not ("N")





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 178

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.12.0

Reference:

6.4.1 To Add a Measurement Set to an Equipment

Minimum information required to add a measurement set, is:

o The Measurement Set identifier

6.4.2 To Modify a Measurement Set of an Equipment

The information that can be modified is:

- o The Working Time
- o The measurement Unit of the Working Time
- o The calendar based option

Click on the icon to launch the ADD window.

6.4.3 To Delete a Measurement Set from an Equipment

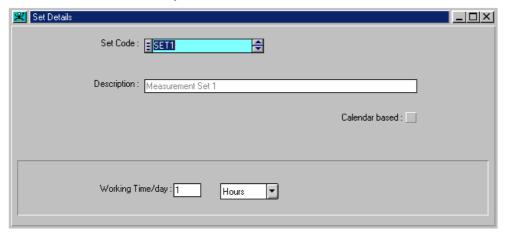
A Measurement Set cannot be deleted if there are already measurement points defined under it.

Click on the icon to delete the current measurement set from the equipment.

6.4.4 Set Details

The purpose of this window is to permit the user to create a new set of measurements and link it to an equipment, or to link an existing set of measurements to an equipment.

The Set Details window looks by default as follows:



Detailed Field Descriptions:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 179

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

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Reference:

KSC Version: 2.12.12.1

Set Code

This is the Set identifier, for the current equipment, a mandatory information of maximum 10 alphanumeric characters. It must be unique for the given equipment.

A selector trigger button (or F2 key) linking to Measurement Set Selector is available.

Right-mouse click (or F7 key) will activate the Measurement Set Details window for the current code.

Description

This is the Measurement Set Description identifier, a read-only information automatically managed by the system.

Calendar based

This check box specifies whether the Working Time should be allocated based on Equipment Calendar (if checked) or not.

Working Time/day

This is the time that must be allocated per day for the work on the Set's measurement job for the current equipment. It is non-null, optional positive integer. COSWIN proposes a default value of 1.

Time unit

This is the measurement unit of the Working Time, an optional information, automatically proposed by COSWIN as "minutes". It must be one of the following:

- o Minutes
- o Hours



MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 180

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.1

756/PMP/8029e/A756/PMP/8

Reference:

6.5 MEASUREMENT POINT

The module is used to manage the measurement points and their readings for existing equipment measurement set.

A Measurement Point represents a physical location on equipment where measurement is carried out to check the normal behaviour of equipment. The guidelines for the measurements and the criteria indicating the validity of a measurement are defined at individual measurement points. Subsequently, the feedback is accepted and the analysis is carried out against individual measurement points. Alarm situations, indicating abnormal behaviour of equipment, are raised at measurement points.

Feedback details (a number of readings in a time interval) can be added for each measurement point. These real readings are used to check if an alarm should be raised for the given point. When adding or modifying the measurement point readings, an analysis process is started. The analysis of measurement data can be of different types depending on the parameter being measured and the equipment on which measurement is done. The process analyses if the actual real readings violate the expected behaviour of the measurement point.

There are three ways to analyze and check for normal behaviour of an equipment parameter:

- Parameter range the parameter values must fit a fixed interval defined by the user
- Deviation from a norm the reading values are compared to the values of a measurement norm and a defined percentage of deviation must be respected
- Deviation from the last reading the deviation from the last reading must be in a defined percentage

A measurement point can have the following profiles (combinations of the analysis types):

- 1. Upper and Lower Limit. Compares measured data against absolute upper and lower limits
- 2. Comp against a Norm: Compare measured data against a set of data representing the ideal operation known as norm readings
- 3. Comp against Previous Value: Compare measured data against the parameter previous values
- 4. Combination of 1 and 2: It is a combination of analysis types 1 and 2
- 5. Combination of 1 and 3: It is a combination of analysis types 1 and 3
- Combination of 2 and 3: It is a combination of analysis types 2 and 3
- Combination of 1, 2 and 3: It is a combination of analysis types 1, 2 and 3

The following measurement actions can be performed when an alarm is triggered (the analysis process detects an abnormal situation):

- 0. No action to be taken
- 1. Make the measurement job due to reconfirm the reading





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 181 Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

Revise the interval of measurement by a revision factor (not available in case of measurement points having LIMIT profile)

The following *maintenance actions* can be performed if an alarm is raised for a measurement point and an equipment job is defined for the measurement point:

- 1. Automatically create a work order for the equipment job
- 2. Increase the measurement job frequency
- 3. Create work order manually (this action is valid only when the equipment job is a maintenance purpose job and the measurement action is '0. No action to be taken' or '1. Make the measurement job due to reconfirm the reading')

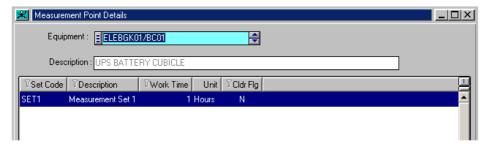
An equipment job can be assigned to each measurement point such that it will be executed when an alarm triggers for the measurement point. Jobs with behaviour code 1-START DATE or 2-FINISH DATE are used for measurement purpose, and jobs with behaviour code 0-JUST IN TIME are used for maintenance purpose,

The measurement action and the maintenance action taken when alarm occurs should logically match. The measurement action 2 (revise the interval of measurement) allows only the maintenance action 2 (increase the measurement job frequency).

For each measurement point it is mandatory to define a measurement job that will be used to measure the value of the point at a specific time. The measurement point interval proposed by default is the interval defined in the measurement job directory.

Select from COSWIN menu *Maintenance / Condition Based Maint / Measurement Point* to launch the Measurement Point module.

The Measurement Point Details window looks by default as follows:



This window displays the list of Sets defined for an equipment. Pressing F7 or double-clicking on current Set record will open **Point Set Details** window, in order to display the list of Measurement Points defined in the set.

Detailed Field Descriptions:





Keppel Steria Consortium (KSC) C756 Page: 182 MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK Date: 21 August 200221

029e/A756/PMP/8029e/A756/ August 200221 August 20023 June 2002 PMP/8029e/-KSC Version: 2.12.12.1

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Equipment

This is the identifier of the Equipment, whose Set information is displayed, a mandatory information. It must exist in the Equipment register or among the Groups of equipment. A selector trigger button (or F2 key) linking to Equipment Selector is available.

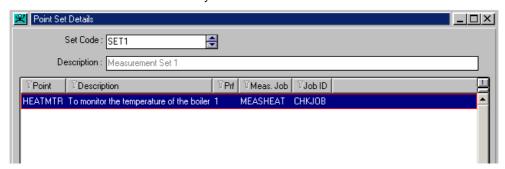
Description

This is the Equipment description, a read-only information automatically managed by the system once the equipment is specified.

Set List Box

Set Code	The Set identifier
Description	The Set description
Work Time	This is the time that must be allocated, per day, for the Work on the Set's measurement job
Work Unit	This is the measurement unit of the Working Time
Calendar Flag	This flag specifies whether the Working Time should be allocated based on Equipment Calendar ("Y") or not ("N")

The Point Set Details window looks by default as follows:



The purpose of this window is to display the list of the Measurement Points belonging to a Set defined for the current Equipment.

Double-clicking on ant of the displayed Point records will activate the Point Details window.

Detailed Field Descriptions:

Set

This is the identifier of the measurement set, for which measurement point information is displayed, a mandatory information. It must be among the measurement sets defined for the current equipment.

Description





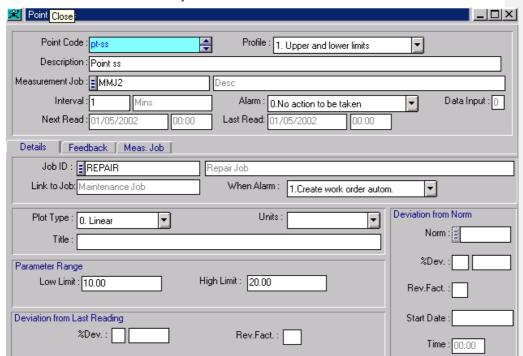
Keppel Sto	eria Consortium (KSC)	C756		
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 183		
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221		Formatted: Font: 10 pt, Font color:
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KSC Version: 2.12.12.1				Tormacour Folici S pe

This is the description of the set, a read-only information automatically managed by the system once the set is defined.

Point Set List Box

Point Code	The identifier of the Measurement Point
Description	The description of the Measurement Point
Profile	The identifier of the Measurement Point's Profile
Meas. Job	The identifier of the Measurement Job attached to the Measurement Point
Job	The identifier of the maintenance planned Job attached to the Measurement Point

The Point Details window looks by default as follows:



The purpose of this window is to provide details for a measurement point, and / or to add measurement points for equipment.

Detailed Field Descriptions:

Point Code





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 184

Date: 21 August 200221 August 200221 August

20023 June 2002

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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.12.0

This is the identifier of the measurement Point, to be added to the equipment, a mandatory information of maximum 6 alphanumeric characters. It must be unique among all Point identifiers defined for an equipment-set combination.

Profile

This is the profile identifier applied to analyse the measured feedback data, a mandatory information.

The analysis of measurement data can be of different types depending on the parameter being measured and the equipment on which measurement is done.

There are seven profile codes and they are defined as follows:

- Upper and Lower Limit Compare measured data against absolute upper and lower limits
- 2. Comp. Against a Norm Compare measured data against a set of data representing the ideal operations known as Norms Values.
- 3. Comp. Against Previous Value Compare measured data against its own previous values.
- 4. Combination of profile 1 and 2.
- 5. Combination of profile 1 and 3.
- 6. Combination of profile 2 and 3.
- 7. Combination of profile 1, 2 and 3.

Description

This is the Point description, an optional information of maximum 40 alphanumeric characters.

Measurement Job

This is the Measurement Job identifier, a mandatory information of maximum10 alphanumeric characters. It must exist in the directory of Measurement Jobs. A selector trigger button (or F2 key) linking to Measurement Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Measurement Job Details window for the current code.

Measurement Job description

This is the description of the Measurement Job, a read-only information automatically managed by the system once the measurement job is specified.

Interval

This is the interval of the measurement, an optional positive numeric information. COSWIN will propose the interval defined in the measurement job as the default.

Interval unit

This is the interval measurement Unit identifier, a read-only information automatically managed by the system.

Δlarm

This is the identifier for the measurement action to be taken once an alarm is set. This action must be correlated with the corresponding profile code. It is a mandatory information and must be one of the followings:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 185

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

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- 0. No action to be taken
- 1. Create an occurrence of the measurement job, to reconfirm the reading.
- 2. Revise the interval of measurement by a revision factor.

The action code '2' is not available for profile code '1 – Upper and Lower Limit'.

Data Input

This is the code for the mode of measurement feedback, a read-only information automatically managed by the system (its default value is 0).

Next Read Date

This is the date of next measurement job to be carried out, a read-only information automatically computed by the system, from the values of last reading date and interval.

Next Read Time

This is the specific time moment of next measurement job to be carried out, a read-only information automatically computed by the system, from the values of last reading date, time and interval.

Last Read Date

This is the date of the last measurement job, a read-only information automatically managed by the system.

Last Read Time

This is the specific time of the last measurement job, a read-only information automatically managed by the system.

Under the Detail tab:

Job

This is the identifier of the equipment Job, by means of which a maintenance actual operation (e.g. a Work Order) can be generated when a measurement alarm occurs, an optional information of maximum 10 alphanumeric characters. It must be an existing Equipment Jobs defined for the current equipment. The following supplementary restrictions are imposed to the specified Job:

- o The Job cannot have behaviour code '3' or '4'
- The Job cannot use a meter
- The Job's interval should match the interval of the measurement job
 A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Jobs Directory window for the current code.

Job description

This is the Job description, a read-only information automatically managed by the system once the job is specified.

Link to Job

This information specifies whether the Equipment Job is to be used for maintenance or measurement purposes. It is a read-only information automatically managed by the system.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 186

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.12.0

Reference:

Jobs with behaviour code '0' are used for maintenance purposes, while those with behaviour code '1' or '2' are used for measurement purposes.

This is the code for the action to be taken when an Alarm occurs, a mandatory information, if the Equipment Job has been specified; otherwise, it is an information inaccessible to the

The following are the valid codes and corresponding actions:

- 1. Automatically create a work order for the job linked to job guidelines to carry out maintenance.
- 2. Revise the interval of the job linked to job guidelines by a revision factor.
- 3. Manually create a work order for the job linked to job guidelines to carry out maintenance. This code is valid only when the job linked to job guidelines is a maintenance job (with behaviour code '0') and the action code on alarm for the measurement job is "1. Create job occurrence".

The action code should logically match the action code for measurement job when alarm occurs.

For example, if you enter the action code for measurement job as '2' (Reduce interval), then you should enter the action code for the job linked to job guidelines as '2' (Reduce interval) only.

Plot Type

This information specifies whether the analysis data should be plotted on a linear or logarithmic scale for the graphics display. It is a mandatory information and it must be one of the followings:

- 0. Linear Scale
- 1. Logarithmic Scale

Unit

This is the time limit for plotting the analysis data. It is an optional information; if specified, it must be one of the following:

- Minutes
- Hours
- Days
- 0 Weeks

Title

This is the title to be displayed on the graph in the analysis and graphics module for the measurement point, an optional information of maximum 40 alphanumeric characters.

Low Limit

This is the lowest permissible value for comparing with the measured Parameter data in analysis, an optional numeric information. This information is accessible to the user only if the Profile code is one of the following: 1, 4, 5 or 7.

High Limit





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 187 Date: 21 August 200221

August 200221 August 20023 June 2002

C756

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

This is the highest permissible value for comparing with the measured Parameter data in analysis, an optional numeric information. This information is accessible to the user only if the Profile code is one of the following: 1, 4, 5 or 7.

Sign of %Deviation from last read

This is the sign of the deviation from the last reading, either '+' or '-' explicitly if the deviation to be allowed is either in the positive or negative side. If not specified, it is assumed that deviation is allowed on both sides and the symbol '±' is prefixed to the value entered. This information is accessible to the user only if the Profile code is one of the following: 3, 5, 6 or

Value of %Deviation from last read

This is the absolute value of the percentage of the deviation allowed in the analysis of the measured parameter data against its immediate previous value to raise an alarm for that measurement point, an optional positive numeric information. The value can never exceed 999 on both sides.

The actual percentage value is computed from the sign (see above) and the absolute percentage value. This information is accessible to the user only if the Profile code is one of the following: 3, 5, 6 or 7.

Revision Factor (Rev. Fact.)

This information indicates the values by which the interval of the measurement job is to be reduced when an alarm occurs, a mandatory positive integer.

The values could be 1 to 9, by which it would mean a reduction in the Interval of Job by a factor of 1/2 to 1/9. This information is accessible to the user only if the Profile code is one of the following: 3, 5, 6 or 7.

Norm

This is the Norm identifier, a mandatory information. It must exist in the directory of the Measurement Norms. The norm code entered is valid for the point only if its time unit is the same as that of the specified measurement job, and the measurement unit is the same as that of the measurement set. This information is accessible to the user only if the Profile code is one of the following: 2, 4, 6 or 7.

A selector trigger button (or F2 key) linking to Measurement Norms Selector is available.

Right-mouse click (or F7 key) will activate the Measurement Norms Details window for the current code.

Norm %Deviation sign

This is the sign of the deviation of the Norm, either '+' or '-' explicitly if the deviation to be allowed is either in the positive or negative side. If not specified, it is assumed that deviation is allowed on both sides and the symbol '±' is prefixed to the value entered. This information is accessible to the user only if the Profile code is one of the following: 2, 4, 6 or

Norm %Deviation value

This is the absolute value of the percentage of the deviation allowed in the analysis of the measured parameter data against the standard norms data to raise an alarm for that measurement point, an optional positive numeric information. The value can never exceed 999 on both sides.





Keppel Ste	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 188
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

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The actual percentage value is computed from the sign (see above) and the absolute percentage value. This information is accessible to the user only if the Profile code is one of the following: 2, 4, 6 or 7.

Norm Revision Factor

This information indicates the values by which the interval of the measurement job is to be reduced when an alarm occurs, a mandatory positive integer. The values could be 1 to 9 by which it would mean a reduction in the Interval of Job by a factor of 1/2 to 1/9. This information is accessible to the user only if the Profile code is one of the following: 2, 4, 6 or 7.

Start Date

KSC Version: 2.12.12.12.0

This is the date on which a cycle of operation has started on this equipment (the date on which the Measurement Job commenced on this equipment), an optional information.

This is the time on which a cycle of operations of measurements started on this equipment (the time at which the Measurement Job was started at this point), an optional information.

Under the Feedback tab:



The purpose of this selector is to display the current's point feedback history, ascending ordered by date and time.

Feedback List Box

Date	The date of the measurement point's current reading	
Time	The time of the measurement point's current reading	
Reading	The value of the measurement point's current reading	
Alarm	This is the alarm flag (none, 0-no alarm, 1-expected alarm, 2-actual alarm)	
Error	This is the error flag indicating the any data errors encountered during the analysis process (none, 0-no error, 1-insufficient norm, 2-missing reading, 3-no start date given)	
Action	This is the action flag indicating the action to be taken when an alarm occurs (none, 0-no action, 1-reduce interval of the measurement job, 2-create a Job occurrence, 3-create Work Order)	

Under the Measurement Job tab:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 189

Date: 21 August 200221 August 200221 August 20023 June 2002

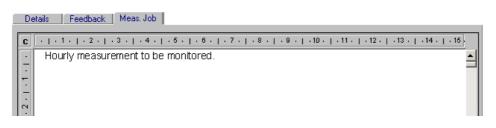
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KSC Version: <u>2.12.12.1</u>2.0

Reference:



The purpose of this window is to display the measurement job's detailed activities.

Job Description Layout

The interface consists of the drawing layout, where text and / or pictures, drawings, spreadsheets and any other form of OLE information is displayed.

6.5.1 To Add a New Measurement Point

Minimum information required to add a measurement point, is:

- The Measurement Point identifier
- o The Measurement Job identifier
- o The Profile identifier
- The two Alarm codes
- The Plot Type
- o The Last Reading Revision Factor (for Profile codes 3, 5, 6 or 7)
- o The Norm identifier (for Profile codes: 2, 4, 6 or 7)
- The Norm Revision Factor (for Profile codes: 2, 4, 6 or 7)

Click on the icon to launch the ADD window.

6.5.2 To Modify a Measurement Point

If an alarm has been launched for the current Measurement Point (i.e. the measurement point's alarm flag is active), the only information that can be modified, is:

- Point description
- Plot Type
- o The Unit (time limit for plotting)
- o The Title
- o The Start Date and Time (if the profile is based on a norm)
- o Otherwise, all the information can be modified, except:
- The Point identifier
- The Measurement Job description





| Reference: | T56/PMP/8029e/A756/PMP/8 | MAINTENANCE MANAGEMENT SYSTEM | Page: 190 | Date: 21 August 200224 | August 20023 June 2002 | RSC Version: 2.12.12.12.0

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- The Equipment Job description
- The Link To Job flag
- o The When Alarm flag, if an equipment Job was not specified

6.5.3 To Delete a Measurement Point

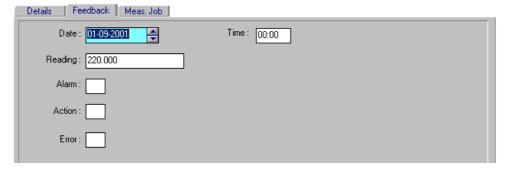
A measurement point cannot be deleted if there is feedback information for it (in which case only the feedback information can be deleted between two specified dates, by opening Feedback Delete window).

Click on the icon to delete the current measurement point.

6.5.4 Feedback Details

The purpose of this window is to provide the current's point feedback history details.

The Feedback Details window looks by default as follows:



Detailed Field Descriptions:

Date

This is the date of the measurement point's current reading, a mandatory information.

Time

This is the time of the measurement point's current reading, an optional information automatically proposed by COSWIN as 0h.

Reading

This is the value of the measurement point's current reading, an optional numeric information (positive or negative) automatically proposed by COSWIN as 0.

Alarm

This is the identifier of the Alarm set, a read-only information automatically managed by the system. It can be one of the following:

" " - No analysis done yet





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 191

Date: 21 August 200221 August 200221 August

20023 June 2002

Formatted: Font: 10 pt, Font color:

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Reference: 756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.1

"0" - No Alarm

"1" - Expected Alarm

"2" - Actual Alarm

This information indicates any errors encountered in data, during the analysis process, a read-only information automatically managed by the system. It can be one of the following:

- 0 No error encountered
- 1 Insufficient Norm
- 2 Missing Reading
- 3 No start date given

Action

This is the identifier of the Action to be taken when an alarm occurs, a read-only information automatically managed by the system. It can be one of the following:

- 0 No Action
- 1 Reduce Interval of the measurement job
- 2 Create a Job occurrence
- 3 Create Work Order for Maintenance

6.5.4.1 To Add a New Feedback

Minimum information required to add Feedback details, is:

The feedback date

6.5.4.2 To Modify a Feedback

If there is a current alarm for the point and it is caused by the displayed feedback data, then the feedback details cannot be modified. Otherwise, the information that can be modified is:

- The feedback date
- The feedback time
- The feedback reading value

6.5.4.3 To Delete a Feedback

A Feedback details record cannot be deleted if there is a current alarm for the point and the displayed feedback data have caused the alarm.

Under the Feedback tab, click on the icon and the following window will appears:



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 192

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.12.0

Reference:



This window will perform a batch deletion for the feedback readings specified between two limits:

Date Limits

These are the lower and upper limits of the dates between which the Feedback Details / Readings are to be deleted (optional information).

Time Limits

These are the lower and upper limits of the actual moments of the limit days between which the Feedback Details / Readings are to be deleted (optional information).

Specify the limits to delete and click on the to execute.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 193

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

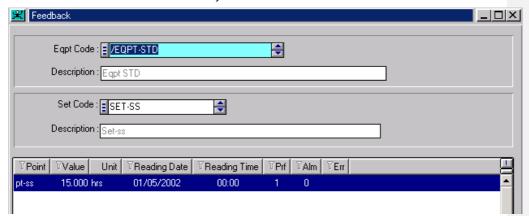
6.6 MEASUREMENT FEEDBACK

Feedback module accepts the readings of measurements carried out at a point for a parameter set of an equipment. The measurement feedback data is accepted as a measurement, point wise.

This module has the facility to verify the measurement feedback data against the specifications defined at this point and to raise any alarm for deviations. The user can scan all the equipment, all the sets linked to each equipment and the last measurement feedback readings of all measurement points defined for each equipment set combination.

Select from COSWIN menu *Maintenance / Condition Based Maint / Feedback* to launch the Measurement Feedback module.

The Feedback Selector window looks by default as follows:



Double click on any of the displayed readings will activate the Feedback Reading window.

Detailed Field Descriptions:

Eqpt Code

This is the identifier of the Equipment, whose set the measurement feedback reading information is displayed, a mandatory information. It must exist in the Equipment register or among the Groups of equipment.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Description

This is the Equipment description, a read-only information automatically managed by the system once the equipment is specified.

Set Code





Keppel Ste	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 194
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

This is the identifier of the Set, for which measurement feedback reading information is displayed, a mandatory information. It must be among the measurement sets defined for the equipment.

A selector trigger button (or F2 key) linking to Measurement Set Selector is available.

Right-mouse click (or F7 key) will activate the Measurement Set Details window for the current code.

Description

KSC Version: 2.12.12.1

This is the Set description identifier, a read-only information automatically managed by the system.

Feedback List Box

Point	This is the identifier of the measurement point.	
Profile	This is the identifier of the profile of the current measurement point.	
Reading Date	The date of the Measurement.	
Reading Time	The time of the Measurement.	
Value	The actual measurement reading value.	
Unit	This is the Set's unit of measurement.	
Alarm	This is the Alarm set (if any), for this measurement point. It can be one of the following:	
	" " - No analysis done yet	
	"0" - No Alarm	
	"1" - Expected Alarm	
	"2" - Actual Alarm	
Err	This column indicates abnormality in data, if analysis has been carried out. It can be one of the following:	
	0 - No error encountered	
	1 - Insufficient Norm	
	2 - Missing Reading	
	3 - No start date given	

The Add, Modify and Delete operations in this window are the same as that for the **Feedback Reading** window. Refers to the **Feedback Reading** section for details.

6.6.1 Feedback Readings

Feedback module accepts the readings of measurements carried out at a point for a parameter set of an equipment. The measurement feedback data is accepted as a measurement, point wise.





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KSC Version: 2.12.12.1

PMP/8029e/-

Page: 195

Date: 21 August 200221 August 200221 August 20023 June 2002

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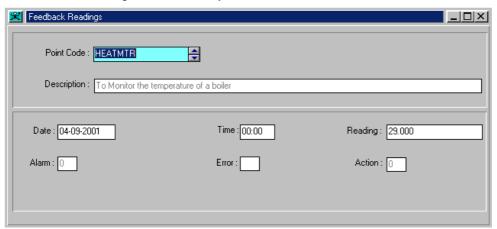
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The purpose of this window is to provide details on the feedback made against the readings of the measurements.

MAINTENANCE MANAGEMENT SYSTEM

COSWIN WORKCOSWIN WORK

The Feedback Readings window looks by default as follows:



Detailed Field Descriptions:

Point Code

This is the identifier of the measurement Point, a mandatory information. It must exist in the directory of Measurement Points.

Description

This is the description of the measurement Point, a read-only information automatically provided by the system once the measurement point is specified.

This is the date of the Measurement, a mandatory information.

This is the Time of the Measurement, an optional information.

Reading

This is the actual measurement Reading Value, an optional numeric information. COSWIN automatically proposes the 0 value.

Alarm

This is the Alarm set (if any), for this measurement point, a read-only information automatically managed by the system. It can be one of the following:

- " " No analysis done yet
- "0" No Alarm
- "1" Expected Alarm





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 196

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.12.0

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"2" - Actual Alarm

Error

Reference:

PMP/8029e/-

This information indicates abnormality in data, if analysis has been carried out, a read-only information automatically managed by the system. It can be one of the following:

- 0 No error encountered
- 1 Insufficient Norm
- 2 Missing Reading
- 3 No start date given

Action

This is the identifier of the Action to be done when alarm occurs, a read-only information automatically managed by the system. It can be one of the following:

- 0 No Action
- 1 Reduce Interval of the measurement job
- 2 Create a Job occurrence
- 3 Create Work Order for Maintenance

6.6.1.1 To Add a New Feedback Reading

Minimum information required to add Feedback Readings for a measurement point, is:

- o The Measurement Point identifier
- o The date of the Measurement

Click on the icon to launch the ADD window.

6.6.1.2 To Modify a Feedback Reading

If there is a current alarm for the point and the displayed feedback data have caused the alarm, the Feedback Reading details cannot be modified. Otherwise the only information that can be modified is:

- The date of the Measurement
- The time of the Measurement
- o The Measurement's actual reading value

6.6.1.3 To Delete a Feedback Reading

Click on the [3] icon and the following window will appears:



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 197

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

This window will perform a batch deletion for the feedback readings specified between two limits:

Date Limits

These are the lower and upper limits of the dates between which the Feedback Details / Readings are to be deleted (optional information).

Time Limits

These are the lower and upper limits of the actual moments of the limit days between which the Feedback Details / Readings are to be deleted (optional information).

Specify the limits to delete and click on the OK to execute.

In the batch deletion process, feedback data later than the last rectified date will not be deleted. If the rectified date does not exist but failure date exists, feedback data from the failure date will not be deleted. If both the rectified and failure date do not exist for the point all feedback data within the specified period will be deleted.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 198

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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6.7 MEASUREMENT DISPLAY

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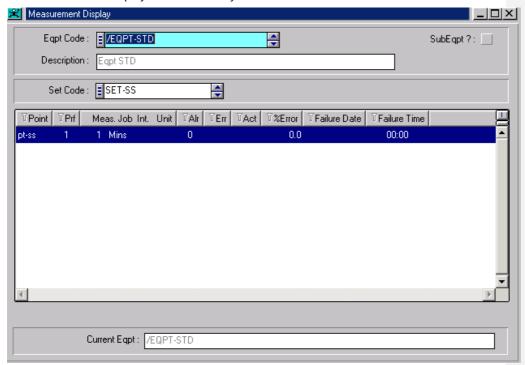
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The measured parameters on various equipments are obtained as feedback against various points in COSWIN Condition Based Maintenance system. This feedback data is analysed to detect possible cases of alarms indicating a deviation from the normal functioning of an equipment.

The *Measurement Display* module lists the different measurement points defined against an equipment-set combination with details indicating status of alarm situations. Option is provided to view the feedback details against a measurement point.

Select from COSWIN menu *Maintenance / Condition Based Maint / Measurement Display* to launch the Measurement Display module.

The Measurement Display window looks by default as follows:



Detailed Field Descriptions:

Eqpt Code





Keppel Ste	C756	
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 199
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

This is the identifier of the Equipment, for which measurement point information is displayed, a mandatory information. It must exist in the directory of Equipments. A selector trigger button (or F2 key) linking to Equipment Selector is available.

Sub-Equipment

This flag, if checked, indicates the displayed information concerns the equipment and all its sub-equipment instances belonging to its structure.

Description

KSC Version: 2.12.12.12.0

This is the description of the equipment, a read-only information automatically provided by the system once the equipment is specified.

Set Code

This is the identifier of the Set, for the current Equipment and for which measurement point information is displayed, a mandatory information. It must exist in the directory of Measurement Sets.

A selector trigger button (or F2 key) linking to Measurement Set Selector is available.

Right-mouse click (or F7 key) will activate the Measurement Set Details window for the current code.

Measurement List Box

Point	This is the identifier of the measurement point
Profile	This is the identifier of the profile of the current measurement point
Meas. Job Int. Unit	These are the time interval between two occurrences of the measurement job, and its measurement unit
Alarm	This is the status of the alarm for a measurement point (0-No Alarm, 1-Expected Alarm, 2-Actual Alarm)
Err	This is the type of error in data encountered during the analysis (0-No error encountered,1-Insufficient norm, 2-Missing reading, 3-No start date given)
%Error	This is the value of the actual deviation of a measurement in percentage
Failure Date	This is the date of the feedback data for which an alarm has occurred
Failure Time	This is the time of the feedback data which caused an alarm
Act	This is the code for the action taken when an alarm occurs (0-No Action, 1-Reduce Interval of the measurement job, 2-Create a Job occurrence, 3-Create Work Order for Maintenance)

Current Equipment

This is the identifier of the Equipment's current sub-equipment, if the measurement point current information concerns an equipment's sub-equipment; otherwise it is the description of the equipment. It is a read-only information automatically managed by the system.





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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 200

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

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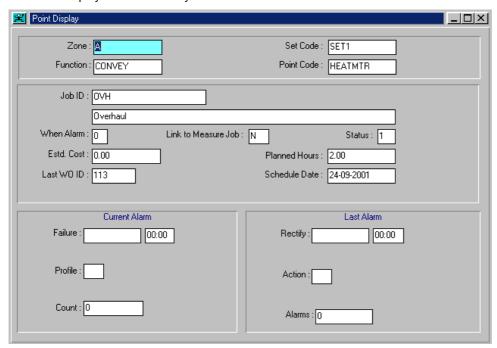
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6.7.1 To View Point Details

Click on the non-standard Point button to activate the Point Display module.

The purpose of this window is to provide Measurement Point details for a point defined against an equipment (or sub-equipment)-set combination. The information display are read-only.

The Point Display window looks by default as follows:



Detailed Field Descriptions:

Zone

This is the identifier of the Zone of the equipment for which the current measurement point is defined.

Right-mouse click (or F7 key) will activate the Zone Details window for the current code.

Set

This is the identifier of the Set defined against the current measurement point.

Right-mouse click (or F7 key) will activate the Measurement Set Details window for the current code.

Function





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 201

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

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Reference:

KSC Version: 2.12.12.12.0

This is the identifier of the Function of the equipment for which the current measurement point is defined.

Right-mouse click (or F7 key) will activate the Function Details window for the current code.

This is the identifier of the current Measurement Point.

Job ID

This is the identifier of the planned Job defined against the current measurement point.

Right-mouse click (or F7 key) will activate the Jobs Directory window for the current code.

Job description

This is the description of the planned Job defined against the current measurement point.

When Alarm

This is the code of the action to be taken when an alarm occurs for the current measurement point.

Link to Measure Job

This information specifies whether the planned job is a measurement job ("Y") or a maintenance job ("N"). It is a read-only information automatically managed by the system.

Status

This is the Status of the last Work Order created upon the planned maintenance Job, a read-only information automatically managed by the system (0-not started, 1-in progress, 2finished, 3-archivable).

Estimated Cost

This information represents the total cost (total of the labour cost and material cost) incurred against the work order.

Planned Hours

This information specifies the total number of resource hours that will be required to execute the job.

Last Work Order ID

This is the identifier of the last Work Order created upon the planned maintenance Job.

Right-mouse click (or F7 key) will activate the Work Order Details window for the current code.

Schedule Date

This is the measurement's last Work Order Schedule Date.

Failure date

This information represents the actual date on which the failure causing the alarm occurred (displayed only if the current measurement point has an alarm).

This information represents the actual time at which the failure causing the alarm occurred (displayed only if the current measurement point has an alarm).

Profile





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 202

Date: 21 August 200221 August 200221 August

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This information represents the current profile of the measurement point (displayed only if the current measurement point has an alarm).

Count

Reference:

This information represents the number of alarms that have occurred since the rectification of last alarm on the current measurement point (displayed only if the current measurement point has an alarm).

Rectify date

This information represents the date on which rectifying action was taken and the alarm was reset (displayed only if there was an alarm occurrence, previous to the current alarm, for the current measurement point).

Rectify time

This information represents the time at which rectifying action was taken and the alarm was reset (displayed only if there was an alarm occurrence, previous to the current alarm, for the current measurement point).

Action

This information represents the action that was taken on the previous alarm (displayed only if there was an alarm occurrence, previous to the current alarm, for the current measurement point).

Alarms

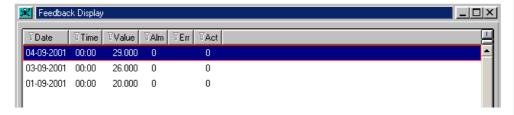
This information represents the number of previous alarm occurrences, until the current date, for the current measurement point (displayed only if there was an alarm occurrence, previous to the current alarm, for the current measurement point).

6.7.2 To View Feedback Display

Click on the non-standard Feedback button to activate the Feedback Display module.

The purpose of this window is to display the details of the feedback data defined against a measurement point.

The Feedback Display window looks by default as follows:



Detailed Field Descriptions:

Feedback List Box

Date	This is the date when the measurement was carried out.
Date	This is the date when the measurement was carried out.





Keppel Ste	eria Consortium (KSC)	C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 203
756/PMP/8029e/A 756/PMP/8	COSWIN WORKCOSWIN WORK	Date: 21 August 200221
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Time	This is the specific moment of the day when the measurement was carried out.
Value	The measured value.
Alarm Flag	This flag specifies the validity of the measured data (0-No alarm situation, 1-Reading carried on expected alarm situation., 2-Reading carried on actual alarm situation).
Err	This is the status of error situation caused during the analysis of a feedback data (0-No error,1-No equivalent norm present, 2-Equivalent norm obtained by interpolating, 3-Date and time of measurement lies outside the working range of the equipment).
Act	This is the action to be taken in case of an alarm situation against a reading (0-no action, 1-reduce interval of the measurement job, 2-create a Job occurrence, 3-create Work Order).



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 204

Date: 21 August 200221 August 200221 August 20023 June 2002

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6.8 MEASUREMENT BATCH ANALYSIS

Using the *BATCH ANAL YSIS* module the user can analyse the data for various combinations of equipment-sets and measurement points for different periods. The analysis process essentially validates the measurement data to check for alarms. An alarm is a condition when data representing a measured parameter on an equipment do not satisfy the criteria which indicate a normal smooth operation of the equipment. The analysis option also forecasts a likely moment of equipment failure based on the trend of a set of data.

The users have the provision to specify criteria for carrying out analysis on his data.

The Analysis process consists of two phases:

- Validation on feedback to detect alarms.
- o Action taken on an equipment in case of an alarm situation

The above two processes depend on the specifications defined in the measurement point module.

Phase I - Detection of Alarm situations

Every measurement point is represented by a particular profile code. COSWIN provides 7 profiles for analysis. They are as follows:

- 1. Upper and Lower Limit Compare measured data against absolute upper and lower limits.
- 2. Compare Against a Norm Compare measured data against a set of data representing the ideal operations known as Norms Values.
- 3. Compare Against Previous Value Compare measured data against its own previous values.
- 4. Combination of profile 1 and 2.
- 5. Combination of profile 1 and 3.
- 6. Combination of profile 2 and 3.
- 7. Combination of profile 1, 2 and 3.

Profile Code 1 - Upper and Lower Limit

For this profile, the validation is carried out by comparing each instance of feedback data against a set of absolute upper and lower limits. If an instance of feedback data violates the defined parameter, then a flag is updated against the feedback data, indicating the occurrence of an alarm.

This is done only if the measurement point does not currently have an alarm triggered. The date and time of the feedback data are updated as the failure date and time.

In the case when a current alarm is set against a measurement point then this occurrence is set as the current alarm if the date and time of this feedback data is earlier than the existing failure date and time.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 205

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

No instance of feedback data is considered to be set as a current alarm, if it is earlier than the date and time at which the equipment was last rectified. This rectified date can be specified in the Alarms Summary module.

Profile Code 2 - Compare Against a Norm

When a measurement point is defined with a profile code 2, the feedback data is compared against an ideal set of data called the norm. The norm represents the ideal data for an equipment. The norm data can be defined or modified through the Measurement Norms Directory module and can be defined against an equipment in the Measurement Point module. Each occurrence of feedback is compared against its corresponding value in the set of data representing the norms.

As in the case of profile code 1, the individual feedback occurrence is marked for the alarm condition. In this profile, the individual feedback data is also marked for errors if a corresponding norm data does not exist. In case of inconsistent feedback data, the intermediate values, i.e., the instance at which the measurement should actually have been carried out, are obtained by interpolating the existing data for the analysis period. Some graphics interpolation techniques are employed here to obtain near accurate values.

In the case of this profile, feedback data not falling in the daily operating period of an equipment is not considered for analysis. The daily operation period of an equipment is represented by the Start Time information of the measurement point and the Working Time/Day information defined in the **Measurement Set** module.

All rules for setting a current alarm are same as in the earlier profile code.

Profile Code 3 - Compare Against Previous Value

When measurement points are defined with this profile, each instance of the measured data is compared against the previous instance of data. If the deviation is greater than the permissible deviation defined by you, then an alarm is raised against this feedback. All rules for setting current alarm discussed for earlier profile codes are applicable here. As in the case of profile code 2, the missing readings are obtained by interpolation and then compared against the previous reading.

When measurement point is defined with a combination of more than one profile, the analysis is carried out successively for each profile taken.

Computation of Expected Date of Failure: A set of data though not violating the range of permissible values can indicate the likely occurrence of an alarm in the future. Thus, what is called a trend of a set of data can be obtained, which can be extrapolated to compute the likely moment of failure.

This process is done by the analysis option when a measurement point with profile code 1 does not have an alarm condition in the specified analysis period.

Phase II - Action on Alarms

There are two different types of jobs against a Measurement Point.





Keppel Steria Consortium (KSC)		C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 206
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.12.0

Page. 200
Date: 21 August 200221
August 200221 August 20023 June 2002

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- A measurement job defined in Measurement Job Directory. Definition of this job is compulsory.
- A job linked to job guidelines module that can either be a Measurement job or a Maintenance job. This job is optional.

Measurement Job of Measurement Directory

You can define three types of actions for this job in the Measurement Point module:

Increase Frequency: The frequency of the measurement job is increased by reducing the interval. The interval is reduced by a factor specified by you in the Measurement Point module. This action will be reflected the next time you take a Plan Job Report in the Measurement Point module.

Create a Job Occurrence: When the action is set to this case, an occurrence of the Measurement Job is scheduled for the day on which the alarm is noticed.

Do Nothing: No action is taken on the Measurement Job in this case.

Job linked to the Job Guidelines and behaving as a Measurement Job

Two actions are possible on this job in case of an alarm situation:

Increase Frequency: As in the case of the Measurement Job the frequency of this job can also be increased in case of an alarm. The interval of the job is reduced by the specified factor.

Create a Work Order. In this case, a work order is generated against this job, thus scheduling an occurrence of the job. The Work Order is scheduled for the date on which the alarm was noticed.

Job linked to the Job Guidelines and behaving as a Maintenance Job

This job can only be a breakdown job with a behaviour code 0. The only action possible on this job is a creation of a Work Order:

Create Work Order automatically: In this case, the Work Order against the job is created when an alarm condition is raised. The work order is scheduled for the date and time at which the alarm was noticed.

Create Work Order manually: This case arises when the measurement job has the action of **1. Create Job Occurrence**. Such a situation indicates that a measurement job needs to be done to confirm the earlier readings taken and then a Work Order has to be created for the maintenance job if the new reading has an alarm condition too. Once the analysis process encounters such a situation, it takes the necessary action to enable creation of the Work Order manually through the **Alarms Summary** module.





C756 Page: 207

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

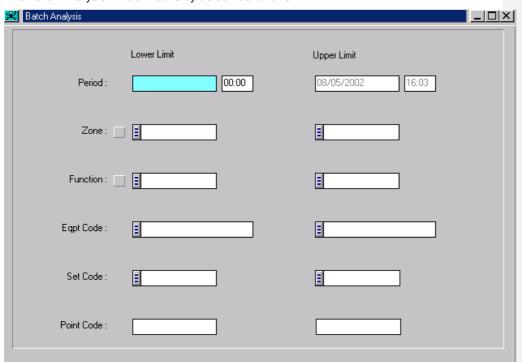
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KSC Version: <u>2.12.12.1</u>2.0

The Batch Analysis window looks by default as follows:



Detailed Field Descriptions:

Analysis Period

Enter the date and time lower and upper limits of the period to be analysed.

Zone

Enter the lower and upper limits of the identifiers of the equipment Zone, for which CBM analysis is to be performed (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Zone Selector is available.

Function

Enter the lower and upper limits of the identifiers of the equipment Function, for which CBM analysis is to be performed (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Function Selector is available.

Eqpt Code

Enter the lower and upper limits of the identifiers of the Equipment instances, for which CBM analysis is to be performed (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Set Code





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 208

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Enter the lower and upper limits of the identifiers of the Measurement Sets, for which CBM analysis is to be performed (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Measurement Set Selector is available.

Point

Reference:

Enter the lower and upper limits of the identifiers of the Points for which CBM analysis is to be performed (up to 6 alphanumeric characters).

Execute Click on the non-standard button to perform the Batch Analysis process.

As a result, the following information is displayed:

- Total number of equipment scanned
- Number of sets scanned
- Number of points scanned
- Number of points selected for analysis
- Total number of measurement points having an alarm condition



Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

Page: 209
Date: 21 August 200221
August 200221 August 20023 June 2002

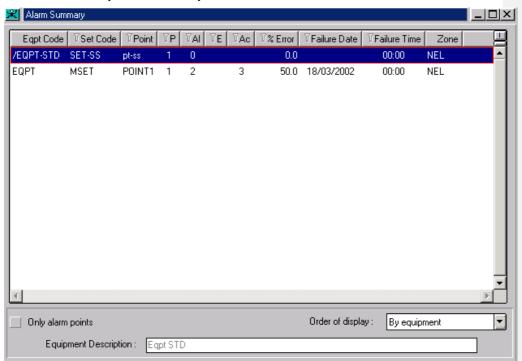
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6.9 ALARMS SUMMARY

Alarm Summary module lists the various measurement points at which an alarm is raised, displays the details of the alarm and lets you take an action or reset the alarm indicating a normal operation of the equipment. Optionally you can view all the measurement points irrespective of the status of the alarm.

The Alarm Summary window looks by default as follows:



Double click on any of the displayed points will activate the **Point Details** window on the selected point. Refers to the section on **Measurement Display** for screen and field details on **Point Details**.

Detailed Field Descriptions:

Alarm List Box

Eqpt Code	This is the identifier of the equipment against whose set the current measurement point is being defined.	
Set	This is the identifier of the set defined against the above	





Keppel Ste	eria Consortium (KSC)	C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 210
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

Date: 21 August 200221
August 200221 August
20023 June 2002
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	equipment for which this point is being defined.
Point	This is the identifier of the measurement point.
Profile	This is the profile code of the measurement point.
Alarm	This is the status of the alarm for the current measurement point (0-No Alarm, 1-Expected Alarm, 2-Actual Alarm).
Error	This is the type of error in the current point. (0-No error,1-No equivalent norm present, 2-Equivalent norm obtained by interpolating, 3-Date and time of measurement lies outside the working range of the equipment)
% Error	This is the error in the current alarm.
Failure Date	This is the actual date on which the failure/violation occurred.
Failure Time	This is the actual time at which the failure/violation occurred.
Action Code	This is the code for action to be taken when an alarm occurs. There could be either no action or one of the followings: 0 No Action, 1 Reduce Interval, 2 Create a Job, 3 Create Work Order.
Zone	This is the identifier of the Zone of the equipment against whose set the current measurement point is being defined.

Only alarm points

KSC Version: 2.12.12.12.0

This flag, if checked, displays only measurement points with alarm. Otherwise, all the measurement points will be displayed.

Order of display

This information specifies the sorting order used when displaying the measurement point information. It must be one of the followings:

- o Ordered by equipment (ascending lexically order of equipment identifier)
- o Ordered by alarm (descending order of alarm identifier)

Equipment description

This is the description of the equipment of the currently selected measurement point, a read-only information automatically managed by the system.

6.9.1 To Specify a Rectification Date for a Measurement Point

Click on the non-standard Rect. Date button to specify a rectification date and time for a measurement point. This rectification date is an indication that the measurement point has suffered a change and been rectified.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 211

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:



6.9.2 To Reset Alarm Occurred on a Measurement Point

Click on the non-standard Rst. Alarm button to reset the alarm for a measurement point having an alarm by specifying a rectification date on it.



6.9.3 To Create Manual Work Order for Alarm

This button performs a Work Order creation against the selected measurement point's launched alarm, if the following conditions are met simultaneously:

- o The selected measurement point must have launched an alarm
- o There is not a Work Order already created for the selected measurement point alarm
- The measurement point's action to be done, when an alarm occurs, must have been of type "3-Manually create a work order for the job linked to job guidelines to carry out maintenance".





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 212

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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KSC Version: <u>2.12.12.1</u>2.0

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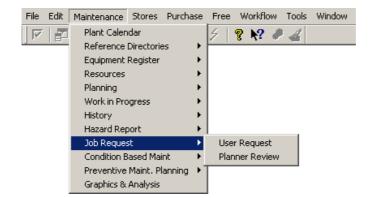
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7. JOB REQUESTS

Reference:

PMP/8029e/-

Job requests serve as a link between the requestor departments (e.g.: production department) and the maintenance department. A demand is created in the **User Request** module, the maintenance department provider is informed of the request and decides the necessary operation in the **Planner Review** module. The requestor can also view the progress of the follow-up work from the request, number and status of the WO from the **User Request** module.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 213

Date: 21 August 200221 August 200221 August

<u>August 200221 August</u> <u>2002</u>3 June 2002

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KSC Version: 2.12.12.12.0

Reference:

7.1 CREATE USER REQUEST

Path: Maintenance / Job requests/ User request

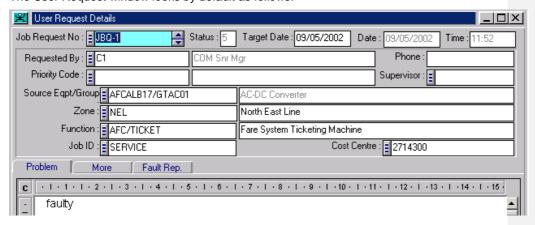
This module specifies the details for a request for job to be done on equipment, like details of the equipment on which the job has to be carried out, the job ID, the target date and date of sanction of the request.

Also, this module also performs the following activities:

- Raise new job requests. User can provide a problem report to help the planner decide on the maintenance job to be done.
- View the requests raised and their status.
- Modify an already raised request, if no action has been taken against the request.
- Delete a request if no action has been taken on it and if it becomes irrelevant.

Select from COSWIN menu *Maintenance / Job Request / User Request* to launch the User Request module.

The User Request window looks by default as follows:



Detailed Field Descriptions:

Job Request No

This is a 10-character, mandatory data field. It is the request reference number for the job. Press the TAB key and system will automatically assign a unique Job Request No with prefix defined in COSWIN Configuration's Maintenance / Job Request.

A selector trigger button (or F2 key) linking to User Request Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 214

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8

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029e/A756/PMP/8029e/A756/ PMP/8029e/-KSC Version: 2.12.12.12.0

Status

This is the request's status, a read-only information automatically managed by the system. The possible values are:

- 1 Request Raised
- 2 Planner Reviewed
- 3 Ready to Release
- 4 To be Released to Plan
- 5 To be Released to Work In Progress
- 6 Closed by Planner
- 7 Request closed due to equipment under warranty

Date

This is the date on which the request was made, a read-only information automatically managed by the system.

Time

This is the time at which the request was made, a read-only information automatically managed by the system.

Request By

This is a 6-character, mandatory data field. It is the identifier of the person requesting the job.

A selector trigger button (or F2 key) linking to Request By Selector is available.

Right-mouse click (or F7 key) will activate the Request By Details window for the current code.

Requester Name

This is the name of the requester, a read-only information automatically provided by the system once the Request By is specified.

Phone

This is the phone number of the person who requested the job, an optional information of maximum 15 alphanumeric characters.

Source Equipment/Group

This is the equipment / group for which the request was raised, an optional information. The entered value must exist in the directory of Equipments.

The Cost Centre, Zone and Function of the selected equipment will be extracted and proposed as default values for the corresponding fields in the window.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Equipment/Group Description

This is the equipment description, a read-only information automatically provided by the system once the equipment is specified.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 215

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.1 Job ID

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Reference:

PMP/8029e/-

This is the job that is to be performed against the equipment in response to the request. It is an optional information, of maximum 16 alphanumeric characters. A job identifier can be entered only if the equipment is specified and the job ID must have already been defined against the equipment in the database.

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Job Guidelines Details window for the current code.

Target Date

This is the target date by which you need the request to be completed, an optional information.

Supervisor

This is the supervisor in charge of the request, an optional information of maximum 6 alphanumeric characters.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Right-mouse click (or F7 key) will activate the Supervisor Details window for the current code.

Cost Centre

This is the cost centre to which all costs for this request will be charged to, an optional information of maximum 16 alphanumeric characters. It must exist in the directory of Cost

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Maintenance Cost Centre Details window for the current code.

Zone

This is the zone in which the job is requested, an optional information of maximum 10 alphanumeric characters. It must exist in the directory of Zones.

A selector trigger button (or F2 key) linking to Zones Selector is available.

Right-mouse click (or F7 key) will activate the Zone Details window for the current code.

Function

This is the function for which the job is requested, an optional information of maximum 10 alphanumeric characters. It must exist in the directory of Functions.

A selector trigger button (or F2 key) linking to Function Selector is available.

Right-mouse click (or F7 key) will activate the Function Details window for the current code.

Priority

This is the priority code of work order, an optional information. The provided value must exist in the directory of Priorities of Work.

A selector trigger button (or F2 key) linking to Priority Selector is available.

Right-mouse click (or F7 key) will activate the Priority Details window for the current code.

Priority Description



Keppel Steria Consortium (KSC) MAINTENANCE MANAGEMENT SYSTEM Reference:

COSWIN WORKCOSWIN WORK

Page: 216 Date: 21 August 200221

August 200221 August 20023 June 2002

C756

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This is the description of the priority code of work order, a read-only information automatically provided by the system once the priority is specified.

Under the Problem Tab:

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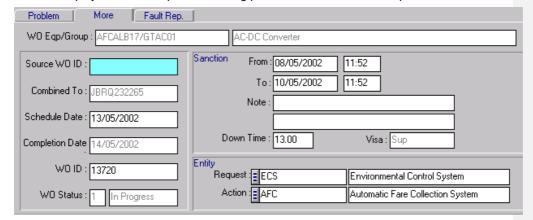
PMP/8029e/-

This field captures the detailed description on the problem encountered on the machine.

The interface consists of the drawing layout, where the user can write text and/or append pictures, drawings, spreadsheets and any other form of OLE information.

MORE TAB:

This tab displays the follow-up actions being performed on the current request.



Source Wo ID

This is the work order that creates the current user request. It is a read-only information automatically managed by the system.

Combined To

This field displays the User Request ID that the current request has been combined into. This is a read-only information automatically managed by the system. It is to be updated by planner in Planner Review module.

Schedule Date

This is a read-only information automatically managed by the system. It is to be updated by planner in Planner Review module.

Completion Date

This is a read-only information automatically managed by the system. It is to be updated by planner in Planner Review module.

Work Order ID

This is a read-only information automatically managed by the system. It is to be updated by planner in Planner Review module.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 217

Date: 21 August 200221 August 200221 August 20023 June 2002

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Work Order Status

Reference:

This is a read-only information automatically managed by the system. It is to be updated by planner in Planner Review module.

From Date

This is the start date from which the request was sanctioned. It is an optional field.

From Time

This is the start time from which the request was sanctioned. It is an optional field.

To Date

This is the end date up to which the request is sanctioned. It is an optional field.

To Time

This is the end time up to which the request is sanctioned. It is an optional field.

Note 1

This is the first field for any general remarks / notes about the job request. It is an optional information of maximum 30 alphanumeric characters.

Note 2

This is the second field for any general remarks / notes about the job request. It is an optional information of maximum 30 alphanumeric characters.

Down Time

Specify the expected down time if the equipment for jobs being executed is off-line. Down time is always specified in hours. This is an optional numeric data.

Visa

This is the name of the person who authorises the job request. This is a read-only information automatically managed by the system. It is to be updated by planner in Planner Review module.

Request Authority

This is the authority entity from which the user request is raised. It is an optional information.

Request Authority Description

This is the description of the request authority entity. It is a read-only information automatically managed by system.

Action Authority

This is the authority entity that performs the necessary action on the user request. It is an optional information.

Action Authority Description

This is the description of the action authority entity. It is a read-only information automatically managed by system.

FAULT REPAIR TAB:

This tab allows user to attach fault reports to the request.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 218

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

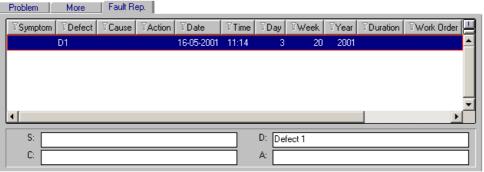
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Reference:



Double click on any of the displayed fault reports will activate the Fault Report Details window for the current defect.

Fault Report List Box

dant report =iot	
Symptom	This is the Defect Symptom identifier.
Defect	This is the Defect identifier.
Cause	This is the Defect Cause identifier.
Action	This is the Defect Action identifier.
Date	This is the date of the Defect incidence.
Time	This is the time of the Defect incidence.
Day	This is the day of the Defect incidence date.
Week	This is the week of the Defect incidence date.
Year	This is the year of the Defect incidence date.
Duration	This is the duration while the equipment was stopped, because of the defect.
WO Ref.	This is the Work Order against which the event is recorded.
Total Cost	This is the total cost associated with the work order.
Job Request	This is the Job Request ID of the fault report.

S:

This is the Symptom description for the current Defect, a read-only information automatically managed by the system.

D:

This is the Defect description for the current Defect, a read-only information automatically managed by the system.

C:





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 219 Date: 21 August 200221 August 200221 August

20023 June 2002

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This is the Cause description for the current Defect, a read-only information automatically managed by the system.

This is the Action description for the current Defect, a read-only information automatically managed by the system.

7.1.1 To Add a New User Request

Minimum information required to add a user request:

- Request identifier
- Requester ID

For a requestor who does not know the equipment code of the faulty machine and or any associated job guidelines, he just requires to do the following:

- 1. Tab through the Job Request field and COSWIN will automatically issue a request code using the prefix defined in COSWIN Configuration.
- 2. Specify the requestor name at the Required By field.
- 3. He may enter the equipment code. If he has specified a wrong code, the planner can still rectify it during Planner Review stage.
- 4. Describe the problem of the machine at the Problem field (OLE field).
- 5. Save the request.

Click on the icon to launch the ADD window.

7.1.2 To Modify an User Request

A request can be modified only if its status is less than 4, i.e. the request has not been released to Plan / WIP or closed by the planner yet.

7.1.3 To Delete an User Request

There is no restriction in deleting a job request.

The details corresponding to the request reference number are deleted along with its associated problem report.

Click on the icon to delete the current User Request.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 220

Date: 21 August 200221 August 200221 August 20023 June 2002

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7.1.4 Fault Report Details

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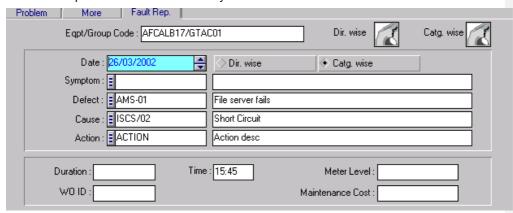
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KSC Version: 2.12.12.1

Reference:

PMP/8029e/-

The Fault Report Details window looks by default as follows:



Detailed Field Descriptions:

Eqpt/Group Code

This is the job request equipment or equipment group, read-only information automatically managed by the system.

Date

This is the fault reporting or last update date, mandatory information.

Dir. wise/Catg. wise radio button (SDCA Selection Criteria)

This radio-button specifies the selection pool for Symptoms / Defects / Causes / Actions.

Category wise select from Defects Selector

Directory wise select from Codes Directory

Symptom

This is the fault symptom, optional information and must exist in the directory of symptom codes. The symptom can be selected from the selector by choosing the SDCA Selection Criteria radio button.

Symptom description

This is the fault's symptom description, read-only information automatically managed by the system.

Defect

This is the fault, optional information and must exist in the directory of defect codes. The defect can be selected from the given selector using the SDCA Selection Criteria radio button.

Defect description

This is the fault's description, read-only information automatically managed by the system.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 221

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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KSC Version: 2.12.12.1

756/PMP/8029e/A756/PMP/8

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Reference:

PMP/8029e/-

This is the fault cause, optional information and must exist in the directory of cause codes. The cause can be selected from the selector using the SDCA Selection Criteria radio button.

Cause description

This is the fault's cause description, read-only information automatically managed by the system.

Action

This is the fault remedy action, optional information and must exist in the directory of action codes. The remedy action can be selected from the given selector using the SDCA Selection Criteria radio button.

Action description

This is the fault's action description, read-only information automatically managed by the system.

Duration

This is the duration while the equipment was stopped, because of the defect. Report Time

This is the fault reporting time or last update date, mandatory information.

Meter Level

This is the meter level reading when work on the faulty equipment, read-only information automatically managed by the system.

This is the Work Order number that work on the faulty equipment, read-only information automatically managed by the system.

Maintenance Cost

This is the cost of the maintaining the faulty equipment, read-only information automatically managed by the system.

Click on the icon to add a new fault report. Once added, fault report cannot be deleted.

Note: A fault report can only be added to a request, provided the faulty equipment has been specified in the request.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 222

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 Formatted: Font: 10 pt, Font color:

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Reference: 756/PMP/8029e/A756/PMP/8

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7.2 REVIEW JOB REQUEST BY PLANNER

Path: Maintenance / Job Request / Planner Review

Planner reviews the User Requests through the Planner Review module and decides the appropriate actions for each request.

In Planner Review module, provision is available for maintenance personnel to review the user requests, assign jobs to a request or a combination of requests, and release the job either to plan or directly to work in progress.

The following operations can be performed in the module:

- o Review User Requests
- Combine Requests / Raise jobs for the request
- o Release jobs to Plan / Work in Progress
- o Batch delete of Job Requests which have already been released or closed by the planner

Select from COSWIN menu Maintenance / Job Request / Planner Review to launch the Planner Review module.

The Planner Review window looks by default as follows:





C756 Page: 223

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

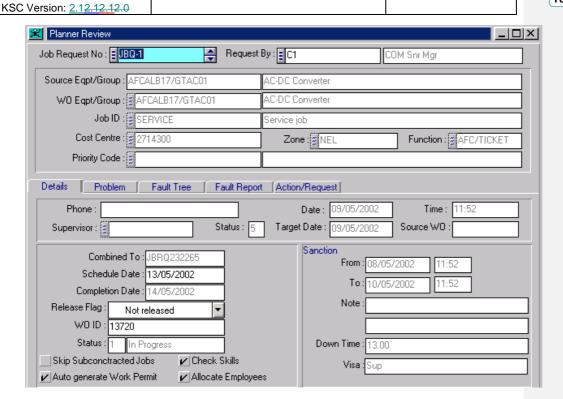
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Job Request No

This is the reference number of the user request. It must exist in the directory of User Requests.

A selector trigger button (or F2 key) linking to User Request Selector is available.

Request By

This is a 6-character, mandatory data field. It is the identifier of the person requesting the job.

A selector trigger button (or F2 key) linking to Request By Selector is available.

Right-mouse click (or F7 key) will activate the Request By Details window for the current code.

Requester Name

This is the entire name of the requester, a read-only information automatically managed by the system.

Source Eqpt/Group

This is the identifier of the (source) equipment originally specified in the User Request. It is a read-only information that cannot be modified by the planner.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 224

Date: 21 August 200221 August 200221 August 20023 June 2002

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Source Eqpt/Group Description

This is the source equipment description, a read-only information automatically managed by the system.

WO Egpt/Group

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KSC Version: 2.12.12.1

Reference:

PMP/8029e/-

This is the identifier of the actual equipment to be serviced and maintained per the user request raised. It is a mandatory information, and must exist in the directory of Equipment.

If a source equipment has already been specified in the User Request, that equipment will be proposed by default for this field and planner can change it if it is not the correct code for the faulty equipment.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

WO Eqpt/Group Description

This is the actual equipment description, a read-only information automatically provided by the system once the actual equipment is specified.

This is the identifier of the maintenance job to be performed on the equipment. The entered value in this field may:

- a) Be an existing equipment job for the actual equipment of the job request
- b) Exist in the Job directory and be connected to some other equipment
- c) Exist in the Job directory but not connected to any equipment
- d) Not exist in the Jobs directory

In case 'a', you can enter or select a job identifier.

In case of 'b', the job ID will be defined to the equipment specified in the request per planner confirmation.

In cases 'c' and 'd', the equipment job can be created with stock and manpower details added.

In cases 'b', 'c' and 'd' press the F7 key to link to the Job Guidelines module, where you can operate with jobs.

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Jobs Guidelines Details window for the current code.

Job Description

This is the job description, a read-only information automatically provided by the system once the Job ID is specified.

Cost Centre

This is the cost centre to which all costs for this request will be apportioned, a mandatory information and must exist in the directory of Cost Centres.

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Cost Centre Details window for the current code.

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MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 225

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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PMP/8029e/-KSC Version: 2.12.12.1

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Reference:

This is the zone in which the job is requested, a mandatory information and it must exist in the directory of Zones.

A selector trigger button (or F2 key) linking to Zone Selector is available.

Right-mouse click (or F7 key) will activate the Zone Details window for the current code.

Function

This is the function for which the job is requested, a mandatory information and it must exist in the directory of Functions.

A selector trigger button (or F2 key) linking to Function Selector is available.

Right-mouse click (or F7 key) will activate the Function Details window for the current code.

Priority

This is the priority of work defined for the equipment job. It will be assigned by default to the work orders released against this equipment job. It is an optional information. The provided value must exist in the directory of Priority of Work.

A selector trigger button (or F2 key) linking to Priority Selector is available.

Right-mouse click (or F7 key) will activate the Priority Details window for the current code.

Priority Description

This is the description of the priority of work, a read-only information automatically managed by the system.

Under the Details Tab:

Phone

This is the phone number of the person who requested the job, an optional information of maximum 15 alphanumeric characters.

This is the date on which the request is made.

Time

This is the time at which the request was made.

Supervisor

This is the supervisor for the request, an optional information and must exist in the directory of Supervisors.

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Jobs Directory window for the current code.

Status

This is the request's status, a read-only information automatically managed by the system.

The status identifies the various processing stages of the request:

1- User Request - when the request is first raised, with minimum details, i.e. without specifying the equipment code and job ID, it is assigned this status.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 226

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

2 - Planner Reviewed Request – When a request of status 1 has been reviewed by the planner, it is assigned this status.

3 - Request Ready for Release – a request is provided this status when the following data is available:

Job Request No

Request By

Target Date

Equipment

Job ID

- 4 Released to Plan a request is assigned this status when it is released to planning
- 5 Released to WIP a request is assigned this status when it is released to WIP
- 6 Closed by Planner the planner has closed this request.
- 7 Request closed due to equipment under warranty The request is closed when warranty action is being performed on the faulty equipment of the request.

Target Date

This is the target date by which the request needs to be completed.

Source WO

This is the work order from which the request is created. It is a read-only information automatically managed by the system.

Combined To

This is the reference of the job request to which the current one is combined into. This is a read-only information automatically managed by the system.

Schedule Date

This is the planned date of the job if the request is to be released into planning or the start date for the WO if to be released into work in progress. This date cannot be less than current date.

Completion Date

This is the finish date for the work order if released to work in progress. It is a read-only information automatically managed by the system.

Release Flag

While reviewing the job request, you should enter the release option and the schedule date for the request. Four choices are available for the release option:

Not Released (default option at job request creation)

- 0 Release in Plan (the request will be released in plan, with a plan number greater than 30001)
- 1 Release in WO (the request will be released directly in work order)
- 2 Closed by Planner (in this case, the request will be deleted from the requests list)

WOID





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 227

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

This is the number of the Work Order in which the Job Request was released. It is a readonly information automatically managed by the system.

Status

Reference:

This is the released Work Order's status. It is a read-only information automatically managed by the system.

Skip Subcontracted Jobs

This flag, when checked, will disable the release of work orders whose jobs are sub-contracted. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

Check Skills

This flag, when checked, automatically checks the skills of the employees allocated to released work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

For each allocated employee the system will check (on request) the employee skills against the equipment job skill requirements and flags them as REJECTED when none of its skills matches any of the equipment job skill requirements.

Auto generate Work Permit

This flag, when checked, automatically generate work permit request if required during release of work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Permit / General Parameters.

Allocate Employees

This flag, when checked, automatically allocates employees to the released work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters. The system allocates employees to the work order based on:

- o The resource requirements of the planned job
- The preferred employee of the equipment job
- o The available roster list
- o The planned shifts of the planned job released in Work in Progress.

The system allocates the job's preferred employees to the work order whenever possible (employees are available in the shift and not overloaded).

From Date

The date from which the request was sanctioned can be entered here.

From Time

The time from which the request was sanctioned can be entered here.

As on Date

The date up to which the request is sanctioned can be entered here.

As on Time

The time up to which the request is sanctioned can be entered here.

Note 1





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KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 228
Date: 21 August 200221
August 200221 August

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August 200221 Augu 20023 June 2002

Here, you can enter any general remarks / notes about the job request. It is an optional information of maximum 30 alphanumeric characters.

Note 2

Here, you can enter any general remarks / notes about the job request. It is an optional information of maximum 30 alphanumeric characters.

Down Time

Specify the expected down time if the equipment for jobs being executed is off-line. Down time is always specified in hours. It is an optional numeric information.

Visa

This is the name of the person who authorises the job request, an optional information of maximum 10 alphanumeric characters.

Under Problem Report Tab:

The details in this field are captured during creation of User Request.

It is the detailed description on the problem encountered on the machine.

The details stated in this tab will be copied to work order's feedback note when a work order is released against the job request.



The interface consists of the drawing layout, which can contents write text and / or pictures, drawings, spreadsheets and any other form of OLE information.

Under Fault Tree Tab:

This tab displays the tree of defect for the job request's faulty equipment. The information displayed is read-only and cannot be modified.



The tree presents the hierarchy of equipment defects respecting the following categorization levels in order: Symptom / Defect / Cause / Repair Action.

Under Fault Report Tab:

This tab displays the fault report specified during User Request creation. The information displayed is read-only and cannot be modified.

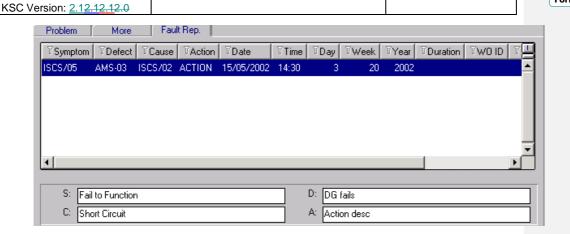




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August 200221 August 20023 June 2002

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Under Action/Request Tab:

Reference:

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Requesting Entity

This is the company entity that is requesting the job, an optional information. The provided value of authority must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.

Right-mouse click (or F7 key) will activate the Company Entities Details window for the current code.

Requesting Entity Description

This is the description of the Requesting Entity, a read-only information automatically provided by the system once the Requesting Entity is specified.

Action Entity

This is the company entity that is supposed to perform the work, an optional information. The provided value of authority must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.

Right-mouse click (or F7 key) will activate the Company Entities Details window for the current code.

Action Entity Description

This is the description of the Action Entity, a read-only information automatically provided by the system once the Action Entity is specified.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 230

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

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Transfer Reason

This is the reason of job request transfer to other company entity.

The interface consists of the drawing layout, where the user can write text and/or append pictures, drawings, spreadsheets and any other form of OLE information.

7.2.1 To Review/Modify the User Request

The planner can check, correct and update the information for the user request. The following data can be modified:

- Equipment code if the code was not defined the planner can enter any equipment code.
 If an equipment code was already assigned during User Request phase, then the planner can only change it to an equipment within the same structure
- Requested job
- Cost centre, zone and function
- Requestor identifier and name
- o Request date and phone
- o Requesting and actioning entity
- o Job supervisor, target date, schedule date, shutdown time, notes and problems
- Release options

The release options are the following:

- Not released
- o 0 Released in plan (a plan will be created)
- 1 Released in Work in Progress (a work order will be generated directly for the user request)
- o 2- Closed by planner (the request is no longer modifiable)

7.2.2 To Assign a Job to the User Request

Below are the various scenarios when assigning job code to a User Request:

The Job ID Already Exists for the Current Equipment

Click on the Job ID selector (or press F2 Key) to select from the list of existing jobs already defined for the current equipment.

The Job ID Exists for another Equipment

Type the required job ld then system will offer to connect the job code to the current equipment.

The Job ID does not Exist and You Want to Create It





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK Page: 231
Date: 21 August 200221
August 200221 August 20023 June 2002

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- Type the required job code then TAB, system offers to create the equipment job guideline in the database
- If the answer is Yes, the Job Guideline screen opens:
- Fill in the fields as a creation. Once validated return to the Job Request window, this job is selected automatically:

The Job Id does not Exist And You do not Want To Create One

- Click on the non-standard Create Job button
- COSWIN opens a Job Guideline screen for the equipment, fill in the remaining fields except the job ID. Upon saving a new job with job ID = UNPLxxxxxxx is created. RELEASE JOB REQUEST

After the request is reviewed, the request may either be released into **a plan** or directly into **Work in Progress**.

7.2.3 Releasing Job Requests into Plan

- a) To release the Job Requests into plan, all these requests must have their Release Flag set to '0 Release in Plan' and saved.
- b) From the Planner Review module, click on the non-standard Release button and the Release Job Request window appears:



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 232

Date: 21 August 200221 August 200221 August 20023 June 2002

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🙎 Release Ranges _ | _ | × Planner ID : Planned Shifts : [PICK LIST] Function: Egpt Code Supervisor: Job Request No: Request By: Priority Code: 3/19/2002 3/20/2002 Schedule Date Action Entity: 固 Request Entity:

- c) Select the Request to release by setting the upper and lower limits from the pick list on the required fields. Refers to the section below for detailed descriptions on the release option fields.
- d) Click on the Non-standard Release button again and a plan will be created with plan number starting from 30000 series number. You can check the Plan Summary module for the newly created plan jobs.
- e) The Job request will then progress to status '4 Released to Plan'.

7.2.4 Releasing Job Request into Work In Progress

- a) To release the Job Requests into work in progress, all these requests must have their Release Flag set to '1 - Release Work Order'.
- b) Upon saving the job request, a window will appear prompting whether to release the request into work order immediately:







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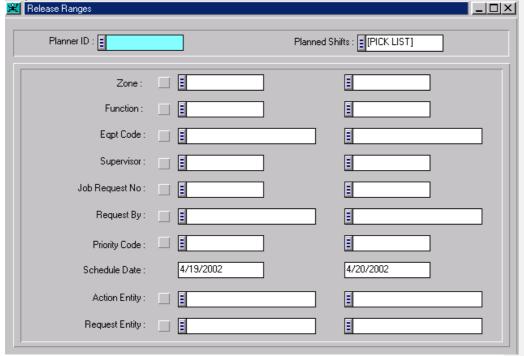
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- c) If YES is selected, a Work Order will be created immediately.
- d) If NO is selected, Work Order can still be created from the request at later stage using the non-standard Release button in the Planner Review module.
- e) When a work order is released from a job request, the request will progress to status '5 Released to WIP' and updated with the ID of the released Work Order.

7.2.5 Detailed Field Descriptions for Release Ranges

When the non-standard button of the Planner Review module is clicked, the following window is activated, prompting user for the criteria for selecting the requests to release either into plan or WIP depending on the Release Flag set in the individual Request.



Planner ID

Indicates the abbreviated name of the planner. This is a mandatory information of maximum 7 alphanumeric characters.

A selector trigger button (or F2 key) linking to Planner ID Selector is available.

Planned Shift

This field allows the planner to specify the work order planned shifts from a pick-list of shifts. A selector trigger button (or F2 key) linking to Shifts Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 234

Date: 21 August 200221 August 200221 August 20023 June 2002

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PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

Zone

Enter the lower and upper limits of the Zone identifier (up to 7 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired zones from the available Zones pick list.

A selector trigger button (or F2 key) linking to Zone Selector is available.

Function

Enter the lower and upper limits of the Function identifier (up to 11 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired functions from the available Functions pick list.

A selector trigger button (or F2 key) linking to Function Selector is available.

Eqpt Code

Enter the lower and upper limits of the Equipment identifier (up to 17 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired equipment from the available Equipment pick list.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Supervisor

Enter the lower and upper limits of the Supervisor identifier (up to 7 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired supervisors from the available Supervisors pick list.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Job Request No

Enter the lower and upper limits of the Request References (up to 11 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired requests from the available User Requests pick list.

A selector trigger button (or F2 key) linking to Job Request Selector is available.

Request By

Enter the lower and upper limits of the Requester identifier (up to 10 alphanumeric characters) if the pick list checkbox is unmarked. Otherwise, select the desired requester from the available Request By pick list.

A selector trigger button (or F2 key) linking to Request By Selector is available.

Priority

Enter lower and upper limits of the Priority Code of the Request, if the pick list checkbox is unmarked. Otherwise, select the desired requester from the available Priority pick list.

A selector trigger button (or F2 key) linking to Priority Selector is available.

Schedule Date

Enter lower and upper limits of the Schedule Dates between which you want to release the requests.

Action Entity

Enter the lower and upper limits of the action authority, if the pick list checkbox is unmarked. Otherwise, select the desired authorities from the available Authority pick list.





C756

Reference: 756/PMP/8029e/A756/PMP/8

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 235
Date: 21 August 200221
August 200221 August

August 200221 August 20023 June 2002

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A selector trigger button (or F2 key) linking to Company Entity Selector is available.

Requesting Entity

Enter the lower and upper limits of the requesting authority, if the pick list checkbox is unmarked. Otherwise, select the desired authorities from the available Authority pick list.

A selector trigger button (or F2 key) linking to Company Entity Selector is available.

After specifying the release criteria, click on the non-standard Release button and the selected requests will be released accordingly.

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7.2.6 Paging from Job Requests

MMS allows the relevant staff to be paged for a particular maintenance action.

In COSWIN, paging is linked to the Job Request Module. The Maintenance planner shall modify the Job Request in Planner Review Module. This will allow the Maintenance Planner to amend the Problem Report, the Job Request priority or the Actioning Authority when necessary.

Step 1: Planner makes the necessary changes on the Job Request regarding the WO equipment if necessary and the Job in the Planner Review module.

<u>Step 2: Planner shall ensure that there is the Actioning authority defined in the Action/Request By tab of the Job Request and the Pager number and Message for the action authority is defined in the Company Hierarchy module. The pager number and pager message shall be defined in the Commercial telex field and the Technical telex field of the Contacts tab in the Company Entity screen respectively.</u>

<u>Step 3: The Planner will have to change the Priority Code to a pre-defined code of "PAGING".</u>

Once the Job Request is saved, paging is triggered.

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756 Page: 236

Date: 21 August 200221 August 200221 August 20023 June 2002

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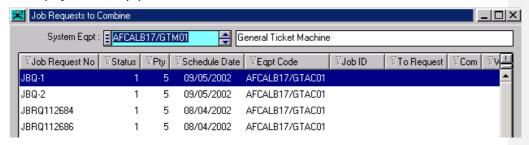
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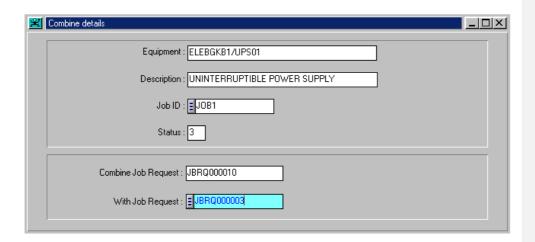
7.3 COMBINE JOB REQUESTS

COSWIN provides an option to combine job requests from the equipment in the same structure into a job request on the system equipment of this structure.

- a) From the Planner Review module, select the Job request to combine.
- b) Click on the non-standard combine button and COSWIN will display a list of job requests existing for all equipment in the same structure. The System equipment code is displayed in the equipment code field:



c) Double-clicking on the job request to combine and the following detail window appears:



- d) The list of existing job requests related to the system equipment of the current request is available in the selector on the With Job Request field.
- e) Select the job request with which you want to combine the current job request, and save.
- f) COSWIN displays on the combined request, the request number with which it is combined.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 237

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

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Note:

- You cannot combine a request to a request that has already combined with others.
- When a Job request is combined, you can no longer modify the Release Flag field. You can release a plan or a WO on a request to which it is combined. The WO number will nevertheless be displayed in the combined job request.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 238

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

7.4 CANCEL/CLOSE JOB REQUESTS

While the job request is at status 1, the requestor can still delete the request. But once the request's status is greater than 2, it can only be closed by the planner.

To cancel/close a request, set the Release Flag of the request to '2 – Closed by Planner'. Upon saving the record, the status of the request becomes '6 – Closed by Planner'.



C756

Reference: 756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 239 Date: 21 August 200221 August 200221 August 20023 June 2002

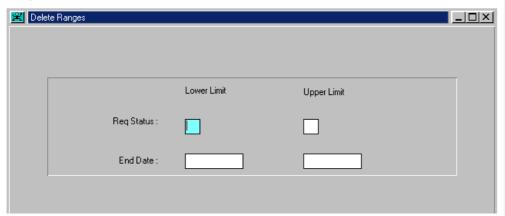
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7.5 DELETE JOB REQUESTS

It is possible to delete obsolete job requests from archived WO or cancelled job requests.

From the Planner Review module, click on the non-standard button and the Delete Range prompt will appear:



Request Status refers to the status of the requests to be deleted.

End Date refers to the target date of the requests to be deleted.

Define the upper and lower limits of selection criteria. Only Job requests at status 4, 5, 6 can be deleted.

button again to confirm deletion and COSWIN will Click on the non-standard display the number of job requests deleted.

NOTE: Job requests linked to work orders are deleted during the archive process.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 240

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color: Auto

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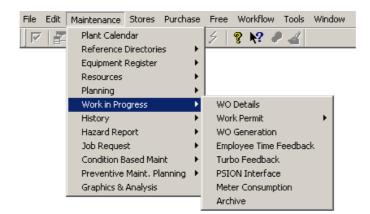
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8. WORK IN PROGRESS

The purpose of Work in Progress is to provide the user with the facilities to:

- Define work orders and to provide different kind of feedback on work orders (employee time, resource, stock and facility usage and defects)
- Manage the several types of feedback against the work order (employee, material, defects, meters)
- Manage follow-up request or work order
- Manage feedback on consumption on the meters used in maintenance activities
- □ Provide Turbo Feedback for WO requiring minimum feedback
- Generate and print work orders
- Archive the completed work orders



Work Order is a written specification to perform a maintenance job on specific equipment. The ultimate purpose of a work order is to operate upon an equipment in a way or another (mainly repairing).

Work orders in the system have been categorised as follows

- Planned work orders created by planning and release modules. These are work orders that have been planned in advance and therefore do not cause disruption to production activities.
- Unplanned work orders created in Work Order Details Module for breakdown/corrective maintenance.
- Other work order performed for project maintenance jobs.





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Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 241
756/PMP/8029e/A 756/PMP/8	COSWIN WORKCOSWIN WORK	Date: 21 August 200224

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August 200221 August 20023 June 2002

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Each work order has a life cycle described by its status. There are four stages of broadly defined transitions through which the status of a work order progresses:

- 0 NOT STARTED: the work order under this status has been generated but the work has not started.
- 1 IN PROGRESS: the work to accomplish the job has been initiated against the work order but has not been completed.
- 2 FINISHED but awaiting feedback: the work is completed against the work order but feedback to the system is not yet over.
- 3 ARCHIVABLE: the work has completed and necessary feedback to the system has been provided. The work order is now ready to be posted to the History module.

Work order status can change status in any of the following ways:

FROM Current Status	TO New Status
Not Started	In Progress
	Finished
	Archivable
In Progress	Finished
	Archivable
Finished	Archivable
Archivable	Finished



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 242

Date: 21 August 200221 August 200221 August

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8.1 PROVIDE FEEDBACK ON WORK ORDER

Feedback is the action of entering data resulting from the work performed to accomplish the tasks of the work order. Accurate and timely feedback helps in evolving an efficient preventive maintenance system. Work order feedback module is used to provide feedback in detail on each work order.

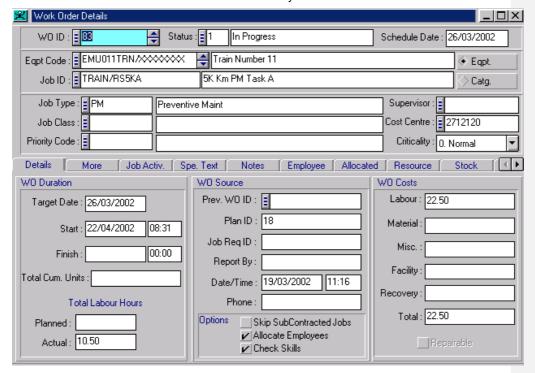
Feedback cannot be given for a work order in 0 – NOT STARTED status. In order to give feedback to the work order, the status must be changed to 1 – IN PROGRESS, 2 – FINISHED. Also, most feedback cannot be given if the work order is already in 3 – ARCHIVABLE state. However, the work order status can be changed from 3 – ARCHIVABLE to 2 - FINISHED and then give any remaining feedback.

It is possible to restrict users to provide feedback to certain status of work order using COSWIN Configuration program.

Most of the fields can be modified irrespective of the state the work order is progressed to. Though, the equipment, job description and job type can only be modified for work orders made on unplanned jobs.

Launch the Work Order Details & Feedback module from COSWIN menu *Maintenance / Work In Progress / Work Order Details*.

The Work Order Details & Feedback window looks by default as follows:







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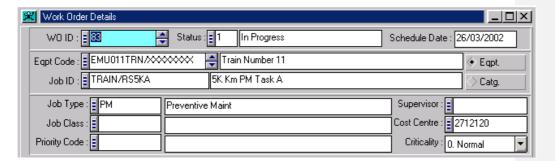
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At the **WO ID** field, enter the work order number to be updated with feedback and press Tab key. The details of the specified work order will be displayed in the window. You may select a work order from the Work Order Selector by using the selector button (or pressing F2 key).

Below describes in details the fields that can be updated during feedback.

8.1.1 Specifying the Main Parameters of the Work Order



Depending on the work order's status, the following fields are editable:

	Not Started	In Progress	Finished	Archivable
Status	√	\checkmark	√	√
Schedule Date	√	\checkmark	√	√
Eqpt Code		√ *	√ *	
Job ID		√ *	√ *	
Job Description		√ *	√ *	
Job Type		√	√	
Job Class	\checkmark	\checkmark	√	
Priority Code		\checkmark	√	
Supervisor	√	√	√	
Cost Centre	√	$\sqrt{}$	√	
Criticality	√	√	√	

^{*} Only modifiable for unplanned job.

Detailed Field Descriptions:

Status

This is the work order *user status*, a mandatory information of 1 alphanumeric character. It must be one of the already defined Work Order User Statuses.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 244

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

A selector trigger button (or F2 key) linking to Status List Selector is available.

Status description

This is the work order user status description, a read-only information automatically managed by the system once the WO Status is specified.

Schedule date

This is the date when the work against the work order is to begin, a mandatory information.

The schedule date should not be earlier than one year from the work order creation or feedback date.

Eqpt Code

This is the equipment/group identifier for which the work order is generated, a mandatory information. It must exist in the directory of Equipment or Groups of equipment. This field can only be modified if the work order is of Unplanned type.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Eqpt description

This is the description of the equipment selected for the work order, a read-only information automatically provided by the system once the equipment identifier is assigned.

Job ID

This is the work order job identifier, i.e. the code of the maintenance job that is to be accomplished. It is a mandatory information of maximum 16 alphanumeric characters. This field can only be modified if the work order is of Unplanned type.

A selector trigger button (or F2 key) linking to either Equipment Job Selector or Category Job Selector (depending on the Job Selection Criteria radio button) is available.

Right-mouse click (or F7 key) will activate the Job Guidelines Details window for the current code.

Job description

This is the job description, a mandatory information of maximum 40 alphanumeric characters. This field is accessible and can be modified if the work order is of Unplanned.

Eqp. / Catg. Radio button (Job selection criteria)

This radio button represents the source of job selection (see paragraph Job). The available options are:

Equipment wise	This selection specifies that work order's job will be selected from the current equipment's list of jobs.
Category wise	This selection specifies that work order's job will be selected from the current equipment's category list of jobs.

Type

This is the job type, a mandatory information of maximum 6 alphanumeric characters. It must exist in the directory of Job Types. Job Types are defined through COSWIN Configuration's Maintenance / Job / Type.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 245

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.12.0

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If the work order's job is an existing equipment job in the database, then the system will automatically propose job type of the equipment job as default during the work order

A selector trigger button (or F2 key) linking to Job Types Selector is available.

Type description

This is the description of the job type, a read-only information, automatically provided by the system once the Job Type is assigned.

Supervisor

This is the work order's supervisor identifier, i.e., the person who supervises the work order's execution. It is an optional information of maximum 6 alphanumeric characters. It must exist the directory of Supervisors.

If the work order's job is an existing equipment job, then system will propose the supervisor defined in the equipment job as the default value.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Right-mouse click (or F7 key) will activate the Supervisor Details window for the current code.

Class

This is the job class identifier, an optional information of maximum 6 alphanumeric characters.

If the work order's job is an existing equipment job, then system will propose the job class defined in the equipment job as the default value.

If a work order progresses to 3-Archivable status without Job Class being assign, then system will propose the Default Job Class established in COSWIN Configuration as the job class of the work order.

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Class description

This is the job class description, a read-only information, automatically provided by the system once the Job Class is assigned.

Cost centre

This is the work order's cost centre identifier, which specifies the costing point to which the cost incurred on the work order should be posted. It is a mandatory information. It must exist in the directory of Cost Centres.

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Right-mouse click (or F7 key) will activate the Maintenance Cost Centre Details window for the current code.

Priority Code

This is the Priority of Work assigned to the work order, an optional information. It must exist in the directory of Priority of Work.

Priority description

This is the priority description, a read-only information, automatically managed by the system.





Keppel Steria Consortium (KSC)

Reference:
756/PMP/8029e/A756/PMP/8

MAINTENANCE MANAGEMENT SYSTEM
COSWIN WORKCOSWIN WORK
Date: 21 August 20

029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Page: 246
Date: 21 August 200221
August 200221 August
20023 June 2002

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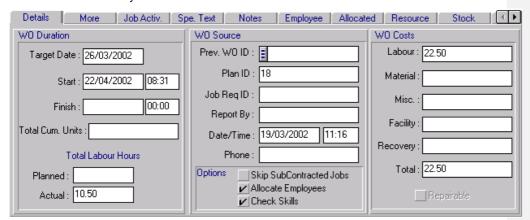
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Criticality

This indicates the criticality of the work order. The valid options are: 0-Normal, 1-Major and 3-Critical. System will propose 1-Normal as the default value.

8.1.2 Specifying the Time Duration, Source and CostOthers in the Details tab

The Details tab looks by default as follows:



Depending on the work order's status, the following fields are editable:

	Not Started	In Progress	Finished	Archivable
Target date		√	√	
Start date and time		√	\checkmark	
Finished date and time			\checkmark	
Total Planned Hours		√	\checkmark	
Previous WO ID		√	√	\checkmark
Report By	√	√	\checkmark	√
Report Date and time	√	√	√	\checkmark
Phone		√	√	\checkmark
Labour Cost				
(only for WO with contract jobs)		√	√	√
Material Cost	_	√	√	√





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Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 247
756/PMP/8029e/A 756/PMP/8	COSWIN WORKCOSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
KSC Version: <u>2.12.12.1</u> 2.0		

(only for WO with contract jobs)			
Miscellaneous Cost	\checkmark	√	√
Recovery Cost	√	√	√

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 248

Date: 21 August 200221 August 200221 August

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PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

Reference:

Detailed Field Descriptions:

Target date

This is the date when the work order is supposed to be finished. It is a mandatory information. If not specified, system will propose current date.

Start date

This represents the date when the work against the work order starts. It is an optional information.

If employee time usage feedback has been provided, the default start date proposed by the system is internally computed as the earliest date on which the employee worked against the work order.

If employee time usage feedback has not been provided, but the work order's finish date was already provided, then the start date is computed from the work order finish date and the job duration with the following formula:

Start date = Finish date - job duration + 1

Otherwise, the current date is proposed as work order's start date.

The work order start date cannot be later than current date.

Start time

This represents the time when the work against the work order started. It is an optional information.

If employee time usage feedback has been provided, the default start time is internally computed by the system from the time inputs, otherwise the system proposes the current time as default work order's start time.

Finish date

This represents the date when the work against the work order was completed.

It is only accessible as well as mandatory for work order with system status equal 2 – Finished or 3 – Archivable.

If employee time usage feedback has been provided, the default finish date proposed by the system is internally computed as the latest date on which the employee worked against the work order.

If employee time usage feedback has not been provided, but the work order start date has already been provided, then the finish date is computed from the start date and the job duration with the following formula:

Finish date = Start date + job duration - 1

If the both the work order's start date and finished date are not specified (for work orders progress from status '0 – Not Started' to '2 – Finished' or '3 – Archivable' directly), then the current date is proposed as default finish date and the work order's start date is computed based on the finish date and the job duration.

Finish time

This represents the time when the work against the work order was finished.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 249

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

If employee time usage feedback has been provided, the default finish time is internally computed by the system from the time inputs, otherwise the following rules apply to the default value of work order's finish time proposed by the system:

- The work order's finish time is the same as work order's start time when the start date is different from the finish date.
- The work order's finish time is one hour later than the work order's start time when the start date and the finish date are the same.
- In case the start time is not specified, the start time is considered the current time.

Total cumulative units (T. Units)

This represents the cumulative units of the job's meter at the end of work order's execution. The total cumulative units is an read-only information, automatically provided by the system when the work order is progressed to archival status.

The Total cumulative units (TCU) is computed using the following formula:

new TCU = old TCU + (LMRV - PMRV)

where: LMRV is the last meter reading value

PMRV is the previous before last meter reading value

Total planned hours

This information represents the number of resource hours required to accomplish the work order job (from the resources requirement specified for the work order). It is an optional numeric information

If the work order's job is an existing equipment job, then system will propose the total labour hour of the equipment job as the default value for this information.

Total actual hours

This information represents the actual number of worked hours against the work order. It is an information not accessible to the user, automatically derived by the system from the employee time usage feedback.

Previous WO ID

This is the previous work order identifier, an optional positive numeric integer value. The entered value must exist in the directory of Work Orders. It specifies the identifier of the work order from which the current work order is created.

This field will be automatically updated by system in those work orders created using the non-standard button operation **Create Work Order**. Like in the case of repairable management, a second work order is created from the first work order to move the faulty unit to the repair yard.

In all the other cases, the previous work order has no relevant significance, although it can be assigned when work order is at $1 - \ln Progress$ or 2 - Finished status.

A selector trigger button (or F2 key) linking to Work Order Selector is available.

Plan No

This is the plan number under which the work order was released. It is a read-only information automatically updated by the system for work orders generated from Release Jobs Module.

Job Request ID





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 250

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

This is the Job Request number under which the work order was released. It is read-only information automatically updated by the system for work orders generated in Planner Review Module.

Report by

This is the name of the person who requested for the maintenance job to be carried out. It is an optional information of maximum 13 alphanumeric characters. If the work order is generated from the Planner Review module, then the system automatically assigns the person who raised the job request as the work order's reporting person.

Reporting date

This is the date when the work order is first requested, a mandatory information. If the work order is generated from the Planner Review module, then the system automatically propose the job request's date as work order's reporting date. Otherwise, the system will propose the current date as work order's reporting date.

Reporting time

This is the time when the work order is first requested, an optional information.

If the work order is generated from the Planner Review module, then the system automatically propose the job request's time as work order's reporting time. Otherwise, the system will propose the current time as work order's reporting date.

Reporting phone

This is the phone number from where the work order was reported (see paragraph Report by). It is an optional information of maximum 13 alphanumeric characters.

If the work order is generated from the Planner Review module, then the system automatically propose the job request's phone as work order's reporting phone.

Skip SubContracted Jobs

When checked, system will disable the release of work orders whose jobs are sub-contracted. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

Allocate Employees

When checked, system will automatically allocate employees to the work orders. The default status of this flag is established in COSWIN Configuration's Maintenance / Work Order / Parameters. The system allocates employees to the work order based on:

- o The resource requirements of the planned job
- The preferred employee of the equipment job
- The available roster list
- o The planned shifts of the planned job released in Work in Progress.

The system allocates the job's preferred employees to the work order whenever possible (employees are available in the shift and not overloaded).

Check Skills

When checked, system will automatically check the skills of the employees allocated against the equipment job skill requirements. The system flags the allocated employee as REJECTED when none of its skills does not match any of the equipment job skill requirements.



MAINTENANCE MANAGEMENT SYSTEM | P

Page: 251

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A COSWIN WORK COSWIN WORK

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

Reference:

The default status of the check box is established in COSWIN Configuration's Maintenance / Work Order / Parameters.

Actual labour costs (Lab.)

This is the total manpower cost (labour cost) incurred against the work order. It is a positive numeric value automatically computed by the system, on the basis of employee time usage feedback.

The information is accessible to the user only in case of work orders having contract jobs with third parties. For those work orders the user will be allowed to specify the cost of contracted labour hours.

The formula used to compute the value is:

$$CCLH + \sum_E (FR_E + \sum_A (H_A * R_A))$$

Where:

- CCLH is the cost of contracted labour hours
- FR is the fixed rate of the employee E
- H is the number of hours worked by employee E to perform the activity A
- R is the rate under which employee E performed the activity A

Actual material costs (Mat.)

This is the total material cost incurred against the work order. It is a positive numeric value automatically computed by the system, on the basis of stock usage feedback and the issues against work order.

The information is accessible to the user only in case of work orders having contract jobs with third parties. For those work orders, the user will be allowed to specify the cost of materials provided by the sub-contractor.

The formula used to compute the value is:

$$CM + \sum_{S} (QTY_{S} * UP_{S})$$

Where:

- CM is the cost of materials provided by the sub-contractor
- QTY is the quantity used (issued) of the spare S
- UP is the unit price of the spare S

Actual miscellaneous costs (Misc.)

This information specifies the miscellaneous costs that may have been incurred against the work order. It is an optional positive numeric value. It can be accessed only for work orders with system status not equal to '0 – Not Started'.

Actual recovery costs

This information specifies any other costs as adjustments (recovery costs) that may have been incurred against the work order. It is an optional positive numeric value. It can be accessed only for work orders with system status not equal to '0 – Not Started'.



C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 252 Date: 21 August 200221

August 200221 August 20023 June 2002

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For example, if a replaced component has some value as it can be repaired and reused, then certain costs of the component can be specified as recovery.

Actual total costs

This information specifies the total work order costs. It is a read-only information, automatically computed by the system, using the following formula:

Total costs = Labour costs + Material costs + Miscellaneous costs - Recovery costs

Repairable

This information specifies whether the work order is a repairable one, i.e. the work order is made against a repairable equipment using the non-standard button operation Create Work Order. It is not accessible to the user.

8.1.3 Currency Conversion

Currency conversion may be performed any of the cost fields as follows:

- 1. Select the desired cost field.
- located on the standard toolbar. This shall display the Select the gadget icon, Currency Conversion window.



- 3. Select the currency for the From and To field and the converted figure shall be displayed automatically on the Result field.
- 1.4. Select **OK** to exit.

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Keppel Steria Consortium (KSC) C756

MAINTENANCE MANAGEMENT SYSTEM Page: 253

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

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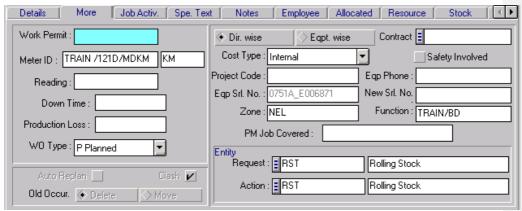
COSWIN WORKCOSWIN WORK

Page: 253
Date: 21 August 200221
August 200221 August
20023 June 2002

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8.1.38.1.4 Specifying the Down Time and Others in the More tab

The More tab looks by default as follows:



Depending on the work order's status, the following fields are editable:

	Not Started	In Progress	Finished	Archival
Meter reading				
(if the work order job is meter based)				√
Down time	√	√	√	
Production Loss	√	√	√	
WO Type		√	√	\checkmark
Auto Re-plan				\checkmark
Clash (if Auto Re-plan is selected)				√
Old Occurrences (if Auto Re-plan is selected)				√
Contract No	√	√	√	
Cost Type	√	√	√	
Safety Involved checkbox	√	√		
Project Code	√	√	√	
Equipment Phone	√	√	√	
Actioning Entity	√	√	√	\checkmark

Detailed Field Descriptions:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 254

Date: 21 August 200221 August 200221 August

20023 June 2002

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Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

Work Permit

This is the identifier of the work permit raised under the work order. It is a read-only information, automatically provided by the system when work permit is created for the work

order (using the Create Work Permit operation of the non-standard button

Meter ID

This is the identifier of meter specified in the work order's job. It is a read-only information, automatically managed by the system.

Reading

This is the meter reading observed at the time of work order completion. This information can be accessed and is mandatory only for work orders made for meter based jobs. It is an optional numeric information.

When the work order progresses to '3 - Archivable' status, the system computes and proposes a default value for the reading based on the meter's forecast. However, user is still able to update it if actual value differs from the computed one.

This is the measurement unit for the meter reading a read-only information automatically provided by the system.

Down time (D/Time)

This is the time interval (in hours) when the equipment was down because of the work against the work order. It is an optional numeric value, accessible to the user when the work order is at '1 - In Progress', '2 - Finished' or '3 - Archivable' status. When work order is first created, system will propose the Down Time specified in the respective Job Guideline.

Production loss (P/Loss)

This is the number of hours the production has stopped because of the work against this work order. This is an optional numeric information, accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Work order type

This is the work order's type, i.e. the way the work order was created. It is a mandatory information. The available types for the work orders are:

Planned - when they are created in Release Jobs Module and work order's job is not under a maintenance project

Unplanned - when they are created in Work Order Details Module or in Planner Review Module

Other - when they are created in Release Jobs Module and work order's job is under a maintenance project

Auto Replan

This information specifies whether the planned jobs, created in Plan Jobs Module for the work order's job, should be updated or not based on the work order execution.

The option to automatically re-plan the existing planned jobs of the job is available only for work orders created for jobs having the behaviour '1' or '2'.





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 255

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.12.0

The information is accessible to the user when the work order is progressed to '3 -Archivable' status.

Reference:

This information specifies whether planned jobs generated by other planners should be taken into account or not during the synchronisation of planned jobs with the current work order. The information is accessible to the user only when Auto Replan is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of planned jobs with the current work order. The available actions are:

> Delete The system will delete the delayed jobs

The system will move the delayed jobs to future dates, Move

according to the equipment job's periodicity

This information is accessible to the user only when Auto re-plan is set.

Contract Selection Criteria (Dir. wise / Eqpt. wise)

It represents the source of job contract selection (see paragraph Contract). The available options are:

> **Directory** This selection specifies that the job contract will be

wise selected from the list of all open contracts

Equipment This selection specifies that job contract will be selected from the current job list of open contracts

Contract

This is the identifier of the job contract under which the work order is to be performed. It is an optional information, accessible to the user when the work order is at '1 - In Progress', '2 - Finished' or '3 - Archivable' system status. The entered value must exist in the directory of Contracts.

A selector trigger button (or F2 key) linking to Contract Selector is available.

Right-mouse click (or F7 key) will activate the Contract Details window for the current code.

Costs type

This is the type of the work order's costs. The available costs types are:

Internal when the work order is performed by the local team

External when the work order is performed by a third party

The following rules are applied to establish the default proposed costs type during work order creation:

The internal costs type is considered first

If the work order's job is already defined for the work order's equipment, then the job's costs type are considered

If a contract is specified for the work order, the system will automatically change the costs type to external

The information is accessible to the user when the work order is at '1 - In Progress', '2 -Finished' or '3 – Archivable' status.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 256

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

Safety Involved

This flag specifies if the corrective maintenance covered by the work order involve safety. The system automatically set this flag to false when the work order is created.

Proiect Code

This is the maintenance project under which the work order's job is performed. It is an optional information of maximum 10 alphanumeric characters. If the work order's job is an existing equipment job, then the equipment job's project is proposed as default value during the work order creation. This field is accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Eqp Phone

This is the work order's equipment nearest phone number, an optional alphanumeric information of maximum 13 alphanumeric characters. The equipment phone is proposed by the system as default value during work order creation. This field is accessible to the user when the work order is at '1 – In Progress', '2 – Finished' or '3 – Archivable' status.

Eqp Srl. No.

This is the equipment serial number valid at the work order's creation for any work order made for repairable equipment, a read-only field automatically managed by the system.

In order to repair an item, two work orders are to be generated: one for replacing the item with defects, and the other that actually repairs the work order. This serial number keeps track of the item that is replaced.

New Srl. No.

This is the serial number of the item issued from the stock to replace the one with defects, a read-only field automatically managed by the system.

Zone

This is the zone identifier of the work order's equipment, a read-only field automatically read and updated by the system.

Function

This is the function identifier of the work order's equipment, a read-only field automatically read and updated by the system.

PM Job Covered

This is a field to be entered manually as a Yes/No to act as a reminder to close the associated PM job.

Request Entity

This is the company entity that is requesting the job, an optional information. The provided value of authority must exist in the directory of Company Entities. COSWIN proposes the company entity that owns the equipment of the WO as the default value.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.

Action Entity

This is the company entity that is supposed to perform the work, an optional information. The provided value of authority must exist in the directory of Company Entities. COSWIN proposes the company entity that owns the equipment of the WO as the default value.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.





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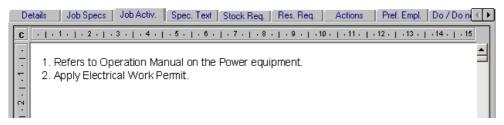
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8.1.48.1.5 Specifying the Job Activity

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The Job Activity tab looks by default as follows:



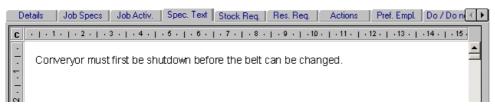
Job Activity tab contains the details instructions pertaining to the maintenance job in general. It is maintained in the Job Activity tab of both the Job Directory as well as the Job Guidelines module of the same job code.

For unplanned jobs, user is able to specify the detailed activities to be performed for the work order under this tab of the Work Order Details window.

Otherwise, for planned jobs, this tab displays the activities specified in the equipment job (in Job Guidelines module) and is not editable by the user.

8.1.58.1.6 Specifying the Specific Text

The Specific Text tab looks by default as follows:



Specific Text tab contains the specific instructions pertaining to the particular equipment job. It is maintained in the Job Guidelines module of the same equipment and job code.

For unplanned jobs, user is able to specify some specific information, regarding the equipment on which the work is to be performed, under this tab of the Work Order Details window.

Otherwise, for planned jobs, this tab displays the specific text specified in the equipment job (in Job Guidelines module) and is not editable by the user.

8.1.68.1.7 Updating Comments on the Work Order in Feedback Note tab

The Notes tab looks by default as follows:

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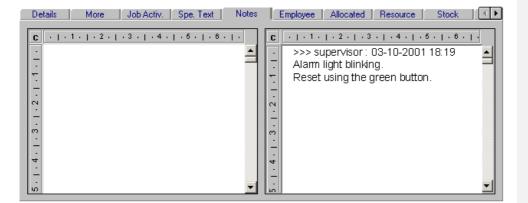
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 258
Date: 21 August 200221
August 200221 August
20023 June 2002

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In this tab, user will key in the comments pertaining to the work done/to be done on the left-hand side panel.

To freeze the comments entered,

Select the option 'Split WO Notes' under COSWIN Configuration's Maintenance / Work Order / Parameters. When this option is selected, a similar panel will appear at the right-hand side displaying the past comments entered together with user id and entry date/time.

8.1.78.1.8 Providing feedback on Employee Time Usage

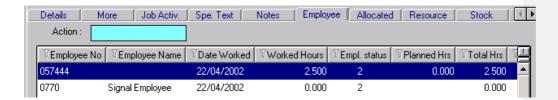
After performing all the activities to accomplish the tasks of a work order, the employees have to fill in information on time spent in getting the work done. The data entered is used to compute the actual labour cost of the work order.

The employee time feedback can be:

- o for the work order, not linked to any work order action
- o for one or more work order action and linked to the work order in the same time

Employee feedback can be captured here under the Work Order detail's Employee tab or through the *Employee Time Feedback* module.

The Employee tab looks by default as follows:



It displays all the employees' feedback made against the current work order.

If feedback is done for an allocated employee having the rejection status 1-REJECTED, the system will present the user a message box, prompting the permission to continue. If the user chooses to continue with the feedback, the system will change the rejection status of the corresponding allocated employee to 2-CANCELED.





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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 259

Date: 21 August 200221 August 200221 August 20023 June 2002

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If the work orders have work permits associated, only employees covered by approved work permits are allowed to provide time feedback.

8.1.7.18.1.8.1 To Add a New Employee Feedback

The minimum information required to make an employee feedback from Work Order Details is:

- o Employee Number
- Employee Status
- o Date Worked

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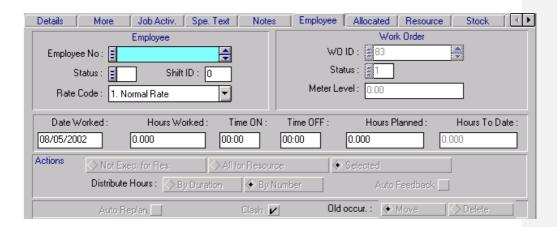
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Employee feedback can be added as long as the work order is at NOT STARTED, IN PROGRESS or FINISHED status.

At the Employee tab, click on the oicon on the COSWIN toolbar and the following ADD window appears:



Detailed Field Descriptions:

Employee No

This is the identifier of the Employee that performs the feedback. This field is mandatory and only accessible during ADD mode. It must be an existing employee.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Right-mouse click (or F7 key) will activate the Employee Details window for the current code.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 260

Date: 21 August 200221 August 200221 August 20023 June 2002

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Employee Status

This is the status of the employee's work on the Job, a mandatory field, consisting of one alphanumeric character. This field has similar significance with the Work Order status and can be any of the user-defined states corresponding to not started, in progress or Finished system states.

A selector trigger button (or F2 key) linking to Status Selector is available.

Shift ID

This is the employee's shift identifier, an optional numeric integer value, which can range from 0 to 99.

Rate Code

This is the rate of the employee at which the labour cost will be computed. See also Employee Details - Costing Rates.

WO ID

This is the identifier of the Work Order against which the feedback is made a numeric integer value. It is a read-only field automatically managed by the system.

WO Status

This is the Work Order user status (one alphanumeric character), a read-only field automatically managed by the system.

Meter Level

This is the level of the meter from the moment of the completion of the Work Order, a positive numeric field.

This field is editable only for a Work Order made for a meter-based job and when the Work Order is passed in archival state. It is computed by the system according to the meter forecast and the user can modify it to put the actual value.

Otherwise, it is not used.

Date Worked

This field specifies the date on which the employee performed the job, a mandatory field.

Hours Planned

This is the number of hours planned for the employee's job, an optional positive numeric field.

Hours Worked

This is the number of hours worked by the employee on the specified date, an optional numeric value.

Negative values can be entered here to correct an erroneous feedback previously made, provided that the Hours to Date are still positive.

Hours to Date

This field specifies the cumulative hours worked by the employee against the Work Order, a read-only field automatically managed by the system. It represents the sum of hours worked by the given employee for the given work order and has to be a positive value.

Time ON





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 261

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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This is the time at which the employee started his work on the Job, an optional field ranging from 00:00 to 24:00.

Time OFF

This is the time at which the employee finished his work on the Job, an optional field ranging from 00:00 to 24:00.

Proposed action selection

This radio button specifies, if the work order has actions, what Actions are selected, when accessing Actions for Work Order selector

Not Exec. forActions with status "not realised", having no allocated resource, or having this employee's resource among its

resources.

All for Resource Actions having no allocated resources, or having this

employee's resource among its resources.

Selected Actions already selected by a previous feedback; this is the

choice available in VIEW and MODIFY modes.

If not making feedback for actions, or if the frame is not in ADD mode, this radio button is read-only.

Distribute Hours

This radio button specifies, if the work order has Actions, how to distribute the worked hours between the selected actions

By Duration The hours worked for each action will be calculated with the

formula:

Employee Worked Hours * Action Duration / Sum Of

Duration Of All Selected Actions

By Number The hours worked for each action will be calculated with the

formula:

Employee Worked Hours / Number Of Selected Actions

Auto Feedback

If the work order has Actions, this checkbox specifies that Auto Feedback is to be made against the selected Actions (see also 1.3 Action Feedback Details).

Auto Replan

This information specifies whether the planned jobs, created in Plan Jobs Module for the work order's job, should be updated or not based on the work order execution.

The option to automatically re-plan the existing planned jobs of the job is available only for work orders created for jobs having the behaviour '1' or '2'.

The information is accessible to the user when the work order is progressed to archival status.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 262

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.1

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This information specifies whether planned jobs generated by other planners should be taken into account or not during the synchronisation of planned jobs with the current work order. The information is accessible to the user only when Auto re-plan is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of plan jobs with the current work order. The available actions are:

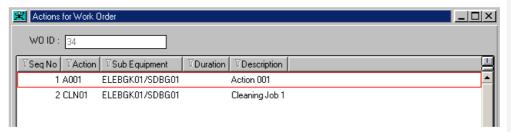
Delete The system will delete the delayed jobs

Move The system will move the delayed jobs to future dates, according

to the equipment job's periodicity

This information is accessible to the user only when Auto re-plan is set.

Actions Click on the non-standard button and the Actions list defined for the selected work order will be displayed:



Save the record by clicking on the \blacksquare icon.

8.1.7.28.1.8.2 To Modify an Employee Feedback

Employee feedback can be modified as long as the work order is at 0 - NOT STARTED, 1 -IN PROGRESS or 2 - FINISHED status.

If an employee worked more than once on a work order, only the last instance of his feedback can be modified.

Save the modification made by clicking on the \blacksquare icon.

8.1.7.38.1.8.3 To Delete an Employee Feedback

Once the feedback is added, it cannot be deleted.

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 263

Date: 21 August 200221 August 200221 August 20023 June 2002

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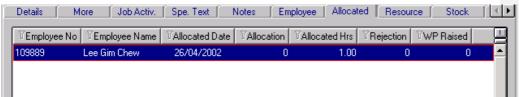
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8.1.88.1.9 Allocating Employee to the Work Order

User may either let system assigns employees to the work order according to the resource requirement specified and available roster, or manually pick the employee from the Employee Directory to assign to the work order.

The Allocated tab looks by default as follows:



It displays the list of employees allocated to the current work order.

8.1.8.18.1.9.1 To Allocate Employee to a Work Order

Employees can be allocated only to work order at status '0 – NOT STARTED'.

The system allocates employees to the work order based on:

- The manpower requirements of the work order 's equipment job
- o The preferred employee of the equipment job
- The available roster list
- The planned shifts of the work order.

The system will allocate the job preferred employees to the work order whenever possible (employees are available in the shift and not overloaded).

Auto Employee Allocation:

To automatically allocate employee to work order, the following must be specified in the Work Order Detail:

- o The checkbox option Allocate Employees under the Detail tab must be checked
- o The resource requirement for the work order must be defined under the Resource tab.

The system allocates employees to the work order based on:

- o The resource requirements of the work order 's equipment job
- The preferred employee of the equipment job
- The available roster list
- The planned shifts of the work order.

Click on the non-standard Alloc. Emp. button at COSWIN Toolbar. COSWIN will automatically assign employee to the work order based on the currently in-use company roster.

Manual Employee Allocation:





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C756 Page: 264 MAINTENANCE MANAGEMENT SYSTEM

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COSWIN WORKCOSWIN WORK

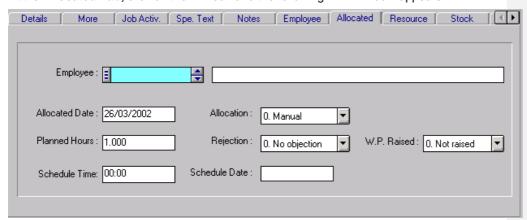
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At the **Allocated Tab**, click on the icon and the following ADD window appears:



Detailed Field Descriptions:

Employee

This is the allocated employee, a mandatory information. It must exist in the directory of Employees and should be unique among the employees allocated to a work order.

This is the name (description) of the allocated employee, a read-only information automatically provided by the system when the employee identifier is selected.

Allocated Date

This is the date when allocation was performed, a read-only integer information automatically managed by the system.

Allocation

This indicates if the employee is manually allocated or automatically allocated, with values 0 - manual or 1 - Automatic. It is a read-only information automatically managed by the system.

Planned Hours

This is the number of hours allocated to the employee to accomplish the work, a mandatory strictly positive numeric information.

Rejection

Specify if the allocated employee was initially rejected due to lack of skills. It is a read-only integer information automatically managed by the system. The possible values are:

- 0 No Objection
- 1 Rejected
- 2 Cancelled

Work Permit Raised





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 265 Date: 21 August 200221 August 200221 August 20023 June 2002

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This indicates if the work permit request was raised or not for the allocated employee, with values 0 - No and 1 - Yes. It is a read-only information automatically managed by the system.

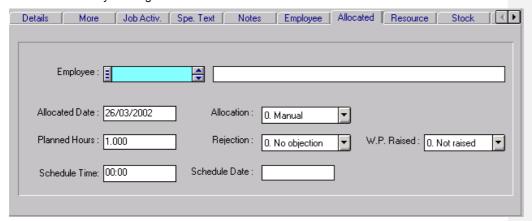
Schedule Time

This is the time that employee has been scheduled to start work.

Schedule Date

This is the date that employee has been scheduled to start work.

Save the record by clicking on the 🔲 icon.



8.1.8.1.18.1.9.1.1 To Modify an Allocated Employee of a Work Order

The following information of an allocated employee can be modified:

- Allocated Date
- Planned Hours

Save the record by clicking on the 🔲 icon.

8.1.8.28.1.9.2 To Delete an Allocated Employee of a Work Order

Allocated employees of a work order can be deleted from the work order without restrictions.

Click on the like icon to delete the currently selected allocated employee.

8.1.8.38.1.9.3 To Check the Skill of an Allocated Employee

The system automatically checks the skills of the employees allocated when the checkbox option Check Skills under Details tab is checked.

Or, you may click on the non-standard button on COSWIN toolbar to manually trigger the checking.

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Page: 266 Date: 21 August 200221 August 200221 August

20023 June 2002

C756

COSWIN will flag the allocated employees as REJECTED when their skills do not cover any of the equipment job skill requirements.

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8.1.98.1.10 Specifying Work Order's Resources Requirement

A list of the estimated human resources required is defined for every work order during its release. If the work order is a planned maintenance job, then the resource requirement list will be copied from that defined in the work order's equipment job.

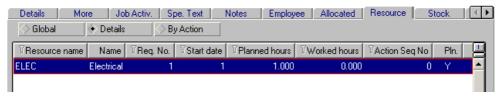
Labour resource to be used can be defined:

KSC Version: 2.12.12.1

- For the work order (GLOBAL), not linked to any work order action
- For a work order action (SPECIFIC), linked to a specific work order action and to the work order in the same time

A Resource cannot be allocated globally to the work order and specifically to one of the work order's Actions at the same time.

The Resource Requirement tab looks by default as follows:



It displays the list of resource requirement specified for the current work order.

8.1.9.18.1.10.1 To Add a New Resource Requirement to a Work Order

Minimum information required to add a resource requirement, is:

- Resource identifier
- Required number the system proposes by default 1
- Planned hours the value proposed by the system is 1.00
- Start day the system proposes by default the first day

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C756 Page: 267

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

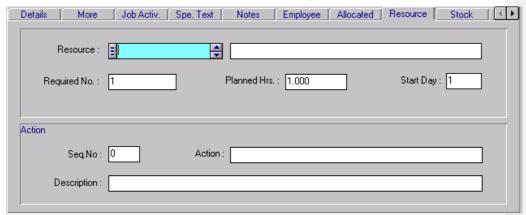
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At the Resource tab, click on the icon and the following ADD window appears:



Detailed Field Descriptions:

Resource

This is the Resource identifier, a mandatory field and must be an existing resource.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Right-mouse click (or F7 key) will activate the Resource Details window for the current code.

Resource Description

This is the description of the resource, a read-only field automatically managed by the system.

Required No.

This is the number of required resources, a mandatory numeric integer value, greater than zero.

Planned hours

This is the number of planned hours for the resource, a mandatory numeric positive value.

Start day

This is the index of day from which the resource begins its job on the Work Order, counting from the Work Order start date, a mandatory numeric integer positive value.

Sequence No

This is the Action's sequence number, if the Resource is allocated for a Work Order's Action. Otherwise it is zero. It is an optional positive numeric integer field.

Action Code

This is the code of the Action, if the resource was allocated for an Action, otherwise is empty. It is a read-only field automatically managed by the system.

Description





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Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 268
Date: 21 August 200221
August 200221 August

August 200221 August 20023 June 2002

This is the description of the Action, if the resource was allocated for an Action, otherwise is empty. It is a read-only field automatically managed by the system.

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8.1.9.28.1.10.2 To Modify a Resource Requirement of a Work Order

Resource requirement specified can be modified as long as the work order system status is at 0 – NOT STARTED, 1 – IN PROGRESS or 2 – FINISHED.

Click on the 🔲 icon to save the modification made.

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8.1.9.38.1.10.3 To Delete a Resource Requirement from a Work Order

Resource requirement cannot be deleted from a work order if

- o It is a planned resource requirement in the equipment job of the work order, or
- An employee with that resource has provided feedback on the work order.

Otherwise, resource used can be deleted as long as the work order status is at 0 - NOT STARTED, 1 - IN PROGRESS or 2 - FINISHED.

Click on the 2 icon to delete the currently selected Resource Requirement.

8.1.108.1.11 Specifying Work Order's Stock Requirement

Stock usage specifies the stock items consumed during the execution of an equipment job. A list of the estimated stock to be used is defined for every work order during its release. This list is copied from the work order's equipment job stock requirement list. Stock usage is used to compute the actual material cost of the work order.

Stock usage can be defined:

- o For the work order (GLOBAL), not linked to any work order action
- For a work order action (SPECIFIC), linked to a specific work order action and to the work order in the same time

A stock requirement cannot be specified globally to the work order and specifically to one of the work order's Actions at the same time.

The Stock Requirement tab looks by default as follows:

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C756 Page: 269

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

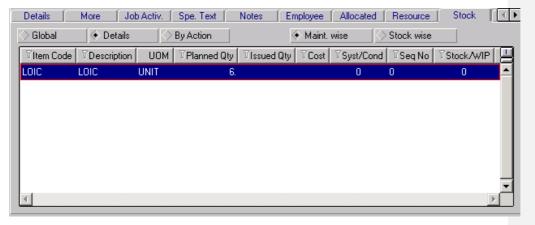
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It displays the list of stock requirement specified for the current work order.

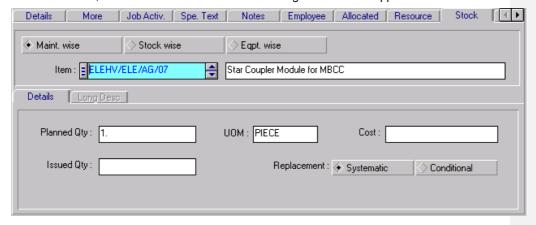
8.1.10.18.1.11.1 To Add a New Stock Requirement to a Work Order

Minimum information required to add a stock requirement, is:

o Item identifier

Stock used can be added as long as the work order system status is at 0 - NOT STARTED, 1 - IN PROGRESS or 2 - FINISHED.

At the Stock tab, click on the icon and the following ADD window appears:



Detailed Field Descriptions:

Item Source (Maint. wise / Stock wise / Eqpt. wise)

It represents the source of item selection (see paragraph Item). The available options are:

Maintenance wiseSpares/Tools SelectorStock wiseStock Items SelectorEquipment wiseList of Spares Selector





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 270

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8

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KSC Version: 2.12.12.1

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This is the identifier of the item used, a mandatory field and must be an existing the item

A selector trigger button (or F2 key) linking to the Selector, set through Item Source radio button, is available.

Right-mouse click (or F7 key) will activates the Stock Register or the Spares/Tools details window for the current code, according to the setting of the Item Source.

Item description

This is the description of the item, a read-only field automatically managed by the system.

Planned Qty

This field specifies the quantity planned to be used from this item.

It is a read-only field automatically managed by the system for planned items.

For unplanned items, the user can define this quantity.

This represents the measurement unit of the specified item, a read-only field automatically managed by the system.

This is the actual cost of the item, computed using the available latest cost per unit of the item. It is a read-only field, automatically managed by the system.

Issued Qty

This is the item issued quantity, a numeric field. It is read-only and automatically managed by the system for a stock item, and editable only for non-stock items.

Replacement

This radio button specifies the way the item is to be replaced:

Systematic Always

Conditional Depending on certain conditions

WO Stock Long Description

Stock Long Description OLE multiline is provides details/notes/observations about a stock usage.

This information is available only for non-stock items coming from a receipt made against the work order. It is a read-only control, automatically managed by the system.

Click on the non-standard

button to add several stock requirements at one time.

8.1.10.28.1.11.2 To Modify a Stock Requirement of a Work Order

Stock used can be modified as long as the work order system status is 0 - NOT STARTED, 1 - IN PROGRESS or 2 - FINISHED.

The information that can be modified, is:



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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 271 Date: 21 August 200221 August 200221 August 20023 June 2002

C756

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Planned quantity - only for unplanned items

- Issued quantity only for non-stock items
- Replacement flag

KSC Version: <u>2.12.12.1</u>2.0

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Click on the licon to save the modification made.

8.1.10.38.1.11.3 To Delete a Stock Requirement from a Work Order

Planned stock requirement, that is stock requirement defined in the work order's equipment job, cannot be deleted.

Otherwise, stock used can be deleted as long as the work order system status is at 0 - NOT STARTED, 1 - IN PROGRESS or 2 - FINISHED.

Click on the icon to delete the currently selected Stock Requirement.

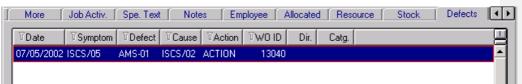
8.1.118.1.12 Analysing Faults/Defects found on the Equipment

To analyse the faults occurred on the equipment, it is useful to describe at each event, the symptom, the observed defects. Subsequently, the analyses will easily allow us to know the most frequent defects on each equipment.

The defects noticed on equipment (corrected or not) can be reported on work order through feedback. The following details are stored:

- Defect symptom
- Defect
- Defect cause
- Repair action taken

The Defect tab looks by default as follows:



It displays the list of Defect analysis of the current work order.

8.1.11.18.1.12.1 To Add a New Defect Analysis to the Work Order

Minimum information required to add a stock requirement, is:

- Defect's date
- At least one of the symptom, defect, cause and action

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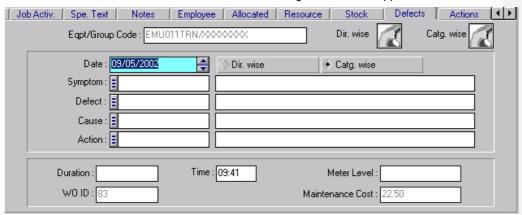
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Defects can be added as long as the work order system status is at 0 – NOT STARTED, 1 – IN PROGRESS or 2 – FINISHED.

At the Defects tab, click on the icon and the following ADD window appears:



Detailed Field Descriptions:

Eqpt/Group Code

KSC Version: 2.12.12.1

This is the Equipment's identifier or Equipment Group's identifier, a read-only information automatically managed by the system.

Date

This is the defect's acknowledgement or lasts updating date, a mandatory information.

Dir. wise / Catg. wise radio button (SDCA Selection Criteria)

This radio-button specifies the selection pool for Symptoms / Defects / Causes / Actions.

Directory wise Select from Defects Selector

Category wise Select from Codes Directory

Symptom

This is the Defect Symptom identifier, an optional information. It must exist in the directory of Symptom Codes.

Symptom description

This is the Defect's Symptom description, a read-only information automatically managed by the system.

Defect

This is the Defect identifier, an optional information. It must exist in the directory of Defect Codes.

Defect description

This is the Defect's description, a read-only information automatically managed by the system.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 273

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

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This is the Defect Cause identifier, an optional information. It must exist in the directory of Cause Codes.

Cause description

This is the Defect's Cause description, a read-only information automatically managed by the system.

Action

This is the Defect remedy Action identifier, an optional information. It must exist in the directory of Action Codes.

Action description

This is the Defect's Action description, a read-only information automatically managed by the system.

Duration

This is the duration of the equipment stopping in terms of hours, due to the defect, an optional numeric information.

This is the moment of defect appearance, an optional numeric information.

Meter Level

This is the meter level for the equipment defect attached Work Order, at the Work Order archiving operation, if Work Order had a meter level, a read-only information automatically managed by the system.

WOID

This is the Work Order identifier attached to the equipment defect, a read-only information automatically managed by the system.

Maintenance Cost

This is the cost of the Work Order attached to the equipment defect, a read-only information automatically managed by the system.

8.1.11.28.1.12.2 To Modify a Defect Analysis of a Work Order

Defects can be modified as long as the work order system status is 0 - NOT STARTED, 1 -IN PROGRESS or 2 - FINISHED.

8.1.11.38.1.12.3 To Delete a Defect Analysis from a Work Order

Once a Defect Analysis has been added to a work order, it cannot be deleted.

8.1.11.48.1.12.4 To View the Defect Analysis in Graphical Mode

From the Defect Details tab, click on the special icons 'Dir. wise' or 'Catg. wise' to display the tree of defects.

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C756

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 274

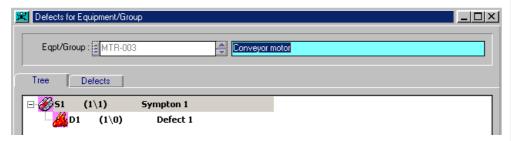
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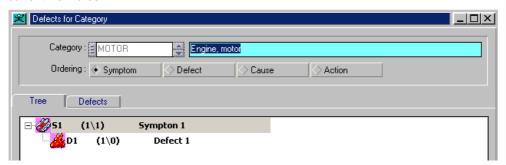
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The 'Dir. wise' icon will activate the Defects for Equipment/Group module for the equipment in the current work order:



The 'Catg. wise' icon will activate the Defects for Category module for the equipment in the current work order:



Refer to the section 'Diagnostic Codes Enquiries' under the chapter of Equipment Register for detailed module descriptions.

8.1.128.1.13 Defining Action Steps for Work Order

Actions are subdivisions of the Work Order, i.e. a collection of more specific operations that are to be applied on a sub-equipment of the work order equipment, or on an element of the sub equipment. They are much alike Work Orders, but usually are shorter and their behaviour falls under the Work Order's general directions and specifications.

An Action has four possible execution states:

- Not realized that is, the Action is not started or in progress, it is yet to be completed (status 0)
- Terminated OK that is, the Action was completed in the allocated time, using the allocated resources, items (status 1)





 Keppel Steria Consortium (KSC)
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 Reference:
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 275

 756/PMP/8029e/A756/PMP/8
 COSWIN WORKCOSWIN WORK
 Date: 21 August 2003

 August 2003
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Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

C756

Error fixed - that is, during the execution of the Action some problems occurred, but finally they have been solved, possibly with some delays and/or with supplementary allocation of resources and/or items (status 2)

 Error not fixed - that is, during the execution of the Action some unsolved problem occurred that produced the failure of the Action (status 3)

Actions can be generated from a Job (see Job Guidelines Module) or can be generated at Work Order's feedback time. From this point of view, Actions fall into two categories:

o Planned Actions (coming from the Job)

PMP/8029e/-

KSC Version: 2.12.12.1

Unplanned Actions (generated at feedback)

Actions are individualised by their kind (or type). Also, they are part of a Work Order. They belong to a Work Order and they have a sequence number within that Work Order; this sequence number specifies the order in which Actions are to be performed, if they are to be in a serial manner.

The Actions tab looks by default as follows:



It displays the list of Actions defined for the current work order.

8.1.12.18.1.13.1 To Add a New Action to the Work Order

Minimum information required to add an action, is:

- Sub Equipment identifier
- Action identifier
- Action duration for executed actions
- Action start date

From the Actions tab, click on the icon and the following ADD window appears:

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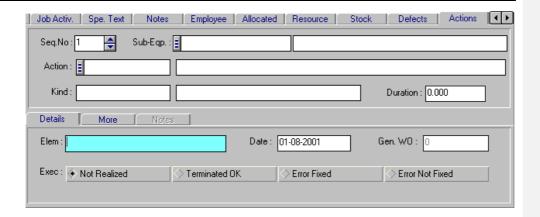




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Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Seq. No.

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This is the sequence number of the Action within the Work Order, a mandatory integer field. The valid value range is from 1 to the number of actions within the Work Order.

Sub Equipment

This is identifier of the equipment / sub-equipment for which the Action is generated, a mandatory field. The entered identifier will always be checked against the equipment existing in the database. It has to be:

- A sub equipment of the work order equipment, if the work order was made for an equipment, or
- An equipment belonging to the work order group, if the work order was made for a group of equipment

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Sub Equipment description

This is the description of the equipment/sub-equipment, a read-only field automatically managed by the system.

Action

This is the identifier of the Action, a mandatory field of maximum 10 alphanumeric characters. It must exist in the directory of Actions and it must be unique within the work order.

A selector trigger button (or F2 key) linking to Actions Selector is available.

Right-mouse click (or F7 key) will activate the Action Details window for the current code.

Action description

This is the description of the Action, a read-only field automatically managed by the system.

Kind

This is the kind of the Action, a read-only field automatically managed by the system.





Keppel Steria Consortium (KSC) MAINTENANCE MANAGEMENT SYSTEM

C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

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COSWIN WORKCOSWIN WORK

Page: 277
Date: 21 August 200221
August 200221 August 20023 June 2002

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Kind description

This is the description of the Action's kind, a read-only field automatically managed by the system.

Duration

This is the duration of the Action, a positive, not null, numeric value. This is a mandatory field for an executed action.

Element

This is the description of the specific element in the equipment upon which the Action is performed, an optional alphanumeric field of maximum 20 alphanumeric characters.

Date

This is the Action's start date, a mandatory field for an executed action (which by default is proposed as the Action's creation date).

Generated Work Order

This is the identifier of the Work Order generated to correct or complete the current Action, if current Action's status was "error fixed" or "error not fixed". This is a read-only field automatically managed by the system.

One or more Actions, being in the status "error fixed" or "error not fixed" and not having, already, generated an Work Order, may be used to generate a new Work Order that will complete their unfinished job.

Execution State

This radio button specifies the status of the Action, and is a mandatory field. An Action can have one of the following states:

Not Realised Action is not completed yet

Terminated OK Action is completed correctly

Error Fixed Action is completed, but some problems occurred

during its execution

Error Not Fixed Action execution failed, due to some problems

Action Feedback More

The Action Feedback More tab window looks by default as follow:



Limit 1





C756 M Page: 278

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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During Action's execution there can be certain parameters that must restrict to certain values. For an Action there can de defined 2 such restriction values. This is the first restriction value, an optional numeric field.

Unit 1

This is the measurement unit for the first restriction value, an optional alphanumeric field of maxumum 6 characters.

Limit 2

This is the second restriction value, an optional numeric field. See Limit 1.

Unit 2

This is the measurement unit for the second restriction value, an optional alphanumeric field of maximum 6 characters.

Operation Type

This is the description of a manual identifier, which in turn explains how to complete the Action on the equipment. It is an optional field of maximum 20 alphanumeric characters.

Device

This is the description of a device with which the Action is to be performed, an optional field of maximum 20 alphanumeric characters.

Equipment Status

This is the description of the status in which the equipment is, during the Action's execution upon the equipment. It is an optional field of maximum 20 alphanumeric characters.

Action Feedback Notes

The Action Feedback Notes window provides details/notes/ observations about a Work Order Action.



The interface consists of the drawing layout, where the user can write text and/or append pictures, drawings, spreadsheets and any other form of OLE information.

8.1.12.28.1.13.2 To Modify an Action of the Work Order

The information that can be modified is:

- Sequence number
- o Action identifier
- Action status: from "not realised" to any other state; if the Action has another status, it cannot be modified
- Action duration

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Keppel Steria Consortium (KSC) Reference: MAINTENANCE MANAGEMENT SYSTEM

C756

Reference: MAINTENANCE MANAGEMENT SYS: 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK COSWIN WORK

Page: 279
Date: 21 August 200221
August 200221 August 20023 June 2002

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Action start date

KSC Version: 2.12.12.12.0

- Operation Type
- Device

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- Equipment Status
- o Limit 1 and 2
- Unit 1 and 2

Click on the 🖬 icon to save the modification made.

8.1.12.38.1.13.3 To Delete an Action from the Work Order

Planned actions, that are defined by the work order's equipment job, cannot be deleted.

Click on the 🔯 icon to delete the currently selected Action.

8.1.12.48.1.13.4 Other Operations available for Action of a Work Order

Auto Feedback using non-standard Auto Fbck button

This button performs automatically feedback on the Action, i.e. automatically passes an Action with status "not realised" into status "terminated OK" and updates the Action's stock usage and resources such that the Action to be considered concluded.

New Feedback using non-standard New Fbck button

This operation is available only for actions that must repeat after a certain period of time, during the execution of the same work order; an action's periodicity can be established for planned actions (i.e. generated from Job Guidelines Module).

This operation switches Action Feedback Details window to ADD mode in order to provide feedback on another occurrence of the same action.

Generate WO using non-standard Create WO button

This button opens Create WO window, in order to generate a Work Order that should correct or complete the activity for the selected Action.

The Action should have the status "error fixed" or "error not fixed" and it should not have a Work Order already generated.

View Stock Requirement of the current Action using non-standard button

View Resource Requirement of the current Action using non-standard

Resource buttor





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 280

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

View Employee Feedbacks of the current Action using non-standard Empl Fbck button



C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK Page: 281
Date: 21 August 200221
August 200221 August 20023 June 2002

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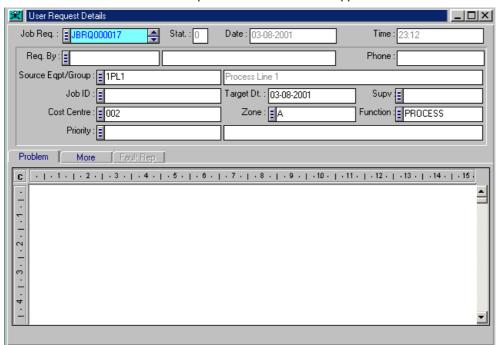
8.1.138.1.14 Creating Follow-up Job Request for the Work Order

The Follow Up looks by default as follows:



It displays all the job requests that are created from the current work order.

At the **Follow Up** tab of the Work Order Details module, click on the non-standard on COSWIN toolbar and the Job Request creation window will appear:



Note that the equipment code and details like cost center, zone, function will be defaulted to that defined in the work order.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 282

Date: 21 August 200221 August 200221 August 20023 June 2002

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8.1.148.1.15 Specifying the Work Order's Facility Requirement

The module is used to manage the facility used to accomplish the work orders. The module specifies the amount of time the specific instances of facilities were used and the actual cost of facilities used to perform the work.

The system updates on request the total worked time of equipment job's corresponding facility requirement with the facility used actual usage time during the work order archival process if the Update Facility Requirements flag is set.

Actual cost for facility used is computed as follows:

AT# * CTU

where:

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756/PMP/8029e/A756/PMP/8

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KSC Version: 2.12.12.1

AT# - number of time units actually used for facility

CTU - cost of use of facility per time unit (taken from the facility instance)

Every time the list of facilities used is updated the system computes and updates the actual facility cost at the level of the work order.

The Facility Requirement tab looks by default as follows:



It displays the list of facilities required for the current work order.

8.1.14.18.1.15.1 To Add a New Facility Requirement to a Work Order

Minimum information required to add a facility requirement, is:

- Facility
- Equipment
- Sharable
- Status
- Start Date/Time

Facility can be added as long as the work order system status is 0 - NOT STARTED, 1 - IN PROGRESS or 2 - FINISHED.

The system rejects the usage of non-sharable facility instances by several work orders at the same time.

The system computes the actual cost of the facility used and updates the actual facility cost of the work order with the cost of the newly added facility.

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 283

Date: 21 August 200221 August 200221 August 20023 June 2002

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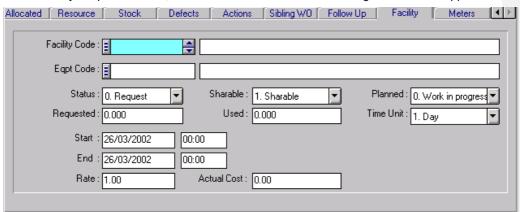
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At the Facility Requirement tab, click on the icon and the following ADD window appears:



Detailed Field Descriptions:

Facility Code

This is the reference code of the generic facility, mandatory information that can take up to 10 alphanumeric characters. The facility reference code should exist in the directory of maintenance facilities.

Facility Description

This is the description of the generic facility, read-only information automatically managed by the system.

Eqpt Code

This is the reference code of the actual equipment used, a mandatory information that can take up to 20 alphanumeric characters. The equipment reference code should exist as a facility instance of the generic facility.

Equipment Description

This is the description of the equipment used as facility instance, read-only information automatically managed by the system.

Status

This is the status of the facility usage, mandatory information. The status can have one of the following values: 0 – REQUEST, 1 – APPROVED and 2 – USED.

Sharable

This flag specifies if the facility instance can be used concurrently by several work orders. It is mandatory information.

Planned

This indicates if the facility is a planned facility, with values 0 – Work in Progress implies not a planned facility, and values 1 – Job Released implies is a planned facility.

Requested Time





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Reference:

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Page: 284
Date: 21 August 200221
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This is the number of facility instance time units planned to be used for the work, read-only positive numeric information.

Used Time

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This is the number of facility instance time units actually used for the work. It is optional positive numeric information. It has to be entered for the facility usage having the status 2 – USED.

Time Unit

This is the unit of measure for the facility instance time actually used to do the work. It is optional integer information that can take the following values: 0-HOUR, 1-DAY or 2-WEEK. It has to be entered for the facility usage having the status 2 – USED.

Start Date/Time

This is the date and time when the facility instance start to be used, a mandatory information.

End Date/Time

This is the date and time when the facility instance end to be used, an optional information.

Rate

This is the cost of use of facility per time unit, read-only information automatically managed by the system. It is used to compute the actual cost of use of facility to perform the work.

Actual Cost

This is the planned cost of use of facility, read-only information automatically computed by the system as the product between the used time and the rate.

8.1.14.28.1.15.2 To Modify Facility Requirement of a Work Order

Facility used can be modified as long as the work order system status is at 0 - NOT STARTED, 1 - IN PROGRESS or 2 - FINISHED.

Whenever the Used Time is modified the system updates the cost of the facility usage and the actual facility cost of the work order with the modified facility used cost.

Click on the 🔲 icon to save the modification made.

8.1.14.38.1.15.3 To Delete Facility Requirement from a Work Order

Allocated facility with status 1 – APPROVED and 2 – USED cannot be deleted.

Otherwise, it can be deleted as long as the work order system status is at 0-NOT STARTED, 1-IN PROGRESS or 2-FINISHED.

The system updates the actual facility cost of the work order by subtracting the cost of the deleted facility usage.

Click on the 2 icon to delete the currently selected facility requirement.

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KSC Version: 2.12.12.1

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 285

Date: 21 August 200221 August 200221 August 20023 June 2002

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8.1.158.1.16 Providing feedback for the Equipment's Meter Usage

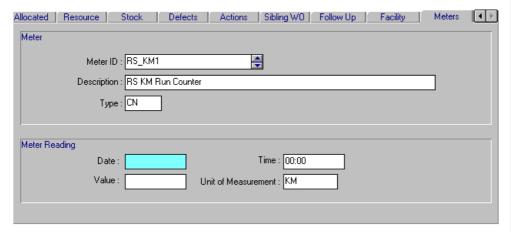
Meters feedback is used to specify the values of different meters associated to the work order's equipment. Special types of jobs may be defined to perform the meter readings. Meters feedback allows managing the readings made when the job is performed. The readings made through the work order meters feedback are taken into account in planning the jobs relying on them.

The equipment meters are automatically copied into the meter feedback when work orders are released against jobs to be performed on equipment having meters attached. A meter reading is entered when feedback is entered against meters.

The Meter Usage tab looks by default as follows:



Double click on any of the displayed meters in the selector will activate the Meter Usage Details window:



Detailed Field Descriptions:

Meter

This is the meter on which feedback is made, mandatory read-only information. It exists in the directory of meters and is unique among the meters on which feedback is made.

Meter Description

This is the description of the meter, read-only information managed by the system.

Type





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 286

Date: 21 August 200221 August 200221 August

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Reference:

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This is the meter type, read-only information automatically managed by the system.

Date

This is the date when the reading was taken, optional information. A null value signal a feedback not performed.

Time

This is the time when the reading was taken, optional information. A default value of 0 is proposed by system.

Value

This is the value of the meter when reading was taken, optional information. A null value signal a feedback not performed.

Unit of Measurement

This is the meter unit of measurement, read-only information automatically managed by the system.

Meter feedback can be performed as long as the work order system status is at 0-NOT STARTED, 1-IN PROGRESS or 2-FINISHED and either Date or/and Value are not entered yet. Once meter feedback has been specified, it cannot be modified.

8.1.168.1.17 Creating Follow up Work Order

The primary purpose of "Create WO" window is to help generating the repair Work Order for a repairable equipment, i.e. a sub equipment which actually needs two Work Orders:

- The first to replace the sub equipment that doesn't work with a good one, in order to avoid the malfunctioning of the parent equipment
- The second, i.e. the one generated with Create WO option from Work Order Details toolbox, performs the repairing activity for the damaged sub equipment

In a more general manner, any Work Order that needs additional work to be performed after can be the source of generating another Work Order.

The follow up Work Order is also known as the Child Work Order. Please note that closing the Parent (or the first) Work Order will not automatically close the Child Work Order.

Another use of this window is to generate a Work Order for one or many of a Work Order's Actions that met problems during their execution (Actions with status "error fixed" or "error not fixed"- see 1.3 Action Feedback Details).





Page: 287 MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

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COSWIN WORKCOSWIN WORK

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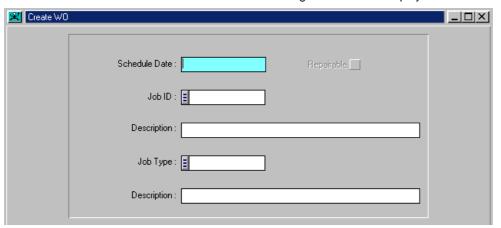
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Click the non-standard Create WO button and the following screen will be displayed:



Detailed Field Descriptions:

Schedule Date

This is the Work Order schedule date, a mandatory field.

Repairable

This check box specifies whether the Work Order to be generated is for repairable equipment or not. It is enabled only if the previous Work Order, on whom this Work Order is to be created, falls under first up-mentioned category, otherwise is a read-only field automatically managed by the system.

Job ID

This is the Job identifier the Work Order is to be created for, an optional field that can take up to 10 alphanumeric characters.

If it is not edited, an unplanned job will be created.

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Right-mouse click (or F7 key) will activate the Jobs Directory window for the current code.

Job description

This is the Job description, a field that can take up to 40 alphanumeric characters.

If the Job identifier is not provided, it is a mandatory field. Otherwise, it is read-only and automatically managed by the system.

Job Type

This is Work Order's Job Type identifier, a field that can take up to 6 alphanumeric characters.

If the Job identifier is provided, the field is read-only and automatically managed by the system.





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Reference:

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PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 288 Date: 21 August 200221

August 200221 August 20023 June 2002

Otherwise, it is a mandatory field. The entered job type will always be checked against the

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Job Type description

directory of job types.

This is the description of the Job Type, a read-only field automatically managed by the

Enter the details and click the 🗒 icon. A follow-up work order will be created.

8.1.178.1.18 Creating Work Permit for the Work Order

The following conditions must apply when generating a work permit request from work order module:

- It must be an unplanned work order
- The status of the work order must be 0-NOT STARTED
- Employee must have been allocated to the work order

Click the non-standard Create WP button on COSWIN toolbar and the Work Permit Request will be generated.

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 289

Date: 21 August 200221 August 200221 August

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8.2 EMPLOYEE TIME FEEDBACK

Reference:

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KSC Version: 2.12.12.1

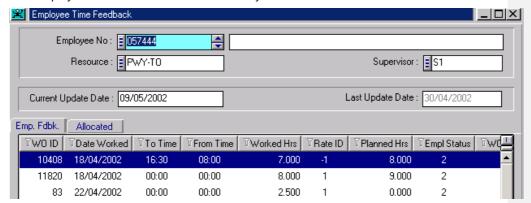
Feedback on employee time usage against a Work Order can be provided in two ways:

- Given a Work Order, provide feedback on the employees who worked on that Work Order using Work Order Details.
- Given an Employee, provide feedback on the Work Orders on which the employee has worked using Employee Time Feedback.

The Employee Time Feedback module's purpose is to provide feedback for an employee against Work Orders.

Select from COSWIN menu *Maintenance / Work in Progress / Employee Time Feedback* to launch the Employee Time Feedback module.

The Employee Time Feedback window looks by default as follows:



Detailed Field Descriptions:

Employee No

This is the identifier of the employee for which feedback is provided, a mandatory field and must exist in the directory of Employees.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Right-mouse click (or F7 key) will activate the Employee Details window for the current code.

Employee description

This is the description of the employee, a read-only field automatically managed by the system





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Keppel Steria Consortium (KSC) C756 Page: 290 MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-KSC Version: 2.12.12.1

Reference:

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August

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20023 June 2002

Resource

This is the employee's Resource (trade) identifier. It is a read-only field automatically managed by the system.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Right-mouse click (or F7 key) will activate the Resource Details window for the current code.

Supervisor

This is the employee's supervisor identifier. It is a read-only field automatically managed by

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Right-mouse click (or F7 key) will activate the Supervisor Details window for the current code.

Current Update Date

This is the date of current employee's feedback, a mandatory field.

It is proposed by default as the current date and cannot be greater than the current date.

Last Update Date

This is the date of the last employee's feedback, a read-only field automatically managed by the system.

Employee Feedback List Box

Double click on any of the displayed feedbacks will activate the Employee Feedback Details window.

WO ID This is the identifier of the Work Order against which the

employee has worked.

Date Worked The date on which the employee performed the Work Order

job.

From Time The time when the employee started his work. To Time The time when the employee finished his work.

Worked Hours This is the number of hours worked by the employee on the

specified date.

Rate ID This is the rate of the employee at which the labour cost will

be computed.

Planned Hours Number of hours planned to be worked by the employee for

the Work Order.

Shift ID This is the shift in which the employee worked on the Work

Order.

This is the status of the work of the employee on the Work **Empl Status**

Order.

WO Status The user status of the Work Order from the moment the

feedback was made.

Total Hours The cumulative hours the employee has worked against the





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 291

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

Reference:

Work Order up to date.

Actual Status The current user status of the Work Order.

Allocated Tab

This tab displays the employee's allocation details.



Allocation List Box

WO ID This is the identifier of the Work Order on which the

employee has been allocated.

Eqpt Code This is the identifier of the equipment on which work order

is created.

Job ID This is the identifier of the job to be performed for the work

order.

Date This is the allocated date that employee will be working.

Hours This the duration in hours that employee needs to spend on

the work.

Job Description This is the description of the job.

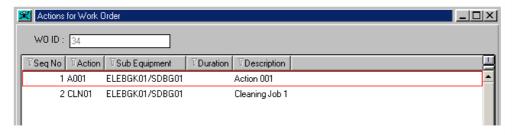
8.2.1 To Add a New Employee Time Feedback

The minimum information required to add an employee time feedback is:

- WO ID
- o WO Status
- Date Worked

Click on the icon to launch the ADD window.

When adding a employee feedback and if the work order has actions defined, then click on the non-standard Actions button to activate the Actions for Work Order window:





MAINTENANCE MANAGEMENT SYSTEM | Page: 292

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COSWIN WORK COSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

C756

KSC Version: <u>2.12.12.1</u>2.0

Select the Action to be associated with the feedback and confirm by clicking on the 🖺 icon.

Note: This non-standard Actions button is only enabled when the work order has actions defined.

After the employee time feedback has been added, you may click on this button to view which action being associated to the feedback.

8.2.2 To Modify an Employee Time Feedback

There is no restriction while modifying an employee feedback, except for the action selection criterion, which cannot be changed.

If an employee worked more than once on a work order, only the last instance of his feedback can be modified.

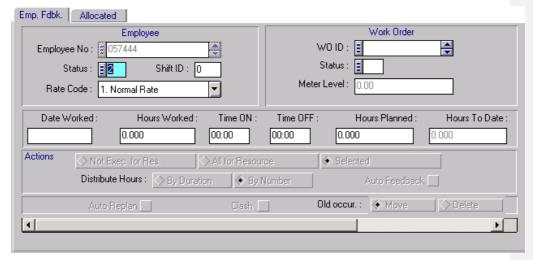
8.2.3 To Delete an Employee Time Feedback

Once the feedback is added, it cannot be deleted.

8.2.4 Employee Time Feedback Details

The purpose of this detail module is to provide time feedback details against an Work Order.

The Employee Time Feedback Details window looks by default as follows:



Detailed Field Descriptions:

Employee Number

This is the identifier of the Employee that performs the feedback. It is a read-only field automatically managed by the system.

Employee Status





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 293

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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This is the status of the employee's work on the Job, a mandatory field, consisting of one alphanumeric character. This field has similar significance with the Work Order status and can be any of the user-defined states corresponding to not started, in progress or Finished system states.

A selector trigger button (or F2 key) linking to Status Selector is available.

756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

KSC Version: 2.12.12.1

Reference:

PMP/8029e/-

This is the employee's shift identifier, an optional numeric integer value, which can range from 0 to 99.

Rate Code

This is the rate of the employee at which the labour cost will be computed. See also Employee Details - Costing Rates.

WOID

This is the identifier of the Work Order against which the feedback is made a numeric integer value. This field is mandatory and only accessible during ADD mode. When selecting a work order for this field, it must be an existing work order and cannot be already in archivable status.

A selector trigger button (or F2 key) linking to Work Order Selector is available.

Right-mouse click (or F7 key) will activate the Work Order Details window for the current code.

WO Status

This is the Work Order user status (one alphanumeric character), a mandatory field.

A selector trigger button (or F2 key) linking to Status Selector is available.

Meter Level

This is the level of the meter from the moment of the completion of the Work Order, a positive numeric field.

This field is editable only for a Work Order made for a meter-based job and when the Work Order is passed in archival state. It is computed by the system according to the meter forecast and the user can modify it to put the actual value.

Otherwise, it is not used.

Date Worked

This field specifies the date on which the employee performed the job, a mandatory field.

Hours Planned

This is the number of hours planned for the employee's job, an optional positive numeric field.

Hours Worked

This is the number of hours worked by the employee on the specified date, an optional numeric value.

Negative values can be entered here to correct an erroneous feedback previously made, provided that the Hours to Date are still positive.

Hours to Date





Page: 294 MAINTENANCE MANAGEMENT SYSTEM

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

Reference:

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK Date: 21 August 200221 August 200221 August

20023 June 2002

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This field specifies the cumulative hours worked by the employee against the Work Order, a read-only field automatically managed by the system. It represents the sum of hours worked by the given employee for the given work order and has to be a positive value.

Time ON

This is the time at which the employee started his work on the Job, an optional field ranging from 00:00 to 24:00.

Time OFF

This is the time at which the employee finished his work on the Job, an optional field ranging from 00:00 to 24:00.

Proposed action selection

This radio button specifies, if the work order has actions, what Actions are selected, when accessing Actions for Work Order selector

Not Exec. for Res.

Actions with status "not realised", having no allocated resource, or having this employee's resource among its

resources

All for Resource

Actions having no allocated resources, or having this

employee's resource among its resources.

Selected

Actions already selected by a previous feedback; this is the

choice available in VIEW and MODIFY modes.

If not making feedback for actions, or if the frame is not in ADD mode, this radio button is read-only.

Distribute Hours

This radio button specifies, if the work order has Actions, how to distribute the worked hours between the selected actions

By Duration The hours worked for each action will be calculated with the

formula:

Employee Worked Hours * Action Duration / Sum Of

Duration Of All Selected Actions

By Number The hours worked for each action will be calculated with the

formula:

Employee Worked Hours / Number Of Selected Actions

Auto Feedback

If the work order has Actions, this checkbox specifies that Auto Feedback is to be made against the selected Actions (see also 1.3 Action Feedback Details).

This information specifies whether the planned jobs, created in Plan Jobs Module for the work order's job, should be updated or not based on the work order execution.

The option to automatically re-plan the existing planned jobs of the job is available only for work orders created for jobs having the behaviour '1' or '2'.

The information is accessible to the user when the work order is progressed to archival status.





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

MAINTENANCE MANAGEMENT SYSTEM

Page: 295 Date: 21 August 200221 August 200221 August

August 200221 Augu 20023 June 2002 Formatted: Font: 10 pt, Font color: Auto

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Clash

This information specifies whether planned jobs generated by other planners should be taken into account or not during the synchronisation of planned jobs with the current work order. The information is accessible to the user only when Auto re-plan is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of plan jobs with the current work order. The available actions are:

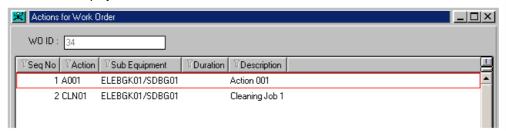
Delete The system will delete the delayed jobs

Move The system will move the delayed jobs to future dates, according

to the equipment job's periodicity

This information is accessible to the user only when Auto re-plan is set.

Click on the non-standard Actions button and the Actions list defined for the selected work order will be displayed:







 Keppel Steria Consortium (KSC)
 C756

 Reference:
 756/PMP/8029e/A756/PMP/8
 MAINTENANCE MANAGEMENT SYSTEM COSWIN WORK
 Page: 296

 029e/A756/PMP/8029e/A756/PMP/8029e/A756/PMP/8029e/ COSWIN WORKCOSWIN WORK
 Date: 21 August 200221

 PMP/8029e/ August 200221 August 200223
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8.3 TURBO FEEDBACK

KSC Version: 2.12.12.1

Work Orders in a Maintenance System can be broadly categorised into two categories:

- Work Orders for which detail feedback is essential
- Work Orders for which minimum, but essential feedback will be sufficient. A large number of the Work Orders in a Maintenance System may fall into this category.

Feedback on Work Orders falling in the first category can be provided using Work Order Details Module.

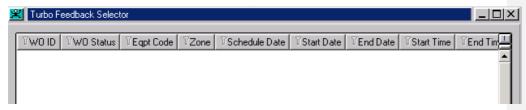
Turbo Feedback Module can be used to provide feedback on Work Orders which fall into the second category.

Turbo Feedback module can be used effectively to provide quick feedback on Work Orders by filling the Actual dates/costs with the planned values.

The purpose of this component is to provide substantial feedback without really entering much data, by establishing some default vital settings for Work Orders that are to support Turbo Feedback.

Select from COSWIN menu *Maintenance / Work in Progress / Turbo Feedback* to launch the Turbo Feedback module.

The Turbo Feedback Selector window looks by default as follows:



Detailed Field Descriptions:

Turbo Feedback List Box

WO ID	This is the identifier of a Work Order for which turbo feedback is provided.
WO Status	This is the Work Order user status which has been set using the Default options (in Turbo Feedback Defaults).
Eqpt Code	This is the identifier of the equipment for which the Work Order is generated.
Zone	This is the identifier of the zone to which the equipment work order belongs.





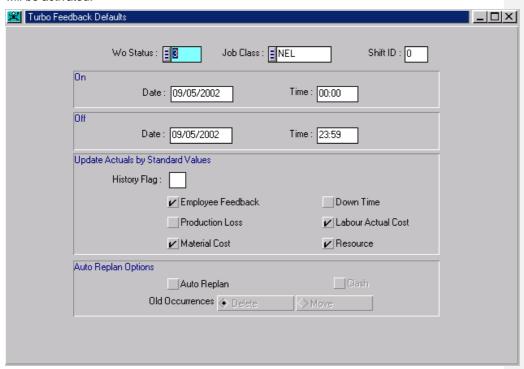
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Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 297
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002
KSC Version: <u>2.12.12.1</u> 2.0		

Schedule Date	This is the Work Order's schedule date.
Start Date	This is the Work Order starting date.
Start Time	This is the Work Order starting time.
End Date	This is the Work Order finish date.
Fin Time	This is the Work Order finish time.
Job Class	This is the identifier of the Work Order's job class.

8.3.1 Define Default Settings for Turbo Feedback

The Turbo Feedback Default module establishes some vital default settings for Work Orders that are to use to update the work order during Turbo Feedback.

Click on the non-standard Defaults button and the Turbo Feedback Default definition screen will be activated:



Detailed Field Descriptions:

WO Status





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C756 Page: 298 MAINTENANCE MANAGEMENT SYSTEM

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KSC Version: 2.12.12.12.0

Reference:

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August

20023 June 2002

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This is the user status for the Work Orders that are to support turbo feedback, a mandatory field, consisting of one alphanumeric character. Its system status must be '2 - Finished' or '3 - Archivable'.

A selector trigger button (or F2 key) linking to WO Status Selector is available.

Job Class

This is the identifier of the Job Class to which Work Orders, that are to support feedback, belong. It is a mandatory field and must exist in the directory of Job Class.

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Shift ID

This is the identifier of the shift in which the Work Orders were performed, a mandatory positive integer.

Start Date

This is the date of starting the work for the Work Orders, a mandatory field.

Start Time

This is the time of starting the work for the Work Orders, an optional field.

Finish Date

This is the date of finishing the work for the Work Orders, a mandatory field. It can be neither earlier than start date, nor later than current date.

Finish Time

This is the time of finishing the work for the Work Orders, an optional field.

History Flag

This field specifies if history details will be maintained for the Work Orders, and is used to override history flag in the Work Order. This is an optional "Y" / "N" field.

Employee Feedback

This check box, if checked, specifies that the planned employee time is taken as the actual employee feedback time for the Work Order.

Down Time

This check box, if checked, specifies that the planned down time is assumed to be the actual down time for the Work Order.

Production Loss

This check box, if checked, specifies that the planned production loss time is assumed to be the actual production loss time for the Work Order.

Labour Actual Cost

This check box, if checked, specifies that the planned labour cost from job guidelines is assumed to be the actual labour cost for the Work Order.

Material Cost

This check box, if checked, specifies that the planned material cost is assumed to be the actual material cost for the Work Order.

Resource



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KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 299

Date: 21 August 200221 August 200221 August

20023 June 2002

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This check box, if checked, specifies that the planned resource requirement is assumed to be the actual resource usage for the Work Order.

Auto Replan

This information specifies whether the planned jobs, created in Plan Jobs Module for the work order's job, should be updated or not based on the work order execution.

The option to automatically re-plan the existing planned jobs of the job is available only for work orders created for jobs having the behaviour '1' or '2'.

The information is accessible to the user when the work order is progressed to archival status.

Clash

This information specifies whether planned jobs generated by other planners should be taken into account or not during the synchronisation of planned jobs with the current work order. The information is accessible to the user only when Auto re-plan is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of planned jobs with the current work order. The available actions are:

Delete The system will delete the delayed jobs

Move The system will move the delayed jobs to future

dates, according to the equipment job's periodicity

The information is accessible to the user only when Auto re-plan is set.

8.3.2 To Select Work Orders for Turbo Feedback

To select work orders for turbo feedback, click the non-standard work order selector will appear:

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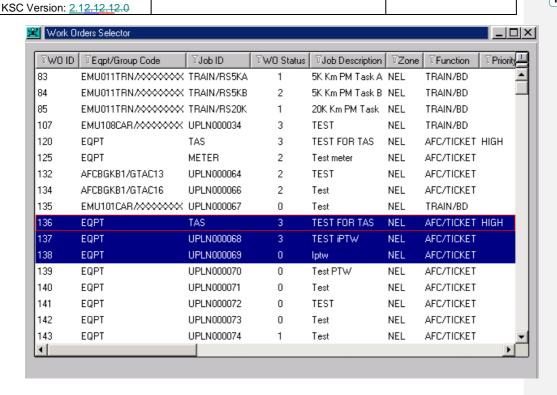
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Page: 300
Date: 21 August 200221
August 200221 August 20023 June 2002

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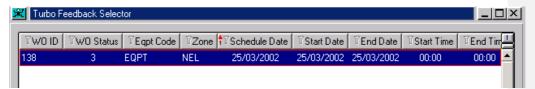
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Note: Only work orders with status not equal to 'Archival' can be selected for turbo feedback.

Pick the work orders to be updated and confirm by clicking on the 🗗 icon. The selected work orders will be added to the Turbo Feedback selector:



8.3.3 To Turbo Feedback on the Selected Work Orders

At the Turbo Feedback selector window with the work orders to be updated already picked, click on the non-standard button and all the selected work orders will be updated with the values specified in the Turbo Feedback Defaults.

Double click on any of the displayed work orders in the Turbo Feedback Selector will activate the Turbo Feedback Detail window:





EM Page: 301

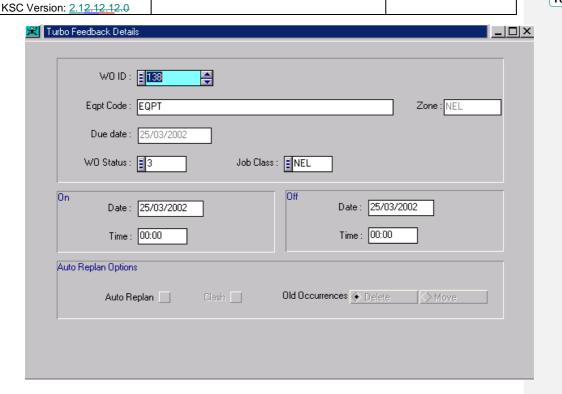
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Date: 21 August 200221 August 200221 August 20023 June 2002

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The Turbo Feedback Details provide setting details of the turbo feedback for the currently selected work order. User may use this module to modify the feedback setting for a particular work order.

Detailed Field Descriptions:

WOID

This is the identifier of the Work Order, for which turbo feedback is provided, a mandatory integer numeric field. It must exist in the database and it must be unique.

You can select the WO Reference from the Work Orders Selector by pressing **F2** key or the selector button.

Pressing **F7** key or the mouse right button activates the Work Order Details window for the current code.

Eqpt Code

This is the identifier of the equipment for which Work Order was generated, a read-only field automatically managed by the system.

Zone

This is the equipment's Zone identifier, a read-only field automatically managed by the system.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 302

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

KSC Version: 2.12.12.1

Due date

This is the Work Order's schedule date, a read-only field automatically managed by the system.

WO Status

This is the Work Order user status, a mandatory, one alphanumeric character, field, which can be set only to an user status corresponding to archival or completed system status.

You can select the WO Status from the WO Status List by pressing F2 key or the selector button.

Job Class

This is the Work Order's Job Class identifier, a mandatory field, which can take up to 6 alphanumeric characters.

You can select the Job Class from the Job Classes Selector by pressing F2 key or the selector button.

Start Date

This is the Work Order's start date, a mandatory field, which cannot be later than current date

Start Time

This is the Work Order's start time, a mandatory field.

Finish Date

This is the Work Order's finish date, a mandatory field, which cannot be later than current date or earlier than start date.

Finish Time

This is the Work Order's finish time, a mandatory field.

Auto Replan

This information specifies whether the planned jobs, created in Plan Jobs Module for the work order's job, should be updated or not based on the work order execution.

The option to automatically re-plan the existing planned jobs of the job is available only for work orders created for jobs having the behaviour '1' or '2'.

The information is accessible to the user when the work order is progressed to archival status.

Clash

This information specifies whether planned jobs generated by other planners should be taken into account or not during the synchronisation of planned jobs with the current work order. The information is accessible to the user only when Auto re-plan is set.

Old occurrences

This information specifies the action to be performed by the system upon the delayed planned jobs, during the synchronisation of planned jobs with the current work order. The available actions are:

Delete The system will delete the delayed jobs

Move The system will move the delayed jobs to future





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PMP/8029e/-KSC Version: 2.12.12.1 MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 303 Date: 21 August 200221 August 200221 August

20023 June 2002

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dates, according to the equipment job's periodicity

The information is accessible to the user only when Auto re-plan is set.

8.3.3.1 To Add a New Work Order for Turbo Feedback

The following fields are proposed by default by the system, based on the values provided by the user in Turbo Feedback Defaults:

- Work Order Status
- Job Class
- o Start Date
- Start Time
- o Finish Date
- o Finish Time

The user, who has to provide the work order identifier, can modify them.

Click on the icon to launch the ADD window.

8.3.3.2 To Modify the Feedback Details of Work Order

Except for the work order identifier and the equipment-related information, all the data can be modified.

Click on the 🔲 icon to save the modification.

8.3.3.3 To Remove a Work Order from Turbo Feedback

Click on the 2 icon to delete the current work order will be removed from Turbo Feedback Selector.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 304

Date: 21 August 200221 August 200221 August

20023 June 2002 Formatted: Font: 9 pt

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KSC Version: <u>2.12.12.1</u>2.0

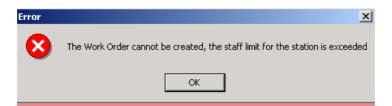
8.4 LIMITATION ON CREATION OF WORK ORDER

COSWIN does not allow adding a new WO if the number of employee already allocated on WO for that station (based on Character 4, 5 and 6 of the Equipment Code), for that day (schedule date) and WO status = 0 - Created or 1 - In Progress, is higher than the pre-defined limit.

The limit on the number of employee allocated to a station can be modified at the Resource Editor and the limit if changed affects all stations.

For example, if the limit is set to be 5 and there are 3 employees allocated for WO 1.

The system allows user to allocate any number of employees for WO 2 for the same station but when the user tries to create WO 3 for the same station, the system prompts him the following error:



This error is prompted only at the creation of WO 3 because, the total number of allocated employees from WO 1 & 2 have exceeded the pre-defined limit of 5.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 305

Date: 21 August 200221 August 200221 August

20023 June 2002

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8.48.5 METER CONSUMPTION FEEDBACK

Reference:

PMP/8029e/-

756/PMP/8029e/A756/PMP/8

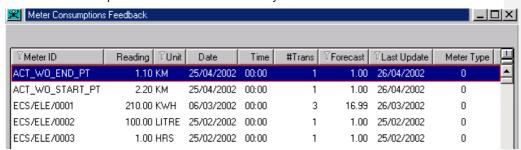
029e/A756/PMP/8029e/A756/

KSC Version: 2.12.12.1

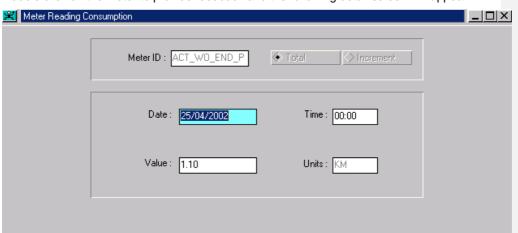
Meter Consumption records the periodic feedback from maintenance personnel regarding the latest readings of various cumulative meters (non-cumulative meters do not require consumption feedback). On this basis, the system forecasts the latest rate of consumption and updates the next job date for all the jobs dependent on the meter (the occurrence of certain maintenance jobs depends on meter consumption). These jobs are to be carried out at regular meter intervals. Hence, for planning the next occurrence of these jobs, Meter Consumption maintains and updates the data on meter readings and consumption rates.

Select from COSWIN menu Maintenance / Work in Progress / Meter Consumption to launch the Meter Consumption Feedback module.

The Meter Consumption Feedback window looks by default as follows:



Double click on the meter to provide feedback and the following detail screen will appear:



Detailed Field Descriptions:





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 306

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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Meter ID

756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

KSC Version: 2.12.12.1

Reference:

PMP/8029e/-

This is the identifier of the selected meter for which reading feedback is to be made, a readonly field automatically managed by the system.

Meter Type (Total / Increment)

The meter type is the way in which the meter is to be re-evaluated (a read-only field automatically managed by the system).

Total In absolute values Increment In incremental values

Date

This is the date when the meter reading was taken, a mandatory field. The date must lie between the last reading date and current date.

Time

This is the time when the meter reading was taken, an optional field given in hh:mm format.

This is the latest observed meter reading, a mandatory numeric field whose value must be:

At least equal to the previous reading's value for cumulative total meters, or any positive number for cumulative increment meters.

Units

This is the measurement unit for the meter's readings, a read-only field automatically managed by the system.

8.4.18.5.1 To Add a New Consumption Feedback

Minimum information required to ADD a meter reading is:

- Reading Date
- Reading Value

Click on the icon to launch the ADD window.

8.4.28.5.2 To Modify Consumption Feedback

Only the reading from the last consumption feedback can be modified.

The information that can be modified is:

- Reading Date
- Reading Time
- Reading Value

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 307

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.1 8.4.38.5.3 To Delete Consumption Feedback

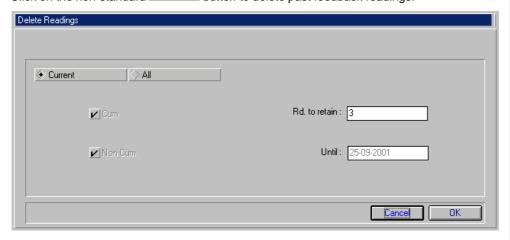
756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

Reference:

PMP/8029e/-

Del Read button to delete past feedback readings. Click on the non-standard



Detailed Field Descriptions:

Target (Current / All)

This radio-button specifies which readings will be deleted:

Current For the current Meter

ΑII For all Meters

Cum.

This check box specifies whether Cumulative Meter Readings are to be deleted, or not.

This check box specifies, whether Non-Cumulative Meter Readings are to be deleted, or not.

Readings to retain

This is the number of readings to retain for cumulative meters, an optional positive integer information, not less than 3, automatically proposed by COSWIN as its minimum value (3).

This is the Meter Readings last updating date until which readings will be deleted for noncumulative meters, an optional information automatically proposed by COSWIN as the current date.

There must be minimum 3 readings to be retained from deletion.



C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 308 Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

8.4.48.5.4 To View Meter Details

Meter Click on the non-standard button to activate the Meter Details module for the currently selected meter.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 309

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

8.58.6 WORK ORDER GENERATION (SEARCH AND PRINT)

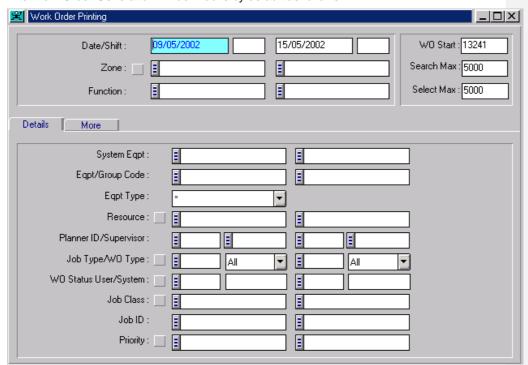
To ease the job of maintenance personnel, the Work Orders are generally printed on a standard fixed format giving details and instructions on the job to be carried out. These are then handed out to the concerned maintenance personnel.

Work Order Generation allows you to select Work Orders based on certain criteria and subsequently print these in a batch.

The main window in Work Order Printing module works in a filtering manner. It provides constraints as selection criteria for the Work Orders to be printed.

Select from COSWIN menu *Maintenance / Work In Progress / WO Generation* to launch the Work Order Generation module.

The Work Order Generation window looks by default as follows:



Detailed Field Descriptions:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 310

Date: 21 August 200221 August 200221 August 20023 June 2002

C756

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Date

Reference:

Enter the Work Order selection start and end date, indicating the period for which Work Orders are to be selected. To select or reject a Work Order, the system uses the Work Order's schedule date, start date or finish date, depending on the status of the Work Order, as given below:

WO Status	Date considered
Not Started	Schedule date
In Progress	Start date
Finished	Finish date
Archivable	Finish date

It is mandatory to enter lower limit and upper limit for the date.

Shift

Enter lower and upper limits to select Work Orders belonging to specific shift(s).

Zone

Enter the lower and upper limits to select work orders belonging to specific zones (up to 10 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired zones from the available Zones pick list.

A selector trigger button (or F2 key) linking to Zone Selector is available.

Function

Enter the lower and upper limits to select work orders belonging to specific functions (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Function Selector is available.

WO Start

Enter the upper limit of the work order identifiers, from which the selection process will begin (a mandatory numeric integer value, up to 8 characters).

Search Max

This is the maximum number of Work Orders to be searched, a mandatory field (numeric integer value, by default 5000).

Select Max

This is the maximum number of Work Orders to be printed, a mandatory field (numeric integer value, by default 5000).

Under the Details tab:

System Eqpt

Enter the lower and upper limits to select work orders belonging to specific systems (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 311

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

KSC Version: <u>2.12.12.1</u>2.0

Eqpt/Group Code

Enter the lower and upper limits to select work orders belonging to specific equipment (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Eqpt Type

Enter the type of equipment. Options available are '*' for all, 'Geographical', 'Technical'.

Resource

Enter the lower and upper limits to select work orders using the specific resources (up to 10 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired resources from the available Resources pick list.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Planner ID

Enter the lower and upper limits to select work orders belonging to specific planners (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Planner ID Selector is available.

Supervisor

Enter the lower and upper limits to select work orders belonging to specific supervisors (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Job Type

Enter the lower and upper limits to select work orders having the specific job types (up to 6 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired job types from the available Job Types pick list.

A selector trigger button (or F2 key) linking to Job Type Selector is available.

WO Type

Select from the combo-boxes the lower and upper limits for the Work Order type (All, Planned, Unplanned, Others).

WO Status (User)

Enter the lower and upper limits to select work orders having the specific user states (one alphanumeric character), if the pick list checkbox is unmarked. Otherwise, select the desired states from the available Job Types pick list.

A selector trigger button (or F2 key) linking to Status Selector is available.

WO Status (System)

Enter lower and upper limits to select work orders having the specific system states (a number between 0 and 3).

Job Class

Enter the lower and upper limits to select work orders on jobs belonging to given classes (up to 6 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired job classes from the available Job Class pick list.

A selector trigger button (or F2 key) linking to Job Class Selector is available.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 312

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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KSC Version: 2.12.12.1

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Job ID

Reference:

PMP/8029e/-

Enter the lower and upper limits to select work orders made on specific jobs (up to 16 alphanumeric characters).

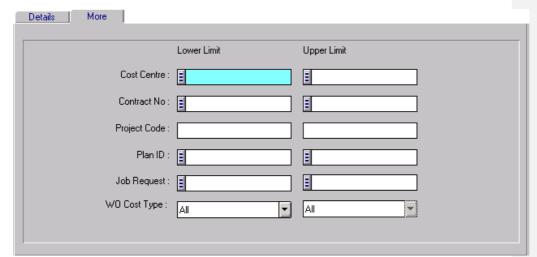
A selector trigger button (or F2 key) linking to Jobs Selector is available.

Priority

Enter the lower and upper limits to select work orders of specific priority code (up to 10 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired states from the available Priority pick list.

A selector trigger button (or F2 key) linking to Priority Selector is available.

Under the More tab:



Cost Centre

Enter the lower and upper limits to select work orders having the specific cost centres (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Contract No

Enter the lower and upper limits to select work orders, generated on a contract basis, belonging to specific contracts (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Contracts Selector is available.

Project Code

Enter the lower and upper limits to select work orders belonging to specific projects (up to 10 alphanumeric characters).

Plan ID

Enter lower and upper limits to select work orders generated on specific plan numbers (up to 5 numeric characters).





C756 Page: 313

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

A selector trigger button (or F2 key) linking to Plan Selector is available.

Job Request

Enter the lower and upper limits to select work orders generated on specific job requests (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Job Request Selector is available.

WO Cost Type

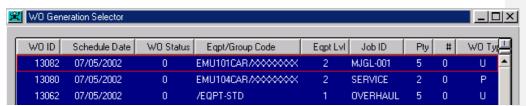
Select from the combo-boxes the lower and upper limits for the Work Order contract types (All, Internal, External).

Fill the necessary selection criteria and click on the non-standard button to activate the searching process.

Once the search complete, the system will return the search results.



View/Sel. You may click on the special button on COSWIN toolbar to display the selected WO:



To print the selected work orders, you may click on the 🖨 icon and select any one of the available reports to print.

NOTE: It is also to possible unselect any work order from printing by click onto its respective row entry on the screen.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 314

Date: 21 August 200221 August 200221 August

20023 June 2002

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Reference:

8.68.7 ARCHIVAL OF WORK ORDER

Archive module transfers work orders from Work-in-Progress to History. Only work orders having 3 - ARCHIVABLE status can be transferred.

During the archiving process, the following are carrried out:

- Transfers archivable status Work Orders from Work In Progress to History files
- Posts Work Order costs and other details to Analysis records at annual and to-date levels
- Optionally, it updates Manpower requirements and Stock requirements for the Job definition (Job Guidelines). The system adds resources and stock items in the Job definition which are consumed on a Work Order but are not defined in the Manpower / Stock requirements for the Job
- Optionally builds minimum spares list for an equipment

The Archive module provides constraints as selection criteria for the Work Orders to be archived. Only those Work Orders with archivable status and which meet the Search Criteria can be archived.

Only the Work Orders for equipment with History flag set to Yes are transferred to History file. If the History flag is set to No and the Work Order satisfies the user defined Search Criteria, then it is deleted from Work In Progress file without being transferred to History file. The History flag for an equipment can be set using the Equipment Topographical Details module. This flag enables the user to maintain History data only for the required equipment.

The following data are transferred to History:

- Work Order basic details
- Start/Finish dates
- Cost details
- Down Time/Production Loss 0
- Feedback Notes
- Actions Feedback 0
- Resource Usage
- Stock Usage
- **Employee Usage** 0
- Defects details

Defects data, though copied to History, is still retained as part of Equipment Register details. This is done to enable Equipment-wise or Category-wise defects analysis for a user-defined period. You may finally remove defects data from Equipment Register using Batch-delete option in Defects module of Equipment Register.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 315

Date: 21 August 200221 August 200221 August

August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

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Reference:

KSC Version: 2.12.12.1

The user must set up analysis records for the appropriate period, before initiating the archiving process to accumulate maintenance statistics at various levels. Choosing Analysis Control option in the Maintenance Parameters menu can set up analysis records. However, it is not mandatory to set up analysis records.

Analysis data both at annual level and to-date level is maintained for the following entities:

- o Zone
- o Function
- o Cost Centre
- Budget Centre
- Equipment/Group
- Sub Contractor

The following details are maintained at annual and to-date level, by type (internal, external), with break up for Planned, Unplanned and Other kinds of Work Orders:

- Actual Labour Cost
- Actual Material Cost (i.e. Material Cost Recovery Cost)
- Actual Miscellaneous Cost
- o Number of Work Orders
- Down Time (in Hours)
- o Production Loss (in Hours)
- Planned Hours
- Actual Hours

The above analysis data is added to the respective yearly record based on Work Order finish date. Since you can have analysis records for more than one-year period, you can archive and generate accurate analysis data for Work Orders of previous financial year(s), as well as current financial year.

The following details are updated in the sub contractor record for Work Orders executed by sub contractors:

- Number of Breakdown Jobs
- Number of Preventive Maintenance Jobs
- o Number of Man Hours spent on Preventive Maintenance Jobs
- Number of Man Hours spent on Breakdown Maintenance Jobs

The system maintains a count for each Job definition, which indicates the number of times the job has been carried out on the Equipment. Archiving process increments this counter as the Work Order is transferred from Work In Progress to History.





MAINTENANCE MANAGEMENT SYSTEM | P

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

Page: 316
Date: 21 August 200221
August 200221 August 20023 June 2002

C756

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Archiving process must be carried out at regular intervals. It is best to run archiving once five hundred to a thousand Work Orders with archival status are accumulated in Work In Progress file. This will enhance the speed of Work In Progress, Plan Jobs and Release Jobs processes. This will also ensure that data displayed by Cost displays are up to date.

If analysis data is required, ensure that analysis records are created before archiving, otherwise Work Orders will be archived to History, but analysis data will not be created.

Select from COSWIN menu *Maintenance / Work In Progress / Archive* to launch the Archive Work Order module.

The Archive Work Order window looks by default as follows:

Krchive Archive		_ _ X
Date/Shift : 01/01/2002 Zone : [] Function : []	0 09/05/2002	0 Start W0 ID : 13260 Search Max : 5000 Select Max : 5000
Details More Options		
System Eqpt : Eqpt/Group Code : Eqpt Type : Resource :		
Planner ID : Supervisor : Job Type/W0 Type :	All 🔻	E All
Job Class : Job ID : Priority Code :	3	3

Detailed Field Descriptions:

Date

Enter the archive start date (by default archive start date is the first date of the current financial year).

Shift

Enter lower and upper limits of the shift identifier (optional integer numeric value).





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 317

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color: Auto

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

Reference:

KSC Version: 2.12.12.1

Zone

Enter the lower and upper limits to select work orders belonging to specific zones (up to 10 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired zones from the available Zones pick list.

A selector trigger button (or F2 key) linking to Zone Selector is available.

Function

Enter the lower and upper limits to archive Work Orders belonging to a specific range of functions (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Function Selector is available.

Start WO ID

Enter upper-limit of the Work Order identifier, from which the archiving process begins (a mandatory numeric integer value).

Search Max

This is the maximum number of Work Orders to be searched, a mandatory field (enter a numeric integer value, by default 5000).

Select Max

This is the maximum number of Work Orders to be archived, a mandatory field (enter a numeric integer value, by default 5000).

Under the Details tab:

System Eqpt

Enter the lower and upper limits to archive Work Orders belonging to a specific range of system equipment (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Egpt/Group Code

Enter the lower and upper limits of the equipment/group identifiers whose Work Orders will be archived (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Eqpt Type

Enter the type of equipment. Options available are '*' for all, 'Geographical', 'Technical'.

Resource

Enter the lower and upper limits to archive Work Orders using specific resources (up to 10 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired resources from the available Resources pick list.

A selector trigger button (or F2 key) linking to Resource Selector is available.

Planner ID

Enter the lower and upper limits of the planner identifiers who generated the Work Orders (up to 6 alphanumeric characters).





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 318

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.12.0

Reference:

A selector trigger button (or F2 key) linking to Planner ID Selector is available.

Supervisor

Enter the lower and upper limits to archive Work Orders belonging to a specific range of supervisors (up to 6 alphanumeric characters).

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Job Type

Enter the lower and upper limits to archive Work Orders having specific job types (up to 6 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired job types from the available Job Types pick list.

A selector trigger button (or F2 key) linking to Job Type Selector is available.

WO Type

Select from the combo-boxes the lower and upper limits for the Work Order type (All, Planned, Unplanned, Others).

Job Class

Enter lexically lower and upper limits to archive Work Orders on jobs belonging to specific classes (up to 6 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired job classes from the available Job Classes pick list.

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Job ID

Enter lexically lower and upper limits to archive Work Orders belonging to a specific range of Jobs (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Job ID Selector is available.

Priority Code

Enter the lower and upper limits to select work orders of specific priority code (up to 10 alphanumeric characters), if the pick list checkbox is unmarked. Otherwise, select the desired states from the available Priority pick list.

A selector trigger button (or F2 key) linking to Priority Selector is available.





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

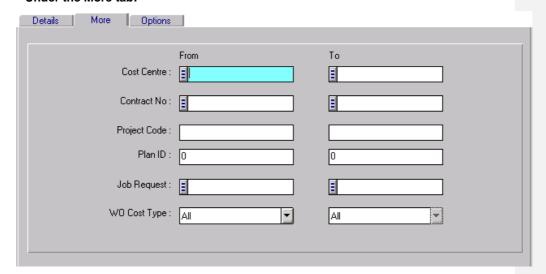
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 319
Date: 21 August 200221
August 200221 August 20023 June 2002

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Under the More tab:



Cost Centre

Enter the lower and upper limits to archive Work Orders belonging to a specific range of cost centres (up to 16 alphanumeric characters).

A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Contract No

Enter lower and upper limits to archive Work Orders (generated on a contract basis) belonging to a specific range of contracts (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Contract Selector is available.

Project Code

Enter lexically lower and upper limits to archive Work Orders belonging to a specific range of projects (up to 10 alphanumeric characters).

Plan ID

Enter lower and upper limits to archive Work Orders generated on specific plan numbers (up to 5 numeric characters).

Job Request

Enter lower and upper limits to archive Work Orders generated on specific job requests (up to 10 alphanumeric characters).

A selector trigger button (or F2 key) linking to Job Request Selector is available.

WO Cost Type

Select from the combo-boxes the lower and upper limits for the Work Order contract types (All, Internal, External).





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

KSC Version: 2.12.12.1

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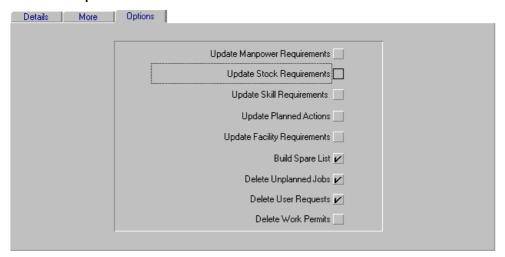
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 320 Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

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Under the Options tab:



Update Manpower Requirements

This check box, if checked, specifies that the Job Resources requirement will be updated for the Job from which Work Order is generated.

A resource which is not defined as part of Manpower requirements and is used while carrying out the Work Order is automatically added by the system in the Manpower requirements of the Job definition with the following values:

- Planned Hours = 0
- Start Day = 1

This feature helps in building Job Guidelines from Work Order feedback. Later, you can modify planned hours to a suitable value based on your experience.

Update Stock Requirements

This check box, if checked, specifies that the Job Stock requirements will be updated, for the Job from which Work Order is generated.

A spare item, which is not defined as part of the stock requirements and is used while carrying out the Work Order, is automatically added by the system to the Stock requirements of the Job definition with the following values:

Planned Quantity = 0

This feature helps in building Job Guidelines from the Work Order feedback. Later, you can modify the planned quantity to a suitable value based on your experience.

Update Skills Requirements

This check box, if checked, specifies that the Skills Requirements will be updated for the actual job from which work order is generated based on employee feedback made against work order.





MAINTENANCE MANAGEMENT SYSTEM Page

C756
Page: 321

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

Reference:

Update Planned Actions

This check box, if checked, specifies that all Work Orders' unplanned Actions (Actions created at feedback) will be appended to the Work Orders' Jobs (if Work Order was made on a planned Job) and, further, they will become planned Actions.

This feature helps in building Job Guidelines from Work Order feedback. Later, you can modify the actions based on your experience.

Update Facility Requirements

This check box, if checked, specifies that the Job facility requirement will be updated for the Job from which Work Order is generated.

Build Spare List

Every time the Work Order uses a spare item, the system increments the quantity used in the minimum spares list for the equipment. This helps in identifying how many times a spare has been replaced and when it was last replaced.

If the spare item used by a Work Order is not present in the minimum spare list of the equipment, then this item gets added to the minimum spare list.

Updating the spares list and Building Minimum Spares list is optional.

Delete Unplanned Jobs

This check box, if checked, specifies that all the new unplanned jobs, created along with the archived Work Orders, will be deleted (see 1 Work Order Details).

The archiving process deletes an unplanned job definition of an unplanned work order with archive status. The deletion of the job definition is only carried out if there are no other work orders associated with this job definition.

Deletion of unplanned jobs is optional.

Delete User Requests

This check box, if checked, specifies that the user requests, upon which Work Orders were generated, will be deleted (see Job Request).

Deletion of user requests is optional.

Delete Work Permits

This check box, if checked, specifies that the work permits, created from Work Orders, will be deleted.

Deletion of work permits is optional.

Specify the criteria on selecting the work orders to be archive and click the non-standard button Archive to activate the archival process.

Use the non-standard Clear button to clear the selection criteria entered.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 322

Date: 21 August 200221 August 200221 August 20023 June 2002

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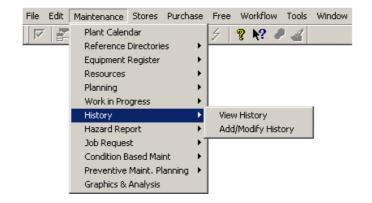
9. WORK ORDER HISTORY

A work order is created and updated with the latest information about the work performed, like the labour hours used, stock used, feedback notes, etc. The work order is passed to the archival status when the job is completed and all information about its execution are known and posted. Archival work orders are moved from the Work in Progress to the History via the archival process.

Archived work orders keep the maintenance history of equipment (the frequency of jobs, the real costs, the stock usage and the manpower usage). Data coming from work orders can be aggregated to obtain the maintenance history for a zone, function or for any other grouping criteria.

The purpose of history is to provide the user the facilities to:

- □ Track and consult the maintenance activities performed in the past
- Analyze the performance of the maintenance activities
- Create work orders in history







MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 323

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.1

9.1 TO VIEW ARCHIVED WORK ORDER IN HISTORY

Path: Maintenance / History / View History

This module is used to view the details of past maintenance work carried out on the various equipments. Proper Analysis of history data of equipment will help in improving planned / corrective maintenance in future.

In the View History module, the following functions are provided:

- Provide Search Criteria for selecting the history data of specific equipment and for a specific period
- View the list of Work Orders selected using the Search Criteria
- Sort the list of selected Work Orders, using the Sort Criteria
- Select a History Work Order to view details of Resource usage, Employee usage, Stock usage, Actions feedback, Defects feedback and Notes on the Work Order
- Download history data to ASCII files
- Upload history data to database from ASCII files

Select from COSWIN menu Maintenance / History / View History to launch the View History module.





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KSC Version: 2.12.12.1

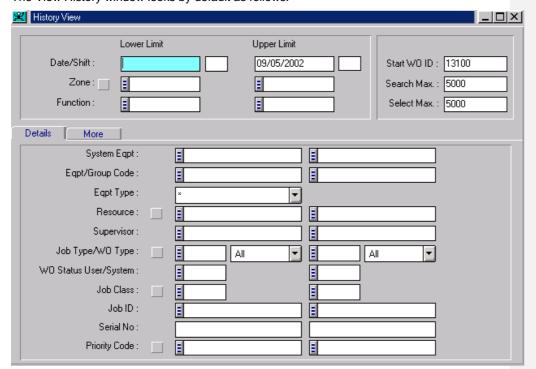
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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 324 Date: 21 August 200221 August 200221 August 20023 June 2002

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The View History window looks by default as follows:



Detailed Field Descriptions:

Date

Enter the History Work Order selection start date lower and upper limits, a mandatory filtering criterion.

Shift

Enter lower and upper limits of the shift identifier (an optional integer numeric value).

Zone

Enter lower and upper limits to view History Work Orders made on equipment from specific zones (up to 10 alphanumeric characters). If the check box is marked, select the desired zones from the available Zones pick list.

Function

Enter lower and upper limits to select Work Orders belonging to specific functions (up to 10 alphanumeric characters).

Start WO ID

Enter upper-limit of the Work Order identifier, from which the searching process begins (a mandatory numeric integer value).





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 325

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Search Max

This is the maximum number of Work Orders to be searched, a mandatory field (enter an integer value, by default 5000).

Select Max

This is the maximum number of Work Orders to be viewed, a mandatory field (enter a integer value, by default 5000).

System Eqpt

Enter lower and upper limits to select Work Orders belonging to specific system equipment (up to 16 alphanumeric characters).

Eqpt/Group Code

Enter lower and upper limits to select Work Orders belonging to specific equipment or groups (up to 16 alphanumeric characters).

Eqpt Type

Choose the type of equipment (Geographical or Technical) that Work Orders belong to. By default, an asterisk is proposed implying all types.

Resource

Enter lower and upper limits to select Work Orders using the specific resources (up to 10 alphanumeric characters). If the check box is marked, select the desired resources from the available Resources pick list.

Supervisor

Enter lower and upper limits of the supervisor identifiers to which Work Orders belong (up to 6 alphanumeric characters).

Job Type

Enter lower and upper limits to select Work Orders having specific job types (up to 6 alphanumeric characters). If the check box is marked, select the desired job types from the available Job Types pick list.

WO Type

Select from the combo boxes the lower and upper limits of the Work Order type. Available options are: All, Planned, Unplanned, Others.

WO Status (User/System)

Select from the combo boxes the lower and upper limits of the Work Order Status.

Job Class

Enter lower and upper limits to select Work Orders on jobs belonging to specific classes (up to 6 alphanumeric characters). If the check box is marked, select the desired job classes from the available Job Classes pick list.

Job ID

Enter lower and upper limits to select Work Orders made on specific jobs (up to 16 alphanumeric characters).

Serial No

Enter lower and upper limits of the equipment serial numbers.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 326

Date: 21 August 200221

August 200221 August 20023 June 2002

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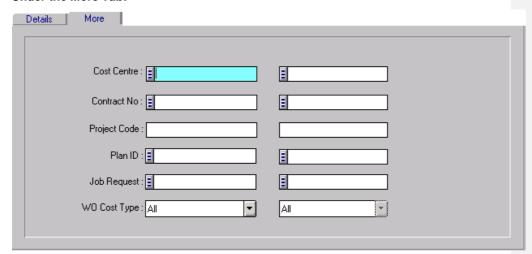
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Priority Code

Enter lower and upper limits to select Work Orders belonging to specific priority codes (up to 10 alphanumeric characters). If the check box is marked, select the desired priority codes from the available Priority pick list.

Under the More Tab:



The More Tab provides more selection options:

Cost Centre

Enter lower and upper limits to select Work Orders having specific cost centres (up to 16 alphanumeric characters).

Contract No

Enter lower and upper limits to select Work Orders, generated on a contract basis, belonging to specific contracts (up to 10 alphanumeric characters).

Project Code

Enter lower and upper limits to select Work Orders belonging to specific projects (up to 10 alphanumeric characters).

Plan ID

Enter lower and upper limits of the Plan numbers upon which Work Orders were generated (numeric positive integer values).

Job Request

Enter lower and upper limits to select Work Orders generated on specific job requests (up to 10 alphanumeric characters).





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 327

Date: 21 August 200221 August 200221 August 20023 June 2002

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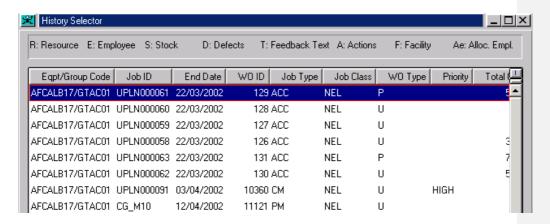
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WO Cost Type

Select from the combo boxes the lower and upper limits of the Work Orders contract type (All, Internal, External).

After specifying the selection criteria and click the non-standard button, COSWIN will begin searching the History database for requested work orders.

Upon successful search, click the non-standard button to display the selected work orders:



Detailed Field Descriptions:

History WO Selector List Box

Eqpt/Group Code	This is the equipment or group for which the Work Order was generated	
Job ID	This is the Job identifier of the Job from which the Work Order was generated	
End Date	Specify the finish date of the work on the work order	
WO ID	This is the identifier of the Work Order	
Job Type	This is the Work Order's Job Type identifier	
Job Class	Specify the class code in which the job was classified	
WO Type	This is the Work Order type	
Priority	This is the priority code for the Work Order	
Total Cost	The work order's total cost	
Resource	Resources flag (set if the work order has resource usage)	

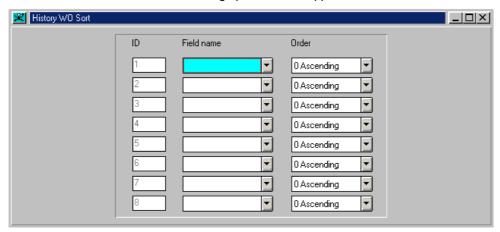


Keppel Steria Consortium (KSC)		C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 328
756/PMP/8029e/A 756/PMP/8	COSWIN WORK COSWIN WORK	Date: 21 August 200221
029e/A756/PMP/8029e/A756/		August 200221 August
PMP/8029e/-		20023 June 2002

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Facility	flag (set if the work order has used facilities)	
Employee	Employees flag (set if the work order has employee feedback)	
Stock	Stocks flag (set if the work order has stock usage)	
Defects	Defects flag (set if the work order has defects feedback)	
Feedback Text	Feedback Text flag (set if the work order has notes)	
Actions	Actions flag (set if the work order has actions)	
Job description	This is the identifier of the Job from which the Work Order was generated	

COSWIN provides 8 ways to sort the selected History Work Orders. Click on the non-standard button and the sorting option window appears:



The available fields to sort on are:

0 - Equipment

KSC Version: <u>2.12.12.1</u>2.0

- 1 Finished date
- 2 WO Number
- 3 Zone
- 4 Job Type
- 5 Supervisor
- 6 Total Cost
- 7 Function

It is also possible to sort the field in either Ascending or Descending order using the Order field provided.





C756 Page: 329

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

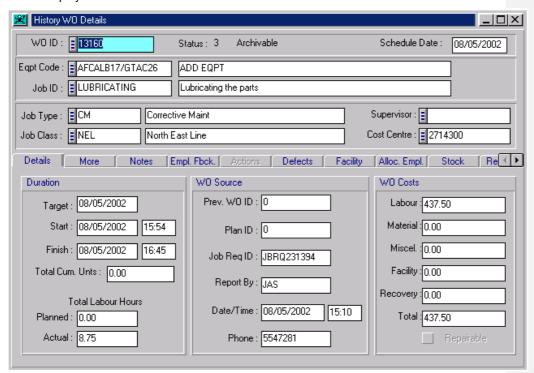
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To execute the sort, click on the non-standard button again. Once the sort process completed, close the sort option window and the selected History Work Orders will appear in the specified sorting sequence.

Double click on any of the work orders listed in the selector and the following history detail will be displayed:



Note:

In the History WO Details, the disabled tabs implied that no feedback data is provided in those tabs.

Detailed Field Descriptions:

WOID

This is the Work Order identifier, a positive unique integer value. This is a read-only field automatically managed by the system.

You can select the Work Order ID from the History Selector by pressing ${\bf F2}$ key or the selector button.

Status





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 330

Date: 21 August 200221 August 200221 August

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

This is the Status of the Work Order, which is always a user status for the archival system status.

Schedule Date

This is the date for which the work order was scheduled to start.

Eqpt Code

This is the equipment identifier, for which the Work Order was generated.

You can select the Equipment from the Equipment Selector by pressing F2 key or the selector button.

Equipment Description

This is the description of the Equipment / Group for which the work order was created.

Job ID

The identifier of the job carried out on the equipment.

You can select the Job from the Equipment Jobs Selector by pressing **F2** key or the selector button.

Pressing **F7** key or the mouse right button activates the Job Guidelines Details for the current code.

Job Description

This is the description of the equipment job.

Job Type

This is the Work Order's Job Type identifier.

You can select the Job Type from the Job Types Selector by pressing **F2** key or the selector button.

Job Type Description

This is the job type's long description.

Supervisor

This is the identifier of the supervisor of the current Work Order.

You can select the Supervisor from the Supervisor Selector by pressing **F2** key or the selector button.

Pressing **F7** key or the mouse right button activates the Supervisor Details for the current code.

Job Class

This is the code of the class in which the job was classified.

You can select the Job Class from the Job Classes Selector by pressing **F2** key or the selector button.

Job Class Description

This is the job class description.

Cost Centre





MAINTENANCE MANAGEMENT SYSTEM Page: 331

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

Reference:

029e/A756/PMP/8029e/A756 PMP/8029e/-KSC Version: 2.12.12.12.0 COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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This is the identifier of the Cost Centre to which the cost incurred on the Work Order was posted.

You can select the Cost Centre from the Maintenance Cost Centre Selector by pressing **F2** key or the selector button.

Pressing **F7** key or the mouse right button activates the Maintenance Cost Centre Details for the current code.

Under Details Tab:

Target Date

This is the target finish date of the work.

Start Date

This is the start date of the work for the work order.

Start Time

This is the time at which the work order was started.

Finish Date

This is the finish date of the work order.

Finish Time

This is the finish time of the work order.

Total Cumulative Units

This field represents the cumulative units of the meter of the Work Order at the end of execution (only if Work Order's job has a meter defined).

Planned Hours

This field represents the number of hours planned to be worked for this Work Order.

Actual Hours

This field represents the actual worked hours for this Work Order.

Previous WO ID

This is the previous Work Order identifier, an optional positive numeric integer value.

Plan ID

This is the plan number from where the Work Order comes, if the Work Order was generated from a plan. See Plan Jobs Module.

Job Request ID

This is the job request number, only for the Work Orders generated from a job request. See Planner Review Module.

Report By

This is the name of the person who reported the Work Order.

Report Date





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 332

Date: 21 August 200221 August 200221 August

20023 June 2002

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PMP/8029e/-

KSC Version: 2.12.12.1

This is the date of the Work Order reporting.

Report Time

This is the time of the Work Order reporting.

Report Phone

This is the phone number from where the Work Order was reported.

Labour Cost

This field specifies the total manpower cost (labour cost) incurred against the WO.

Material Cost

This is the total material cost incurred against the Work Order.

Miscellaneous Cost

This field specifies miscellaneous costs that may have been incurred against the Work Order.

Facility Cost

This is the total facility cost incurred against the Work Order.

Recovery Cost

This field specifies any costs recovered as adjustments (recovery costs).

Total Cost

This field specifies the total Work Order costs, using the following formula:

Total Cost = Labour Cost + Material Cost + Miscellaneous Cost - Recovery Cost

Repairable

This check box, if checked, specifies that this Work Order is a repairable work order for repair LRU.

Under More Tab:

The More Tab of View History WO Details window looks by default as follows:



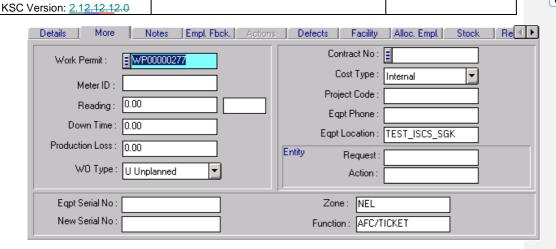


Keppel Steria Consortium (KSC) C756 Page: 333 MAINTENANCE MANAGEMENT SYSTEM 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK

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Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Work Permit

This is the identifier of the work permit that has been issued for this Work Order.

Reference:

This is the identifier of the meter for the Work Order Job.

This is the meter reading at the end of the Work Order (only if the job is based on a cumulative meter).

Down Time

This is the downtime (in hours) of the equipment because of this Work Order.

Production Loss

Number of hours the production has stopped because of this Work Order.

WO Type

This is the Work Order's type, i.e. the way in which Work Order was created: "planned", "unplanned" or "other".

Contract No

Specifies the contract code if a sub-contractor executed the job.

You can select the Contract from the Contract Selector by pressing F2 key or the selector button.

Cost Type

Specify the type of the Work Order Cost, i.e. internal or external.

Project Code

Specify the project code if the job was part of a project.

Egpt Phone





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 334

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.12.0

Reference:

This is the equipment nearest phone.

Eqpt Location

This is the equipment location from the moment the Work Order was executed.

Egpt Serial No

This is the equipment serial number at the Work Order's creation for a Work Order made for a repairable item.

Zone

This is the identifier of the Zone for the equipment upon which the Work Order was generated.

New Serial No

This is the serial number of the item that replaced the one with defects (relevant only for work orders made to replace a damaged repairable equipment with a corresponding available repairable item).

Function

This is the identifier of the Function for the equipment upon which the Work Order was generated.

Requesting Entity

This is the company entity that requested the work

Actioning Entity

is the company entity that performed the work order

Under Note Tab:

The Notes Tab of View History WO Details window looks by default as follows:



The interface consists of the drawing layout, where the user can write text and / or pictures, drawings, spreadsheets and any other form of OLE information.

Under Employee Feedback Tab:

The Employee Time Feedback Tab of View History WO Details window looks by default as follows:





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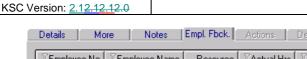
C756 Page: 335

Date: 21 August 200221 August 200221 August

20023 June 2002

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History Employee List Box

Reference:

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Employee No This is the identifier of the employee

Employee Name This is the employee's name

Resource This is the identifier of the employee's skill

Actual Hours Indicates the number of hours worked by the employee From Date This is the date when the employee's activity, for the

Work Order, started

This is the date when the employee's activity, for the To Date

Work Order, ended

Shift ID This is the shift identifier in which the employee

executed his/her Work Order activity

Cost Centre Current employee's cost centre



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 336

Date: 21 August 200221 August 200221 August 20023 June 2002

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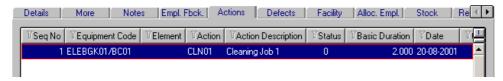
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Reference:

KSC Version: 2.12.12.12.0

Under Actions Tab:

The Actions Tab of View History WO Details window looks by default as follows:



Detailed Field Descriptions:

History Actions List Box

Seq No This is the sequence number of the Action in the Work

Order's list of Actions

Eqpt Code This is the identifier of the equipment for which the Action

was generated

Flement This is the identifier of the sub-equipment's subdivision for

which the Action is generated

Action This is the identifier of the Action Action This is the description of the Action

Description

Status This is the execution status of the action: 0-not realised, 1-

terminated ok, 2-error fixed, 3-error not fixed

Duration This is the duration of the Action **Date**

This is the action start date WO

This is the identifier of the Work Order made in order to Generated correct or complete the undone activity of this Action

(possibly, along with other Actions too)

Eqpt Status This is the description of the status in which the equipment

is, during the Action's execution upon the equipment

Operation This is the description of a manual identifier, which in turn,

Type explains how to complete such an Action kind

Device This is the description of the device with which the Action is

to be executed

Limit 1 The first restrictive value defined for the action

Unit 1 This is the measurement unit for the first restrictive value

Limit 2 The second restrictive value defined for the action

Unit 2 This is the measurement unit for the second restrictive value **Planned** This flag specifies if the Action was planned from Job





Keppel Steria Consortium (KSC) C756 Page: 337 MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8 COSWIN WORKCOSWIN WORK Date: 21 August 200221 029e/A756/PMP/8029e/A756/ August 200221 August 20023 June 2002 PMP/8029e/-KSC Version: 2.12.12.1

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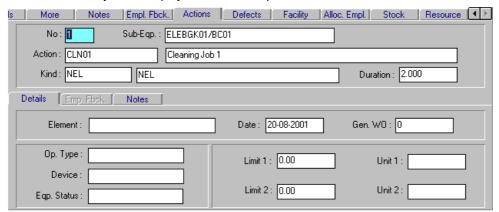
Guidelines (1) or not (0)

Action Kind This is the the code of the Action Kind Action Kind This is the description of the Action's kind Description Equipment This is the description of the equipment

Description

Tot. Res.

Double-click on any of the displayed actions will open the Action Detail window:



Detailed Field Descriptions:

This is the sequence number of the Action within the Work Order. Its value ranges from 1 to the number of actions within the Work Order.

Sub Equipment

This is identifier of the equipment / sub-equipment for which the Action was generated.

This is the identifier of the Action.

Action Description

This is the description of the Action.

Kind

This is the kind of the Action.

Kind Description

This is the description of the Action's kind.

Duration





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK C756
Page: 338

Date: 21 August 200221

August 200221 August 200224 August 200221 August 2002

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KSC Version: <u>2.12.12.1</u>2.0

This is the duration of the Action, a positive, not null, numeric value.

Flement

This is the description of the specific element in the equipment upon which the Action activates.

Date

Reference:

This is the Action's start date.

Generated WO

This is the identifier of the Work Order generated to correct or complete the current Action, if current Action's status is "error-fixed" or "error-not fixed".

Operation Type

This is the description of a manual identifier, which in turn explains how to complete such an Action on the equipment.

Device

This is the description of the device with which the Action is to be executed.

Equipment Status

This is the description of the status in which the equipment is, during the Action's execution upon the equipment.

Limit 1

During Action's execution, there can be certain parameters that must restrict to certain values. For an Action there can de defined 2 such restrictive values.

This is the first restrictive value.

Unit 1

This is the measurement unit for the first restrictive value.

Limit 2

This is the second restrictive value.

Unit 2

This is the measurement unit for the second restrictive value.

Action Notes

This window can be accessed from History Actions Details pressing the Notes Tabs.

The interface consists of the drawing layout, which can contents write text and / or pictures, drawings, spreadsheets and any other form of OLE information.

History Action Employee Feedback

This tab page can be accessed from History Actions Details pressing the Employee Feedback tab button.

Action Employee Feedback List Box

Actual Hours Indicates the number of hours worked by the employee

on the action

Employee This is the identifier of the employee





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 339

Date: <u>21 August 200221</u> August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

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MAINTENANCE MANAGEMENT SYSTEM | Page:

COSWIN WORKCOSWIN WORK

C756 Page: 340

Date: 21 August 200221 August 200221 August

<u>August 200221 August</u> <u>2002</u>3 June 2002

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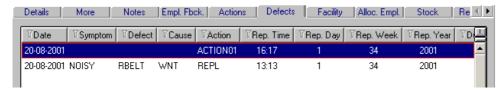
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Reference:

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Under Defects Tab:

The Defects Tab of View History WO Details window looks by default as follows:



History Defects List Box

Date This is the occurrence date of the defect

Symptom This is the identifier of the defect's symptom

Defect This is the identifier of the defect

Cause This is the identifier of the defect's presumed cause

Action This is the identifier of the action to be taken in order to

repair the defect

Reporting Time This is the time of defect reporting
Reporting Day This is the date of defect reporting
Reporting Week This is the week of defect reporting
Reporting Year This is the year of defect reporting

Duration The duration in hours for which the defect persisted

WO Ref. This is the identifier of the Work Order generated to fix the

defects

Meter Level The level of the meter when the defect occurred (only if

the job was based on a cumulative meter)

Total Cost The cost of repair

Double-click on any of the displayed defects will open the Defects Detail window:



C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/- MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 341 Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

s More	Notes Empl. I	Fbck. Actions	Defects Facility Alloc. Empl. Stock Resource
	Symptom:	NOISY	Noisy
	Defect:	RBELT	Rusty Belt
	Cause :	WNT	Wear and Tear
	Action:	REPL	Replacement
	Duration :	0.00	Date: 20-08-2001 Time: 13:13



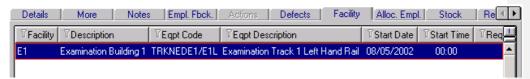
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Reference:
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MAINTENANCE MANAGEMENT SYSTEM
COSWIN WORKCOSWIN WORK
Date: 21 August 200221
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Under Facility Tab:

The Facility Tab of View History WO Details window looks by default as follows:



History Facility List Box

Facility This is the reference code of the generic facility. Description This is the description of the generic facility. **Eqpt Code** This is the reference code of the actual equipment used. **Egpt Description** This is the description of the equipment used as facility instance. Start Date/Time This is the date when the facility instance starts to be used. **Requested Time** This is the number of facility instance time units planned to be used for the work. **Used Time** This is the number of facility instance time units actually used for the work. **Time Unit** This is the unit of measure for the facility instance time actually used to do the work. Rate This is the cost of facility usage per time unit. **Actual Cost** This is the planned cost of facility usage.

The Allocated Employee Tab of View History WO Details window looks by default as follows:



History Allocated Employee List Box

Employee NoThis is the identifier of the allocated employee





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756
Page: 343

20023 June 2002

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- COSWIN WORKCOSWIN WORK Date: 21 August 200221

Date: 21 August 200221 Formatted: Font: 10 pt, Font color: August 200221 August

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KSC Version: <u>2.12.12.1</u>2.0

Reference:

Employee Name This is the name (description) of the allocated

employee

Planned Hours This is the number of hours planned for allocation

Rejection This specify if the allocated employee was rejected

due to lack of skills

0 – Accepted1 – Rejected

2 - Rejection Cancelled

WP This specify if the work permit request was raised or

not for the allocated employee

0 – Not raised1 – Raised

Date This is the date when allocation was performed

Planned This specify if the allocation was manual or automatic

0 – Manual 1 – Automatic

Under Stock Tab:

The Stock Tab of View History WO Details window looks by default as follows:



Stock Selection Criteria

This radio button specifies that the list of items in the list box, is seen as:

Global The Work Order's list of items; Defa

each item appears once in the list, regardless of the fact that the item is actually allocated for the Work Order itself or distributed

on Work Order Action

Default selection if the list is opened from History Work Order Details, and current Work Order has no actions

Details The Work Order's list of items, where items can appear more

than once, depending on their allocation: globally for Work

Default selection if the list is opened from History Work Order Details, and current Work Order has actions



C756 Page: 344

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221

August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

Order or by Action allocation

By Action The list of items for Work Order's current Action (items allocated to

the current selected Work Order Action). In this case, the

properties listed below are for

this action

Default selection if the list is opened from History Action Selector, and it is selectable

only in this case

History Stock List Box

Item This is the identifier of the item

Description This is the description of the item

Planned Quantity This is the quantity planned to be used from this item

This is the actual quantity used against the Work Order

Issued Quantity

Unit This is the unit that has been defined for the item

Cost This is the actual cost of the item, which is computed using

the latest available cost per unit, of the item

Stock/Non Stock

This flag specifies if an item with current code exists in the

stock, or not

1 - Non-stock

0 - Stock

Sequence N°

Actions

If item is allocated for an Work Order's Action, this field specifies the sequence number of the Action in the Work

Order's list of Actions; otherwise is 0

Total **Planned** This is Total for Planned quantities (in global mode only)

Quantity **Total Issued**

This is the Total for Issued quantities (in global mode only)

Quantity

Total Cost This is the Total for the Costs (in global mode only)

Systematic /

This column specifies if the item is used systematically (0)

Conditional or depending on certain constraints (1)

Double-click on any of the displayed stock will open the Stock Issue Detail window:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 345

Date: 21 August 200221

August 200221 August 20023 June 2002

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Under Resource Tab:

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KSC Version: 2.12.12.12.0

Reference:

PMP/8029e/-

The Resource Tab of View History WO Details window looks by default as follows:



Resource Selection Criteria

This radio button specifies the selection criteria for the resources:

Global The Work Order's list of resources: each resource appears once in the list, regardless of the fact that the resource is actually allocated for the

Work Order itself or distributed on Work Order Actions The Work Order's list of resources,

where resources can appear more than once, depending on their allocation: globally for Work Order

or by Action allocation

The list of resources for Work Order's current Action (resources allocated to the current selected Work Order Action). In this case,

the properties listed below are for this action

Default selection if the list is opened from History Work Order Details, and current Work Order has no actions

Default selection if the list is opened from History Work Order Details, and current Work Order has actions

Default selection if the list is opened from History Actions Selector, and it is selectable only in this case

History Resource List Box

Resource This is the identifier of the resource

Code

Details

By

Action

Description This is the resource's description

Required N° This is the required number of this kind of resources for

the Work Order or for the Work Order's Action

Planned Hours

This is the resource's number of hours planned for the

Job on which the Work Order is done

Actual Hours The hours actually worked by this resource type for the

Work Order

Start Day This is the first day on which this kind of resource is





Keppel Steria Consortium (KSC) C756 MAINTENANCE MANAGEMENT SYSTEM Page: 346

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

Reference:

KSC Version: <u>2.12.12.1</u>2.0

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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needed (if the Job extends on more than one day)

Remaining Hours

The hours planned but not worked

Labour **Actual Cost** The actual cost of the labour

Last Date Worked

The date of the last employee feedback for this resource

on the Work Order

Sequence No If resource is allocated for a Work Order's Action, this

field specifies the sequence number of the Action in the

Work Order's list of Actions; otherwise is null

Total Planned Hours

This is the total number of planned hours for this kind of

resource (only in global mode)



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 347

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 Formatted: Font: 10 pt, Font color:

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

Reference:

9.2 CREATE/MODIFY HISTORY RECORD

Path: Maintenance / History / Add/Modify History

Using this module, the user can add new (earlier) Work Orders to the history module or modify the feedback notes and add defects feedback on existing History Work Orders. The work order number will be generated by the system.

The work order can be added with minimum inputs to the system. Choice lists have been provided at every stage of input. A work order can be created for an Equipment / Group which has already been defined using Topographical / Grouping modules from Equipment Register.

The Work Order can be made on an existing job definition for the Equipment / Group. This job should have been defined through Job Guidelines.

Select from COSWIN menu *Maintenance / History / Add/Modify History* to launch the Add/Modify History module.

The Add/Modify History Details window looks by default as follows:



MAINTENANCE MANAGEMENT SYSTEM | Page: 348

C756

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

COSWIN WORKGOSWIN WORK

Date: 21 August 200221

August 200221 August
20023 June 2002

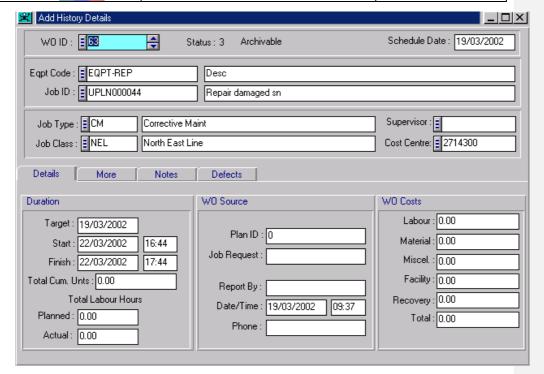
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KSC Version: 2.12.12.1

Reference:



Detailed Field Descriptions:

WO ID

This is the Work Order identifier, a positive unique integer value (up to 8 numeric characters). This is a read-only field automatically managed by the system.

In ADD mode, it is automatically generated by the system.

Schedule Date

This is the date for which the work order was scheduled, a mandatory information.

If it is left blank, the system proposes by default the current date value.

Eqpt Code

Indicate the Equipment / Group code for which the work order is to be created, a mandatory. The code must exist in the Equipment Register.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Equipment Description

This is the description of the equipment on which the Work Order was performed, a readonly field automatically managed by the system.

Job ID





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 349

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.12.0

Reference:

This is the identifier of the job carried out on the equipment, a mandatory information. It must have been defined for the given equipment in Job Guidelines.

After choosing the job, the following data items will be displayed for the work order:

Job description

Job type

Job type description

Supervisor

Contract

Work Order Cost Type

Planned hours

A selector trigger button (or F2 key) linking to Equipment Jobs Selector is available.

Job Description

This is the description of the job, a read-only field automatically managed by the system.

Type

This is the Work Order's Job Type identifier, a mandatory information. It must exist in the directory of Job Types.

A selector trigger button (or F2 key) linking to Job Types Selector is available.

Type Description

This is the description of the job's type, a read-only field automatically managed by the system.

Supervisor

This is the identifier of the supervisor of the Work Order, an optional information.

The entered identifier must exist in the directory of Supervisors.

A selector trigger button (or F2 key) linking to Supervisor Selector is available.

Specify the class in which the job will be classified. This is an optional information. The entered identifier must exist in the directory of Job Classes. If the user does not provide a job class, the system will use the default job class, defined in the parameters of COSWIN Configuration.

A selector trigger button (or F2 key) linking to Job Class Selector is available.

Class Description

This is the description of the job's class, a read-only field automatically managed by the system.

Cost Centre

This is the identifier of the Cost Centre to which the cost incurred on the Work Order should be posted. It is a mandatory information and must exist in the directory of Cost Centres. A selector trigger button (or F2 key) linking to Cost Centre Selector is available.

Target Date

Specify the target date by which the work order supposes to complete, an optional information.





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 350

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

756/PMP/8029e/A756/PMP/8

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Start Date

Reference:

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Specify the start date of the work on the work order, an optional information.

If the start date is not specified, the date is computed as the difference between the finish date and the duration of the job.

Start Time

This is the time at which work on the work order was started, an optional information.

Finish Date

Specify the finish date of the work on the work order, a mandatory information.

If the start date has been specified, the system computes the finish date as the sum of the start date and the job duration.

Finish Time

This is the finish time of the work on the work order, an optional information.

If the start date has been specified and the duration of the job is one day, then the system proposes a default value by adding one hour to the start time.

Total Units (T. Units)

This field represents the cumulative units of the meter at the end of the Work Order execution (only if Work Order's job is based on a cumulative meter).

Planned

This represents the number of hours planned to be worked for this Work Order, a read-only information automatically managed by the system.

Actual

This field represents the actual worked hours for this Work Order, a read-only field automatically managed by the system.

Plan No

This is the identifier of the Plan from which Work Order was released (if the Work Order was generated from a plan), a read-only information automatically managed by the system.

Job Request ID

This is the job request number (only for the Work Orders generated from a job request), a read-only information automatically managed by the system.

Reported By

These are the initials of the person who has reported the requirement for the job, an optional information that can take up to 13 alphanumeric characters.

This is the date of reporting the requirement for the job, an optional information.

By default, the current date will be displayed.

Time

This is the time of reporting the requirement for the job, an optional information.

By default, the current time will be displayed.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 351

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color:

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Reference:

KSC Version: <u>2.12.12.1</u>2.0

756/PMP/8029e/A756/PMP/8

Phone

If the requirement for this work order was intimated by phone, you may specify the phone number. This is an optional information, which can take up to 13 alphanumeric characters.

Labour Cost

This field specifies the total manpower cost (labour cost) incurred against the WO. It is a read-only positive numeric value automatically managed by the system, on the basis of Employee Time Feedback.

The formula used to compute the value is:

$$CCLH + \sum_{E} (FR_E + \sum_{A} (H_A * R_A))$$

Where:

- CCLH is the cost of contracted labour hours
- FR is the fixed rate of the employee E
- H is the number of hours worked by employee E to perform the activity A
- R is the rate under which employee E performed the activity A

Material Cost

This is the total material cost incurred against the Work Order. It is a read-only positive numeric value automatically managed by the system, on the basis of Stock usage and Issues against the Work Order.

The formula used to compute the value is:

$$CM + \sum_{S} (QTY_{S} * UP_{S})$$

Where:

- CM is the cost of materials provided by the sub-contractor
- QTY is the quantity used (issued) of the spare S
- UP is the unit price of the spare S

Miscellaneous Costs

This field specifies miscellaneous costs that may have been incurred against the Work Order. It is a positive numeric value, a read-only information automatically managed by the system.

Recovery Cost

This field specifies any costs as adjustments (recovery costs). It is a positive numeric value, a read-only field automatically managed by the system. For example, if a replaced component has some value as it can be repaired and reused, then certain costs of the component can be specified as recovery.

Total Cost

This field specifies the total Work Order costs. It is a read-only information automatically managed by the system, using the following formula:

Total Cost = Labour Cost + Material Cost + Miscellaneous Cost - Recovery Cost

Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 352

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u>

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

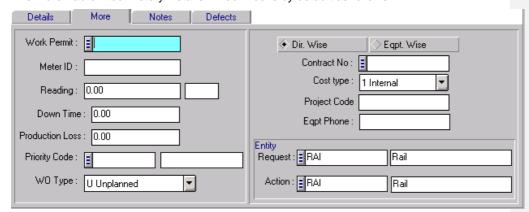
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Add History Details - More Tab

The More Tab of Add History Details window looks by default as follows:



Work Permit No

Specify the Work Permit required by the Work Order. This is an optional information. The entered identifier must exist in the directory of Work Permits.

A selector trigger button (or F2 key) linking to Work Permit Selector is available.

Meter ID

This is the identifier of the meter on which the Work Order Job is based, a read-only information automatically managed by the system.

Reading

This is the reading of the meter taken at the end of the Work Order, a mandatory information if the job is based on a cumulative meter. Otherwise, it is zero. It is a positive numeric value.

Down Time

This is the downtime (in hours) of the equipment because of this Work Order, a read-only information automatically managed by the system.

Production Loss

Number of hours the production has stopped because of this Work Order, a read-only information automatically managed by the system.

Priority Code

This is the priority code assigned to the Work Order. This is an optional information and the entered identifier must exist in the directory of Priority Codes.

A selector trigger button (or F2 key) linking to Priority Selector is available.

WO Type

This combo box defines the Work Order's type, i.e. the way in which Work Order was created: "Planned", "Unplanned" or "Other".

Contract Selection Criteria (Dir wise / Eqpt wise)





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756
Page: 353

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/A

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

This radio button specifies the selection criteria for the Work Order job contract (for Work Orders made based on a contract):

Directory Wise Select among all job contracts

Equipment Wise Select among equipment's job contracts

Contract

Specify the contract code if the job is executed by a sub-contractor. It is an optional information and must exist in the directory of Contracts.

A selector trigger button (or F2 key) linking to Contracts Selector is available.

Cost Type

This combo box specifies the type of the Work Order Cost, i.e. internal or external. By default, the type of the Work Order Cost is the one established in Job Guidelines for the equipment job.

Project

Specify the project code if the job was part of a project. This is an optional information, which can take up to 10 characters.

Equipment Phone

This is the equipment nearest phone, a read-only information automatically managed by the system.

Request Authority

This is the company entity that is requesting the job, an optional information. The provided value of authority must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.

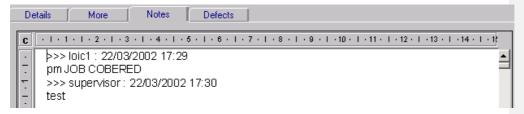
Action Authority

This is the company entity that is supposed to perform the work, an optional information. The provided value of authority must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entities Selector is available.

Add History Details - Notes Tab

The Notes Tab of Add History Details window looks by default as follows:



This tab specifies any feedback notes pertaining to the work being done on the equipment.

The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 354

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.1

756/PMP/8029e/A756/PMP/8

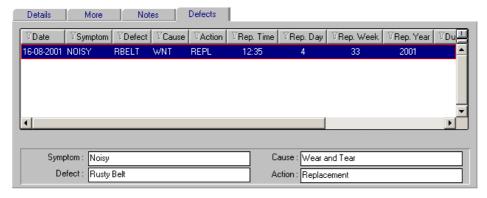
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Reference:

PMP/8029e/-

Add History Details - Defects Tab

The Defects Tab of Add History Details window looks by default as follows:



History Work Order Defects List Box

Date The date of occurrence of the defect

Symptom The symptom code for the problem on the current equipment

Defect The code for the defect on the current equipment

Cause The code for the cause of the defect on the current equipment Action The code for the action taken to rectify the defect on the

current equipment

Reporting Time This is the time of defect reporting

Duration The duration in hours for which the defect persisted WO Ref. The work order for which the defect was found

Meter Level The meter level when the defect occurred (if available)

Total Cost The cost of repair

Symptom

Specifies the description of the symptom for the problem on the current equipment.

Specifies the description of the cause of the defect on the current equipment.

Specifies the description of the defect on the current equipment.

Action

Specifies the description of the action taken to rectify the defect on the current equipment.

9.2.1 To Add a New History Work Order

Minimum information required to ADD a Work Order is:





Keppel Steria Consortium (KSC) C756

MAINTENANCE MANAGEMENT SYSTEM Page: 355

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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o Schedule Date

- o Equipment
- o Job ID
- o Finish Date

Click on the icon to launch the ADD window.

9.2.2 To Modify a History Work Order

Only the Notes and the Defects of a History Work Order can be modified.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 356

Date: 21 August 200221

August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color:

Formatted: Font: 9 pt

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

PMP/8029e/-

Reference:

KSC Version: 2.12.12.12.0

10. REPAIRABLE EQUIPMENT MANAGEMENT

Repairable Management refers to the breakdown maintenance of the repairable equipment. Repairable equipment is defined as the equipment that has an equivalent stocked item (of repairable type). Repair on such equipment will be a replacement of the entire faulty equipment with its equivalent stocked item from the store.

Tracking of Repairable Equipment by Serial Numbers

Serial numbers are attached to repairable equipment and equivalent repairable stocked items in order to keep track of these maintenance operations. The most recent serial number identifies the current instance of repairable equipment used in production. The past serial numbers reflect the history of the repairable equipment.

Only the replacement date of the most recent serial number can be modified (it represents the date when the repairable equipment start its production activity).

Breakdown Maintenance Process on Repairable Equipment

The breakdown maintenance of the repairable equipment s performed in two steps:

First, the broken equipment (identified by a specific serial number) is replaced with an available one from the stock and the production may be resumed.

Then, the broken equipment is actually repaired (if possible).

The system provides a special mechanism to manage the specific maintenance process of repairable equipment through a pair of work orders:

- The first work order is raised to repair the damaged (sub)equipment. Subsequently, a stock issue of the equipment's equivalent stock item to the work order will trigger a replacement of the damaged equipment with a good one issued. This is to avoid the malfunctioning of the parent equipment.
- The second work order is raised from the first work order, to perform the repairing activity for the damaged (sub)equipment. Its job has always behaviour 0 JUST IN TIME (breakdown maintenance).

This facility is also applicable for non-repairable equipment (any work order that needs additional work to be performed after can be the source of generating another work order), though there will not be serial numbers associated to the equipment to track its movements.

The repairable equipment serial numbers implied in the maintenance activities are recorded on the repairable work orders. Each work order made for a repairable equipment stores the following two serial numbers:

- Old serial number the equipment serial number valid at the work order's creation
- New serial number the serial number of the stocked item issued from the store to replace the one with defects





Keppel Steria Consortium (KSC) C756 MAINTENANCE MANAGEMENT SYSTEM | Page: 357

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/A

029e/A756/PMP/8029e/A756 PMP/8029e/-KSC Version: 2.12.12.12.0 COSWIN WORKCOSWIN WORK

Page: 357
Date: 21 August 200221
August 200221 August
20023 June 2002

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When the second work order made against a repairable equipment (the one which performs the repairing job) is progressed into archival state, the user must supply:

- The value of the stocked item
- The status for the repairable item, which at this point can be "available" or "garbage"

Stock Management on the Repairable Stock Items

A stocked item of type 2-REPAIRABLE corresponds to an repairable equipment. Each location of repairable stocked item stores the following additional information:

- A serial number
- A status with the following possible values:
 - 0 AVAILABLE
 - 1 TO REPAIR
 - 2 UNDER REPAIR
 - 3 GARBAGE

The available quantity in the repairable stocked item is always either 0 or 1.

A new serial number is recorded on the equipment

When a repairable stocked item is issued against a repair work order for a repairable equipment, the serial number reference of the stocked item issued will be recorded as the new serial number of the equipment, and the issue date as the replacement date. The existing attributes of the repairable equipment will also be replaced with the attributes of the stocked item. Only the corresponding attributes will be replaced. If an attribute exists for the stocked item, but does not exist for the repairable equipment, the attribute will be added to the repairable equipment.

A receipt of the damaged equipment (under its equivalent stock item code) back to store will be automatically created by the system following the stock issue for a repair work order. The Delivery Reference Number generated will have a 6 digits serial number instead of the usual 7-digits and the supplier of this receipt record is the company code defined in the COSWIN Configuration's Store / Company parameter. The damaged item will be received into the same location used for the issue. The serial number of the location will be the serial number of the damaged equipment.

The following table presents the maintenance flow for repairable equipment.

	Activity	Results
1	Raise a job request for damaged repairable equipment.	Job request created.
2	Release work order to move damaged repairable equipment to repair yard.	The work order cCaptures the serial number of damaged equipment.





Keppel Steria Consortium (KSC) C756 Reference: MAINTENANCE MANAGEMENT SYSTEM Page: 358 756/PMP/8029e/A756/PMP/80

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23 June 2002
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	Activity	Results
2.1	Create an issue on the repairable stock item against the work order released to replace the damaged equipment. The issue location must have the status 0-AVAILABLE.	The work order Createcaptures athe new serial number for the damaged equipment using the serial number of the location from where the stocked item was issued and the issue date as the replacement date.
		The financial purchase order for the equipment replaces the warranty expiry date with that of the issued item.
2.2	The system will automatically create a receipt for the damaged repairable equipment into the store.	Receive the damaged equipment in the location from which the stocked item was issued. The status of the location is updated to 1-TO REPAIR.
3	Create repair work order from the first work order.	
3.1	Progress the repair work order to status 1-IN PROGRESS	The status of the location containing the damaged equipment is updated to 2-UNDER REPAIR
3.2	Progress the repair work order to status 3-ARCHIVAL	The user must specify the final status of the location containing the damaged equipment. The following values are available: 0-AVAILABLE, 3-GARBAGE

KSC Version: <u>2.12.12.1</u>2.0



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 359

Date: 21 August 200221 August 200221 August

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Reference:

KSC Version: <u>2.12.12.1</u>2.0

10.1 MAINTENANCE GRAPHICS AND ANALYSIS

COSWIN provides a set of analysis reports under the module Maintenance Graphics and Analysis.

In these reports, selection criteria are provided to choose the information upon which analysis is to be done and reported. Analysis can be done upon Zone, Function, Cost Centre, Equipment, Budget, Contract or Subcontract.

The module consists of the following types of reports:

- 1. Analysis Reports Various Cost Analysis will be reported
- Defect/Employee Time Analysis Equipment defects and employee time analysis will be reported
- 3. Depreciation Report Equipment depreciation information will be reported
- 4. Plan Jobs Reports Plan Jobs information will be reported
- 5. CBM Reports Measurement activity will be reported
- 6. Performance Analysis Graphics Maintenance activity will be reported
- 7. Budget versus Actual Graphics Budget costs information will be reported
- 8. Resource Availability Resource availability information will be displayed
- 9. Resource Req. Vs. Wrench Resource time allocation will be displayed
- 10. Others Other reports may be created and/or linked



C756

Reference: 756/PMP/8029e/A756/PMP/8

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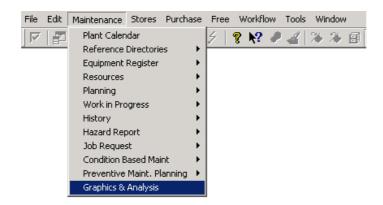
Page: 360 Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

Select from COSWIN menu *Maintenance / Graphics & Analysis* to launch the Maintenance Graphics and Analysis module.



The Maintenance Graphics & Analysis window looks by default as follows:





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

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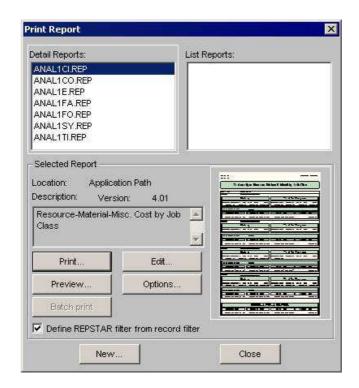
Page: 361

Date: 21 August 200221 August 200221 August 20023 June 2002

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To print any of the analysis reports, select the respective radio button from the Maintenance Graphics and Analysis module and click on the 🗐 icon. A report print dialog similar to that shown below will be launched:



From the Detail Reports or List Reports list box window, select the report to be printed. Click button to send the report to the printer or on the on either the button to view the report on the screen.

Options. Data selection criteria may be provided along with these reports. Click on the button to view the options provided.

Below are the detailed descriptions on the various types of reports provided.



C756 Page: 362 MAINTENANCE MANAGEMENT SYSTEM

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: 2.12.12.1

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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10.2 ANALYSIS REPORTS

These reports may use data from history work orders and/or work in progress, and generate:

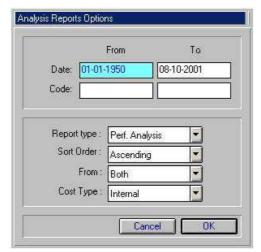
- Calculation of maintenance costs, down time, production loss, number of work orders, planned and actual hours. The costs may be calculated in "planned, unplanned and other" wise or in "resource, material and miscellaneous" wise.
- Comparison of costs, production loss and down time by zone, function, cost centre, category, job type, job class or contract.

The following are the detailed reports available under the Analysis Reports type:

ANAL1CI.REP	Resource-Material-Miscellaneous Cost Analysis by Job Class
ANAL1CO.REP	Resource-Material-Miscellaneous Cost Analysis by Contract
ANAL1E.REP	Resource-Material-Miscellaneous Cost Analysis by Equipment
ANAL1FA.REP	Resource-Material-Miscellaneous Cost Analysis by Category
ANAL1FO.REP	Resource-Material-Miscellaneous Cost Analysis by Function
ANAL1SY.REP	Resource-Material-Miscellaneous Cost Analysis by System
ANAL1TI.REP	Resource-Material-Miscellaneous Cost Analysis by Job Type

The Analysis Reports Options window, activated by clicking on the looks by default as follows:





Detailed Field Descriptions:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 363

Date: 21 August 200221 August 200221 August

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PMP/8029e/-KSC Version: <u>2.12.12.1</u>2.0

Reference:

Enter lower and upper limits of the dates between which costs analysis is to be reported.

Code

Enter lower and upper limits of the identifiers of the zone, function, cost centre, category, job type, job class or contract for which analysis report is to be done (up to 10 alphanumeric characters).

Report type

756/PMP/8029e/A756/PMP/8

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This combo box specifies the type of information to be generated in the report. It must be one of the followings:

- Performance Analysis the report will include calculation of maintenance costs, number of Work Orders, planned and actual worked hours
- Planned/Unplanned/Other the report will include calculation of maintenance costs for Planned, Unplanned and Other maintenance activity
- Res./Mat./Miscellaneous the report will include calculation of maintenance costs for Resources, Materials and miscellaneous costs
- Operation the report will include calculation of maintenance costs, down time and production loss

Sort Order

This information specifies the order in which the zone, function, cost centre, category, job type, job class or contract identifiers' information will be reported. It must be one of the followings:

- o Ascending order
- Descending order

Data from

This information specifies the source of the costs information. It must be one of the followings:

- WIP work in progress cost information will be reported
- o History history cost information will be reported
- o Both the sum of the costs from both work in progress and history, will be reported

Cost Type

This information specifies the type of the costs to be reported. It must be one of the followings:

- Internal costs
- External costs
- Total costs





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 364

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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Reference:

10.3 DEFECT/EMPLOYEE TIME ANALYSIS REPORTS

Employee Time Analysis

This is the computation of work order labour costs using number of hours worked and the applicable hourly rates. It also generates the standard hours required of each trade for a specific job. This is useful in manpower planning for future jobs

Defect Analysis

This is the computation of defect costs calculated from the cost of work order.

Finding the main causes/symptoms of equipment failure as well as most frequent defects and the corrective actions taken

Calculation of the Mean Time Between Failures for an equipment as well as the equipment category.

The following are the detailed reports available under the Defect/Employee Time Analysis type:

ANALCAU.REP Cause Analysis (Options: Defects)
ANALDEF.REP Defect Analysis (Options: Defects)

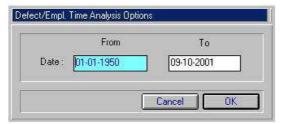
ANALEMP.REP Analysis of Hour Worked by Employee from WIP (Options:

Employee Time)

ANALREM.REP Action Analysis (Options: Defects)

ANALSYP.REP Symptom Analysis (Options: Defects)

The Defect/Employee Time Analysis Options window, activated by clicking on the button, looks by default as follows:



Detailed Field Descriptions:

Date

Enter lower and upper limits of the defects / employees creation or last updating Date between which the analysis is to be done.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 365

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

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10.4 DEPRECIATION REPORTS

Equipment depreciation information can be entered through the depreciation module in the equipment register. This information is useful in making decision regarding maintenance related issues:

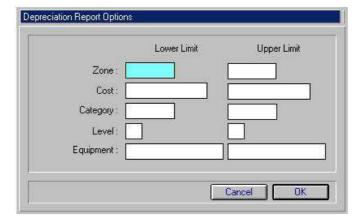
- Replacement decisions
- Calculation of net equipment value after depreciation

The following are the detailed reports available under the Depreciation Report type:

MDEP-01.REP Equipment Depreciation by Cost Centre
MDEP-02.REP Equipment Depreciation by Entity

The Depreciation Reports Options window, activated by clicking on the button, looks by default as follows:





Detailed Field Descriptions:

Zone

Enter lower and upper limits of the identifiers of the Zones, between which Equipment depreciation information is to be printed (up to 6 alphanumeric characters).

Cost Centre

Enter lower and upper limits of the identifiers of the Cost Centres, between which Equipment depreciation information is to be printed (up to 10 alphanumeric characters).

Category

Enter lower and upper limits of the identifiers of the Categories, between which Equipment depreciation information is to be printed (up to 6 alphanumeric characters).





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 366

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

Equipment level

Enter lower and upper limits of the levels of the Equipment between which depreciation information is to be printed (a positive integer information 0...99).

Enter lower and upper limits of the identifiers of Equipment between which depreciation information is to be printed up to 16 alphanumeric characters.



C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 367 Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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10.5 PLAN JOBS REPORTS

The following reports can be generated:

- Report for a period
- Missed jobs report
- Overdue jobs report
- Backlog jobs report

Each of these reports gives a list of planned jobs along with either Manpower or Stock required to carry out the job.

For planned jobs reports with Manpower requirements a summary report can be generated. This summary shows zone-wise Manpower requirements for each of the trades (resources). It also generates a summary giving the Manpower requirements for all the planned jobs listed in the report.

Similarly, for planned job reports with Stock requirements a summary report can be generated. This report shows the Stock requirements for all the planned jobs listed in the report.

The reports can be generated in one of the following sort orders:

- o Zone-wise, Equipment-wise and Job-wise
- o Zone-wise, Equipment-wise and Date-wise
- o Zone-wise, Date-wise and Equipment-wise

The following are the detailed reports available under the Plan Jobs Report type:

PLANRES.REP Planned Jobs – Resources
PLANSTK.REP Planned Jobs – Stock

The Plan Job Reports Options window, activated by clicking on the looks by default as follows:

Options... button.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

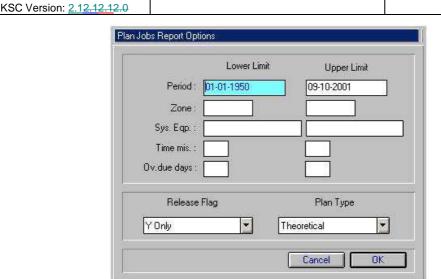
C756 Page: 368

Date: 21 August 200221 August 200221 August

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Detailed Field Descriptions:

Period

Reference:

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Enter lower and upper limits of the Plan Jobs' creation or last updating date, between which the Plan jobs are selected for the report. COSWIN automatically proposes 01/01/1950 as lower limit and the current date as upper limit.

Zone

Enter lower and upper limits of the identifiers of the Zones, between which Equipment's Plan Jobs are selected for the report (up to 6 alphanumeric characters).

System Equipment

Enter lower and upper limits of the identifiers of the Equipment instances whose Plan Jobs are selected for the report (up to 16 alphanumeric characters).

Times missed

Enter lower and upper limits of the number of times the Plan Jobs were missed, during the planning operation, for the Plan Jobs to be printed (reported). These are optional positive integer information.

Overdue days

Enter lower and upper limits of the time intervals, in days, between Plan Job's planned date (the ideal date when the Job is to be executed) and the Plan Job's actual execution date (the date when the Job is to be actually executed), for the Plan Jobs to be selected for the report. These are optional positive integer information.

Release Flag

This information specifies what kind of Plan Jobs should be selected, from their release flag point of view (the release flag specifies whether a Plan Job may be released or not). It is a mandatory information, and it must be one of the followings:





Keppel Steria Consortium (KSC) C756 Page: 369 MAINTENANCE MANAGEMENT SYSTEM Reference: 756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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o "Y" only (only Plan Jobs that can be released)

- o "N" only (only Plan Jobs that cannot be released)
- o All

Plan Type

This information specifies the type of Plan Jobs to be selected, for the report. It is a mandatory information, and it must be one of the followings:

- o Theoretical
- Practical
- Both



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 370

Date: 21 August 200221 August 200221 August

August 200221 Aug 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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KSC Version: <u>2.12.12.1</u>2.0

LSTFBPMD.REP

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029e/A756/PMP/8029e/A756/

Reference:

PMP/8029e/-

10.6 CONDITION BASED MAINTENANCE (CBM) REPORTS

This report provides a list of planned jobs indicating job due and jobs with missing readings.

Equipment Measurement Feedback

The following are the detailed reports available under the CBM Report type:

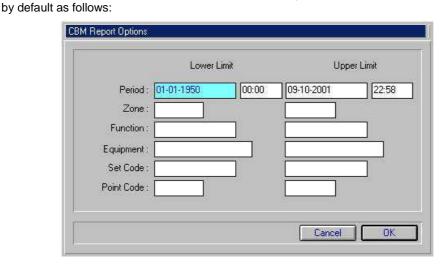
LSTMCUNI.REP Measurement Sets List

LSTNORM.REP CBM Norms List

LSTMESEQ.REP Equipment Measurement Set

The CBM Reports Options window, activated by clicking on the

Options... button, looks



Detailed Field Descriptions:

Period

Enter lower and upper limits of the dates between which measurement activity is to be reported.

Time

Enter lower and upper limits of the specific time between which measurement activity is to be reported.

Zone

Enter lower and upper limits of the identifiers of the Zones, between which measurement activity is to be reported (up to 6 alphanumeric characters).





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 371

Date: 21 August 200221 August 200221 August 20023 June 2002

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Function

Enter lower and upper limits of the identifiers of the Functions, between which measurement activity is to be reported (up to 10 alphanumeric characters).

Equipment

Enter lower and upper limits of the identifiers of the Equipment, for which measurement activity is to be reported (up to 16 alphanumeric characters).

Set Code

Enter lower and upper limits of the identifiers of the measurement point Sets, between which measurement activity is to be reported (up to 10 alphanumeric characters).

Point Code

Enter lower and upper limits of the identifiers of the measurement points, between which measurement activity is to be reported (up to 6 alphanumeric characters).



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 372

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u> **Formatted:** Font: 10 pt, Font color: Auto

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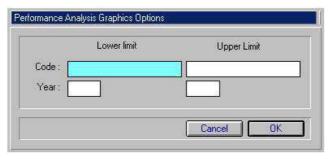
KSC Version: <u>2.12.12.1</u>2.0

10.7 PERFORMANCE ANALYSIS GRAPHICS REPORTS

The following are the detailed reports available under the Performance Analysis Report type:

GRMENCCC.REP	Graph of Monthly Cost for a Cost Centre
GRMENCCL.REP	Graph of Monthly Cost for a Job Class
GRMENCCO.REP	Graph of Monthly Cost for a Contract
GRMENCEQ.REP	Graph of Monthly Cost for an Equipment
GRMENCFA.REP	Graph of Monthly Cost for a Category
GRMENCFO.REP	Graph of Monthly Cost for a Function
GRMENCPR.REP	Graph of Monthly Cost for a Project
GRMENCSY.REP	Graph of Monthly Cost for a System
GRMENCTY.REP	Graph of Monthly Cost for a Job Type
GRMENCZO.REP	Graph of Monthly Cost for a Zone
GRMENHCC.REP	Graph of Monthly Worked Hours for a Cost Centre
GRMENHCL.REP	Graph of Monthly Worked Hours for a Job Class
GRMENHCO.REP	Graph of Monthly Worked Hours for a Contract
GRMENHEQ.REP	Graph of Monthly Worked Hours for an Equipment
GRMENHFA.REP	Graph of Monthly Worked Hours for a Category
GRMENHFO.REP	Graph of Monthly Worked Hours for a Function
GRMENHPR.REP	Graph of Monthly Worked Hours for a Project
GRMENHSY.REP	Graph of Monthly Worked Hours for a System
GRMENHTY.REP	Graph of Monthly Worked Hours for a Job Type
GRMENHZO.REP	Graph of Monthly Worked Hours for a Zone

The Performance Analysis Reports Options window, activated by clicking on the Options... button, looks by default as follows:







MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 373

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

Detailed Field Descriptions:

Enter lower and upper limits of the identifiers of Zone, Function, Cost Centre, Equipment, Budget, Contract or Subcontract, between which the report is generated (up to 17 alphanumeric characters).

Enter lower and upper limits of the dates between which the report's information is being collected.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 374

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color: Auto

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

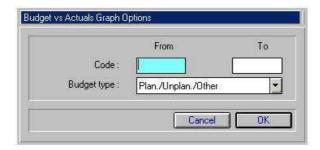
KSC Version: 2.12.12.1

Reference:

10.8 BUDGET VERSUS ACTUAL REPORTS

The following are the detailed reports available under the Budget versus Actual Report type:

The Budget versus Actual Reports Options window, activated by clicking on the button, looks by default as follows:



Detailed Field Descriptions:

Budget Centre

Enter lower and upper limits of the identifiers of the Budget Centres, between which the report is generated (up to 6 alphanumeric characters).

Budget type

This information specifies the Budget Centre targets, for which the report is generated. It is a mandatory information, and it must be one of the followings:

- "Planned / Unplanned / Other" the report will contain information concerning the Planned, Unplanned and Other Budget Centres
- "Resources/Materials/Miscellaneous" the report will contain information concerning the Resource's, Materials' and miscellaneous Budget Centres





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 375

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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10.9 RESOURCE AVAILABILITY REPORTS

Resource Availability Chart

The purpose of this window is to display a chart containing the resource availability for a specified Resource during a specified period of time. The window is opened by pressing Graphic button from Graphical Resource Availability window.

Chart Layout

Reference:

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756/PMP/8029e/A756/PMP/8

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KSC Version: 2.12.12.1

This is the graph layout. On the abscise, the time units, for which resource availability is considered, are specified; the ordinate displays the number of hours, for which different resource availability information is considered. The following information concerning the Resource availability is displayed, depending on the selection made in Graphical Resource Availability:

- Wrench hours (red) 0
- Work in Progress hours (green) 0
- Free hours (blue)
- Planned hours (yellow) 0
- Total hours (magenta)

The following are the detailed reports available under the Resource Availability Report type:

The Resource Availability Reports Options window, activated by clicking on the Options button, looks by default as follows:





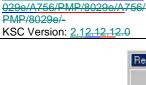
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 376

Date: 21 August 200221 August 200221 August

August 200221 Augu 20023 June 2002 **Formatted:** Font: 10 pt, Font color: Auto

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Reference:



Detailed Field Descriptions:

X-Axis

This radio-button specifies the information displayed on the abscise of the Resource availability chart.

Time The resource availability information is displayed for each

period during a specified interval

Resource The resource availability information is displayed for each

Resource

Period Code

This radio-button specifies the time units, depending on which the resource availability information is displayed.

Day The time unit is one day (the resource availability is

displayed for each day, beginning from the specified date)

Week The time unit is one week (the resource availability is

displayed for each week, beginning from the specified date)

Resource

This is the identifier of the Resource, for which the availability information is displayed, an optional information that can take up to 6 alphanumeric characters. It must exist in the database and it must be unique.

You can select the Resource from the Resource selector by pressing **F2** key or the selector button.

Start Date

This is the date beginning from which the availability information is displayed, an optional information, automatically proposed as the current date.

Display Assigned Load Plan Hours





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 377

Date: 21 August 200221 August 200221 August

20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

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Reference:

KSC Version: <u>2.12.12.1</u>2.0

This information specifies whether the duration of the work assigned to the Resource is to be displayed or not, for the specified Resource and for the specified period of time.

Display Total Load Plan Hours

This information specifies whether the duration of the total work of the Resource is to be displayed or not, for the specified Resource and for the specified period of time.

Display Wrench Hours

This information specifies whether the duration of the already worked period is to be displayed or not, for the specified Resource and for the specified period of time.

Display WIP Hours

This information specifies whether the duration of the work in progress is to be displayed or not, for the specified Resource and for the specified period of time.

Display Free Hours

This information specifies whether the duration of the free time is to be displayed or not, for the specified Resource and for the specified period of time.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 378

Date: 21 August 200221 August 200221 August

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Reference:

10.10 RESOURCE REQUIREMENT VERSUS WRENCH HOURS REPORTS

Resource Requirement versus Wrench Hours Chart

The purpose of this window is to display the Resources' time allocation. The window is opened by pressing Chart button from Resource Requirement versus Wrench Hours window.

Chart Layout

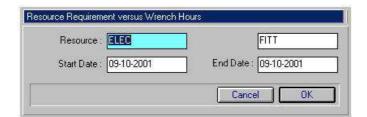
This is the Resources' time allocation chart.

Display Grid

This information specifies the form of the displayed chart: with or without a grid.

The following are the detailed reports available under the Resource Requirement versus Wrench Hours Report type:

The Resource Requirement versus Wrench Hours Reports Options window, activated by clicking on the Options... button, looks by default as follows:



Detailed Field Descriptions:

Resource

Enter lexically lower-limit of the Resource identifiers, for which the report should be generated, an optional information that can take up to 6 alphanumeric characters.

You can select the Resource from the Resource selector by pressing **F2** key or the selector button.

Date





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Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 379 Date: 21 August 200221 August 200221 August 20023 June 2002

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> Enter lower and upper limits of the creation or last updating dates of Resources, between which they are scanned.





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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 380 Date: 21 August 200221 August 200221 August 20023 June 2002

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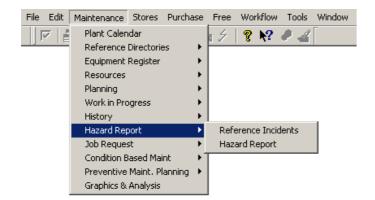
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11. HAZARD MONITORING

The Hazard Monitoring module is used to record the observed incident / accident / safety that occurred on an equipment, as well as their effects, list of recommended actions and followed-up actions.

System also provides configuration module to define the various incident reference codes used in hazard report.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 381

Date: 21 August 200221 August 200221 August

20023 June 2002

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11.1 REFERENCE INCIDENTS

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KSC Version: 2.12.12.1

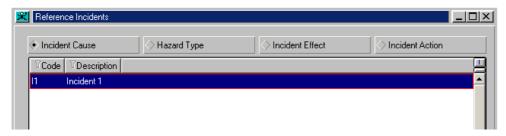
The module is used to manage, i.e., create, update and delete the reference codes used to define hazard reports. There are four types of reference codes:

- o Incident causes codes of possible causes of reported incidents
- o Incident actions codes of basic possible actions to be taken after the incident report
- Hazard report types codes of the types of hazard reports
- o Effects codes of different effects the reported incidents might produce

Select from COSWIN menu Maintenance / Hazard Report / Reference Incidents to launch the Reference Incidents module.

11.1.1 Define Incident Cause

The Reference Incident Cause window looks by default as follows:



Incident Causes List Box contains the following columns:

- Code is the incident cause reference code
- Description is the incident cause short description

Double click on any of the Incident Causes displayed in the list box will activate the **Incident Cause Detail** window for the selected code:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

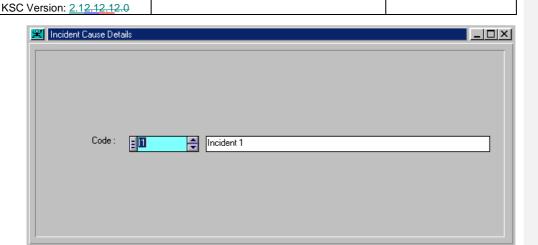
C756 Page: 382

Date: 21 August 200221 August 200221 August

20023 June 2002

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Incident Causes Details display the following information:

- Code incident cause reference code, a mandatory information of maximum 10 alphanumeric characters. It must be unique among the incident causes.
- Description incident cause short description, a mandatory information of maximum 40 alphanumeric characters.

11.1.1.1 To Add a New Incident Cause

Click on the icon to launch the ADD window.

Minimum information to add a new Incident cause is

o Code and Description

Reference:

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029e/A756/PMP/8029e/A756/

11.1.1.2 To Modify an Incident Cause

The information that can be modified, is:

o Incident Causes Description

11.1.1.3 To Delete an Incident Cause

The reference incident cause cannot be deleted if it is in use by a hazard report.

11.1.2 Define Hazard Type

The Reference Hazard Type window looks by default as follows:





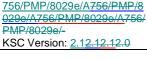
MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 383

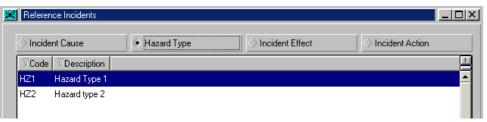
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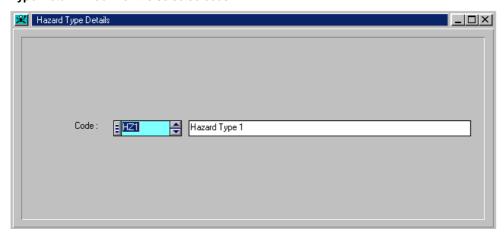
Reference:



Hazard Types List Box contains the following columns:

- Code is the hazard type reference code
- Description is the hazard type short description

Double click on any of the Hazard types displayed in the list box will activate the **Hazard Type Detail** window for the selected code:



Hazard Types Details display the following information:

- **Code** hazard type reference code, a mandatory information of maximum 10 alphanumeric characters. The code shall be unique among the hazard types.
- **Description** hazard type short description, a mandatory information of maximum 40 alphanumeric characters.

11.1.2.1 To Add a New Hazard Type

Click on the icon to launch the ADD window.

Minimum information to add a new Hazard Type is

o Code and Description





Keppel Steria Consortium (KSC)

Reference:

756/PMP/8029e/A756/PMP/8
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PMP/8029e/A

Page: 384
Date: 21 August 200224
August 200221 August 20023 June 2002

C756

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11.1.2.2 To Modify a Hazard Type

KSC Version: <u>2.12.12.1</u>2.0

The information that can be modified, is:

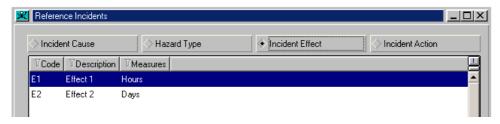
o Hazard Type Description

11.1.2.3 To Delete an Hazard Type

The reference hazard type cannot be deleted if it is in use by a hazard report.

11.1.3 Define Incident Effect

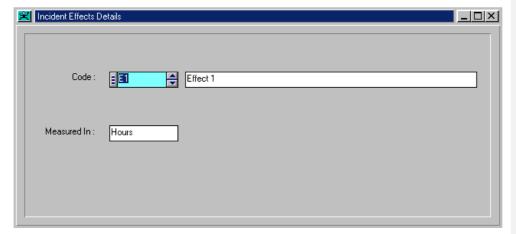
The Reference Incident Effect window looks by default as follows:



Incident Effects List Box contains the following columns:

- Code is the effect reference code
- **Description** is the effect short description
- Measures is the description of effect size

Double click on any of the Incident Effects displayed in the list box will activate the **Incident Effect Detail** window for the selected code:







MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 385 Date: 21 August 200221 August 200221 August

C756

August 200221 August 20023 June 2002 Auto Formatted: Font: 9 pt

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KSC Version: 2.12.12.1

Reference:

Effects Details display the following information:

- Code effect reference code, a mandatory information of maximum 10 alphanumeric characters. The code shall be unique among the effects.
- **Description** effect short description, a mandatory information of maximum 40 alphanumeric characters.
- Measured in description of effect size, an optional information of maximum 16 alphanumeric characters.

11.1.3.1 To Add a New Incident Effect

Click on the icon to launch the ADD window.

Minimum information to add a new Incident Effect is

o Code and Description

11.1.3.2 To Modify an Incident Effect

The information that can be modified, is:

o Incident Effect Description and Measures

11.1.3.3 To Delete an Incident Effect

The reference incident effect cannot be deleted if it is in use by a hazard report.

11.1.4 Define Incident Action

The Reference Incident Action window looks by default as follows:



Incident Actions List Box contains the following columns:

- Code is the action reference code
- Description is the action short description
- Priority is the action default priority code

Double click on any of the Incident Actions displayed in the list box will activate the **Incident Action Detail** window for the selected code:





Reference:

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

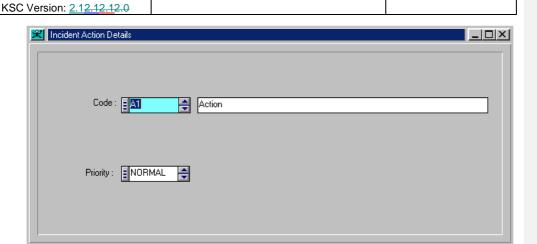
C756 Page: 386

Date: 21 August 200221 August 200221 August

20023 June 2002

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Incident Actions Details display the following information:

- **Code** action reference code, a mandatory information of maximum 10 alphanumeric characters. It must be unique among the incident actions.
- Description action short description, a mandatory information of maximum 40 alphanumeric characters.
- Priority action default priority code, a mandatory information. It must be an existing
 priority codes already defined in the database.

11.1.4.1 To Add a New Incident Action

Click on the icon to launch the ADD window.

Minimum information to add a new Incident Action is

o Code, Description and Priority

11.1.4.2 To Modify an Incident Action

The information that can be modified, is:

o Incident Action Description and Priority

11.1.4.3 To Delete an Incident Action

The reference incident action cannot be deleted if a recommended action of a hazard report is based on the incident action.





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 387

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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11.2 HAZARD REPORTS

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KSC Version: 2.12.12.1

Reference:

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The module is used to manage, i.e., create, update and delete the hazard reports, their effects, recommended actions and follow-up. Each hazard report is made for one equipment and stores all the information about the observed incident / accident / safety.

It also keeps the list of recommended actions and follow-up actions.

The hazard report is defined by the following information:

- Auto-generated code and code of equipment on which the incident / accident / safety was observed
- The authority under which the observed equipment is
- Date, location and cause of the incident
- Date and type of hazard report and the date when the report was closed
- Code, name, phone number of person that made the report
- Status of hazard report with the following values: 0 RAISED, 1 IN PROGRESS, 2 -**CLOSED**
- A list of recommended actions to be taken; each action being defined by the action code, the action priority and actioning party (which is a company entity).
- A list of follow-up actions, each of them being defined by the code of either a job request, a work order or a purchase order, the start and finish date of the follow-up action, the status of the follow-up action with the following values: 0 - RAISED, 1 - IN PROGRESS, 2 - CLOSED and the duration of the follow-up action
- A list of reported incident effects, each of them storing the size of the effect. A hazard may have several effects like casualties, injuries, deaths, and damages. Each of these effects has a size (stored as a numerical value); the size measures the effect (it can be persons in case of injuries or deaths, tracks, wagons, signals, etc in case of damages).

When any follow-up action is created its status is 0-RAISED. This corresponds to the following status of the corresponding follow-up transaction:

- Follow-up job request with status 0-USER REQUEST
- Follow-up job work order with system status 0-NOT STARTED, 6-NOT AUTHORIZED
- Follow-up job purchase order with status 0-CREATED

When the follow-up action starts its status is 1-IN PROGRESS. This corresponds to:

- Job request with status 1-PLANNER REVIEWED, 2-READY TO RELEASE
- Work order with system status 1-IN PROGRESS, 2-COMPLETED
- Purchase order with status 1-PARTIALLY RECEIVED





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 388
Date: 21 August 200221
August 200221 August 20023 June 2002

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KSC Version: <u>2.12.12.1</u>2.0

The follow-up action can be closed manually (its status passed to 2-CLOSED). The follow-up action is automatically closed when:

- Job request is passed in status 5-CLOSED BY PLANNER
- Work order is passed in system status 3-ARCHIVAL
- Purchase order is passed in status 2-RECEIVED, 3-INVOICED, 4-CLOSED, 5-CANCELED

Each hazard report has a status that reflects the status of the follow-up actions. Therefore, the following assertions are always true:

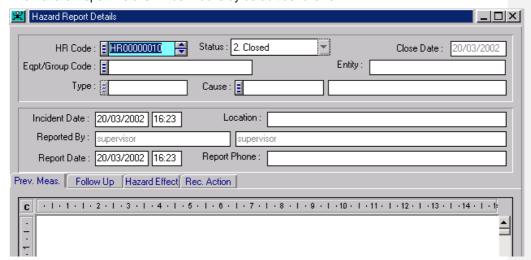
- All follow-up actions' status are RAISED when the hazard report status is RAISED
- The hazard report status is IN PROGRESS when at least one follow-up status is IN PROGRESS
- The hazard report status is CLOSED when all follow-up actions' status are CLOSED

Only raised and closed hazard reports can be deleted. When a hazard report is deleted then all its hazard effects, recommended actions and follow-up actions will also be deleted

Only raised follow-up actions can be deleted individually.

Select from COSWIN menu *Maintenance / Hazard Report / Hazard Report* to launch the Hazard Report Detail module.

The Hazard Report Details window looks by default as follows:



Detailed Field Descriptions:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 389

Date: 21 August 200221 August 200221 August 20023 June 2002

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Reference:

This is the code of hazard report, a mandatory information of maximum 10 alphanumeric character. It must be unique among the hazard reports.

A selector trigger button (or F2 key) linking to Hazard Report Selector is available.

Status

This is the status of the hazard report, a mandatory information with the following possible values: 0-RAISED, 1-IN PROGRESS, 2-CLOSED.

Close Date

This is the date when the hazard report was closed, manually or automatically. It is a readonly information automatically managed by the system.

Egpt/Group Code

This is the equipment / group of equipment on which the incident / accident or safety action was observed. The equipment can be either geographical or technical. It is a mandatory information and must exist in the directory of Equipment or Group of Equipment.

A selector trigger button (or F2 key) linking to Equipment Selector is available.

Authority

The equipment of the hazard report is placed under this authority. It is a read-only mandatory information automatically managed by the system.

Type

This is the hazard type, a mandatory information. It must exist in the directory of Hazard Types.

A selector trigger button (or F2 key) linking to Hazard Type Selector is available.

Right-mouse click (or F7 key) will activate the Hazard Type Detail window for the current code.

Cause

This is the cause that led to the reported incident, a mandatory information. It must exist in the directory of Incident Causes.

A selector trigger button (or F2 key) linking to Incident Cause Selector is available.

Cause Description

This is the description of the cause that led to the reported incident, a read-only information automatically managed by the system.

Incident Date

This is the date when the incident / accident / safety action took place.

Incident Time

This is the time when the incident / accident / safety action took place.

Location

This is the location where the reported incident / accident / safety action took place, a mandatory information. System will propose the location of the specified equipment as default.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 390

Date: 21 August 200221 August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1 Reported By

756/PMP/8029e/A756/PMP/8

029e/A756/PMP/8029e/A756/

Reference:

PMP/8029e/-

This is the login ID of the person who raises the report. It is a read-only information, automatically managed by the system.

Name of Reported By

This is the full name of the person who raises the report. It is a read-only information, automatically managed by the system.

Report Date

This is the date when the report was created, a mandatory information. The system will propose the current date as default when creating a new hazard report.

Report Time

This is the time when the report was created, a mandatory information. The system will propose the current time as default when creating a new hazard report.

Report Phone

This is the telephone number of the person who raises the report. It is an optional information.

Preventive Measures tab

This OLE multi-line enables the user to provide information about the steps taken to prevent recurrence of accident/incident. The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.

Follow Up tab

This tab displays the actions to follow up on the hazard report.

The Follow Up tab looks by default as follows:



Follow-up Actions List Box consists of the following information:

- Type the type of follow-up actions: 0 Job Request, 1 Work Order, 2 Purchase
- **Job Req No** the identifier of the job request raised for the report.
- **WO ID** the identifier of the work order raised for the report.
- **PO No** the identifier of the purchase order following the report.
- **Start** the date when the follow-up action started.
- **Finish** the date when the follow-up action was closed.





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- Status the status of the follow-up action.
- Duration the duration (in hours) of the follow-up action.

Double click on any of the follow up actions displayed in the list box will activate the **Follow Up Action Detail** window for the selected code.

Hazard Effect tab

This tab display the effects associated with the hazard report.

The Hazard Effect tab looks by default as follows:



Hazard Effects List Box consists of the following information:

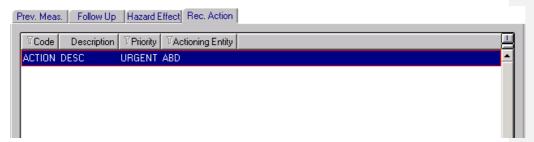
- Code the code of the effect.
- **Description** the short description of the effect.
- Size the size of the effect.
- Measures how the effect is being measured in, says, hours, days.

Double click on any of the Hazard Effects displayed in the list box will activate the **Hazard Effect Detail** window for the selected code.

Recommended Action tab

This tab displays the recommended actions to be taken after the reported incident.

The Recommended Action tab looks by default as follows:



Recommended Actions List Box consists of the following information:





Keppel Steria Consortium (KSC) C756 Page: 392 MAINTENANCE MANAGEMENT SYSTEM Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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- **Code** the code of the action to be taken.
- **Description** the short description of the action.
- **Priority** the priority code of the action.
- Actioning Entity the authority that has to perform the action.

Double click on any of the recommended actions displayed in the list box will activate the Recommended Action Detail window for the selected code.

11.2.1 To Raise a New Hazard Report

Minimum information required to add a new hazard report is:

- Code
- Equipment 0
- Date 0
- Time
- o Report Date
- Report Time

Click on the icon to launch the ADD window.

11.2.2 To Modify a Hazard Report

The information that can be modified, is:

- Type
- Report Phone

11.2.3 To Delete a New Hazard Report

Only closed hazard reports can be deleted. All the hazard effects, recommended actions and follow-up actions will also be deleted.

Click on the icon to delete the current hazard report.

11.2.4 To Close a New Hazard Report

The hazard report will not be automatically closed when its last follow-up action is closed, if the parameter Disable Automatic Closure in COSWIN Configuration's Maintenance / Hazard Monitoring module has been checked. Otherwise, closing of the hazard report's last follow-up action will automatically close the hazard report.

Alternatively, click on the non-standard Close HR button to manually close the hazard reports. Closing the hazard reports will set the Status of the report to 2-CLOSED value.

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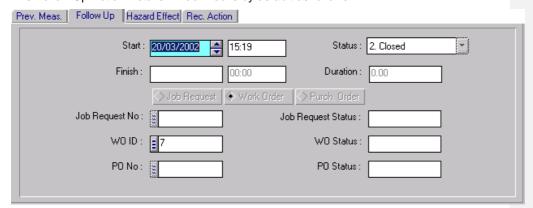
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A warning message will be issued by the system when a hazard report, whose follow-up actions are not closed, is closed manually.

11.2.5 Follow Up Action Details

The Follow Up Action Details window looks by default as follows:



Detailed Field Descriptions:

Start Date/Time

This is the date and time when the follow-up action was created, a mandatory information.

Finish Date/Time

This is the date and time when the follow-up action was finished, an optional information automatically managed by the system. Only closed follow-up actions have finish dates.

Status

This is the status of the follow-up action. It is automatically managed by the system and can have the following possible values: 0-RAISED, 1-IN PROGRESS, 2-CLOSED.

Duration

This is the duration (in hours) of the follow-up action. It is automatically managed by the system. Only closed follow-up actions have the duration computed as the difference between the finish and the start date and time.

Follow Up Action Selector (Job Request / Work Order / Purch Order)

This flag indicate the type of the follow up actions, namely Job Request, Work Order or Purchase Order. It is enabled only during ADD mode.

Job Request No

This is the identifier of the job request following up on the hazard report, an optional information. It must be an existing job request in the system.

A selector trigger button (or F2 key) linking to Job Request Selector is available.





C756
M Page: 394

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

KSC Version: <u>2.12.12.1</u>2.0

Reference:

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Right-mouse click (or F7 key) will activate the Job Request Detail window for the current code.

Request Status

This is the status of the specified follow up job request, an optional read-only information automatically displayed by the system.

WO ID

This is the identifier of the work order following up on the hazard report, an optional information. It must exist be an existing work order in the system.

A selector trigger button (or F2 key) linking to Work Order Selector is available.

Right-mouse click (or F7 key) will activate the Work Order Detail window for the current code.

WO Status

This is the system status of the specified follow up work order, an optional read-only information automatically displayed by the system.

PO No

This is the reference code of the purchase order following up on the hazard report, an optional information. It must be an existing purchase order in the system.

A selector trigger button (or F2 key) linking to Purchase Order Selector is available.

Right-mouse click (or F7 key) will activate the Purchase Order Detail window for the current code.

PO Status

This is the status of the specified follow up purchase order, an optional read-only information automatically displayed by the system.

11.2.5.1 To Add a New Follow Up Action

Minimum information to add a new follow-up action to a hazard report is:

- o Only one of the following: Request Nr, WO ID and Order Nr
- Start

Follow up actions cannot be added to closed hazard reports.

At the Follow Up tab, click on the icon to launch the ADD window.

11.2.5.2 To Modify a Follow Up Action

Details on the follow up actions cannot be modified after creation. The status of the action is automatically managed by the system according to the status respective action.

11.2.5.3 To Delete a Follow Up Action

Follow up actions cannot be deleted from the hazard report if the report has been closed.

At the Follow Up tab, click on the **transport** icon to delete the current follow up action.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 395

Date: 21 August 200221 August 200221 August 20023 June 2002

Formatted: Font: 10 pt, Font color: Auto

Formatted: Font: 9 pt

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

11.2.6 Hazard Effect Details

The Hazard Effect Details window looks by default as follows:



Detailed Field Descriptions:

Code

This is the code of the effect, a mandatory information. It must exist in the directory of Hazard Effects and must be unique among the hazard effects of a report.

Description

This is the short description of the effect, a read-only information automatically managed by the system.

Size

This is the size of the effect, a mandatory numerical value.

Measures

This is how the effect is being measured in, a read-only information automatically managed by the system.

11.2.6.1 To Add a New Hazard Effect

Minimum information to add a new hazard effect to a hazard report is:

- o Code
- o Size

Hazard effects cannot be added to closed hazard reports.

At the Hazard Effect tab, click on the Di icon to launch the ADD window.

11.2.6.2 To Modify a Hazard Effect

The only information that can be modified, is:

o Size

Hazard effects cannot be modified on closed hazard reports.





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 396

Date: 21 August 200221 August 200221 August 20023 June 2002

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11.2.6.3 To Delete a Hazard Effect

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KSC Version: 2.12.12.1

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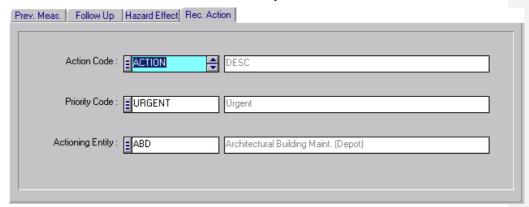
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No restriction exists to delete a hazard effect from a hazard report as long as the report has not been closed.

At the Hazard Effect tab, click on the licon to delete the current effect.

11.2.7 Recommended Action Details

The Recommended Action Details window looks by default as follows:



Detailed Field Descriptions:

Action Code

This is the code of the action to be taken, a mandatory information. It must exist in the directory of Incident Actions and must be unique among the recommended actions of a report.

A selector trigger button (or F2 key) linking to Incident Action Selector is available.

Right-mouse click (or F7 key) will activate the Incident Action Details window for the current code.

Description

This is the short description of the action to be taken, a read-only information automatically managed by the system.

Priority Code

This is the priority code of the action to be taken, a mandatory information. It must exist in the directory of Priorities.

A selector trigger button (or F2 key) linking to Priority Selector is available.

Right-mouse click (or F7 key) will activate the Priority Details window for the current code.

Priority Description





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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/

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KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 397 Date: 21 August 200221

August 200221 August 20023 June 2002

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This is the short description of the priority of the action, a read-only information automatically managed by the system.

Actioning Entity

This is the authority that has to perform the action, a mandatory information. It must exist in the directory of Company Entities.

A selector trigger button (or F2 key) linking to Company Entity Selector is available.

Right-mouse click (or F7 key) will activate the Company Entity Details window for the current code.

Actioning Entity Description

This is the description of the actioning entity, a read-only information automatically managed by the system.

11.2.7.1 To Add a New Recommended Action

Minimum information to add a new recommended action to a hazard report is:

- Code
- Priority
- o Actioning Party

When choosing the code of the recommended action the system will propose the priority code of the incident action as the priority of the recommended action.

Recommended actions cannot be added to closed hazard reports.

At the Recommended Action tab, click on the icon to launch the ADD window.

11.2.7.2 To Modify a Recommended Action

The information that can be modified, is:

- o Priority
- Actioning Party

Recommended actions cannot be modified on closed hazard reports.

11.2.7.3 To Delete a Recommended Action

No restriction exists to delete a recommended action from a hazard report as long as the report has not been closed.

At the Recommended Action tab, click on the 2 icon to delete the current action.



MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 398

Date: 21 August 200221 August 200221 August

20023 June 2002

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KSC Version: 2.12.12.12.0

Reference:

12. PERMIT TO WORK

This module is used to manually raise requests for work permits, to approve the requests for work permit raised automatically from different modules (Topographical Details, Work Order Details, and Planning), to delete just raised or closed work permits, to modify the details (validity interval) of the work permits, to add individual employee to the work permits raised and to approve individually the employees' work permit raised automatically from different modules and manually from this module.

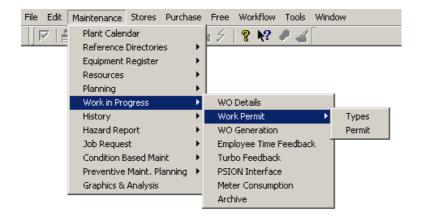
The work permits are always linked to work orders and they cover the work order interval, from schedule date to estimated finish date (schedule date added the work order duration).

A request for work permit is raised when the following conditions are met:

- o The work order equipment or equipment job requires work permit presence
- o The work order is released
- Employees have been allocated to the work order

The work permit can be granted globally or individually to employee grouped in the work permit. Therefore, the following assertions are always true:

- All individual status are JUST RAISED when the global status is JUST RAISED
- The global status is NOT APPROVED when at least one individual status is NOT APPROVED
- The global status is APPROVED when all individual status are APPROVED
- The global status is CLOSED when all individual status are CLOSED







MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756 Page: 399

Date: 21 August 200221 August 200221 August

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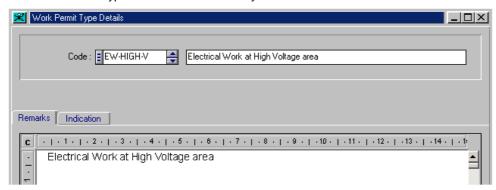
12.1 DEFINE WORK PERMIT TYPE

This module is used to manage the different types of work permits (PTW). Work permits types are associated with the equipment (default work permit type to be considered for the work order) and with the equipment job (specific work permit type).

The equipment PTW type is proposed by default as equipment job PTW type when creating an equipment job. The equipment job PTW type may be different from the equipment PTW type. The type of the work permit raised for a work order is taken from the work order equipment job.

Select from COSWIN menu *Maintenance / Work In Progress / Work Permit / Types* to launch the Work Permit Type Details module.

The Work Permit Type Details window looks by default as follows:



Detailed Field Descriptions:

Code

This is the reference code of the work permit type, a mandatory information of maximum 10 alphanumeric characters. The work permit type must be unique among all the work permit types in the database.

Description

This is the technical description of the work permit type, an optional information of maximum 40 alphanumeric characters.

Remarks

This OLE multi-line enables the user to provide supplementary information about the work permit type. The interface consists of the drawing layout, where the user can write text and / or append pictures, drawings, spreadsheets and any other form of OLE information.

Indications tab





C756

Reference: 756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A<u>756/PMP/8029e/-</u> MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 400 Date: 21 August 200221 August 200221 August 20023 June 2002

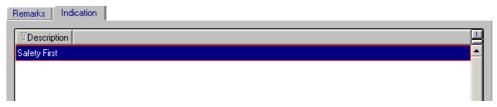
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KSC Version: 2.12.12.1

Several indications can be linked to each work permit type. They are optional informative

The Work Permit Type Indication Selector looks by default as follows:



Double click on any of the indications displayed will activate the Work Permit Type Indication Details window.

12.1.1 To Add a New Work Permit Type

Minimum information to add a new work permit type to the database is:

o Code

Click on the icon to launch the ADD window.

12.1.2 To Modify a Work Permit Type

The information that can be modified is:

- o Description
- Remarks
- o Indications

Click on the 🔲 icon to save the modification made.

12.1.3 To Delete a Work Permit Type

Work permit types can be deleted when are no longer used by:

- o Equipment
- Equipment jobs
- o Work permits

Click on the icon to delete the current work permit type.





Keppel Steria Consortium (KSC)

MAINTENANCE MANAGEMENT SYSTEM

C756
Page: 401

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/-

KSC Version: 2.12.12.1

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COSWIN WORKCOSWIN WORK

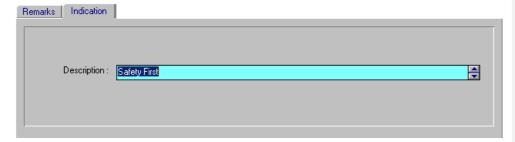
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12.1.4 Work Permit Type's Indication Details

The Work Permit Type Indication Details looks by default as follows:



Detailed Field Descriptions:

Description

This is the description of the indication, a mandatory information of maximum 100 alphanumeric characters.

To add a New Indication, select the indication tab and click on the circle.

Indications can be modified or deleted without restriction. Click on the \square icon to delete the currently selected Indication.



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PMP/8029e/-

KSC Version: 2.12.12.1

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 402

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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12.2 DEFINE WORK PERMIT

This module is used for

- Raising requests for work permits manually.
- Approving the requests for work permit raised automatically from different modules (Topographical Details, Work Order Details, and Planning).
- Deleting just raised or closed work permits.
- □ Modifying the details (validity interval) of the work permits,
- Adding individual employee to the work permits raised and
- Approving individually the employees' work permit raised automatically from different modules and manually from this module.

The work permits are always linked to work orders and they cover the work order interval from schedule date to the estimated finish date (schedule date added the work order duration).

Select from COSWIN menu *Maintenance / Work In Progress / Work Permit / Permit* to launch the Work Permit Details module.

The Work Permit Details window looks by default as follows:





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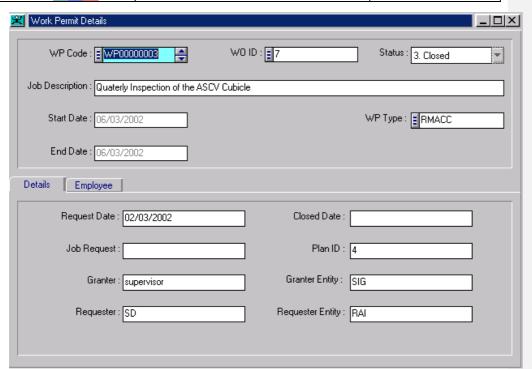
KSC Version: <u>2.12.12.1</u>2.0

MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 403 Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

WP Code

This is the reference code of the work permit, a mandatory information of maximum 10 alphanumeric characters. It must be unique among all the permits in the database.

A selector trigger button (or F2 key) linking to Work Permit Selector is available.

WO ID

This is the identifier of the work order for which the work permit is raised and granted. The work order identifier is accessible only in ADD mode. It must be an existing Work Order identifier in the database.

A selector trigger button (or F2 key) linking to Work Order Selector is available.

Right-mouse click (or F7 key) will activate the Work Order Details window for the current code.

Status

This is the identifier of the work permit status, a mandatory information. The possible values are 0 – Just raised, 1 – Not Approved, 2 – Approved, 3 – Closed.

Job Description





MAINTENANCE MANAGEMENT SYSTEM Pa

C756
Page: 404

COSWIN WORKCOSWIN WORK

Date: <u>21 August 200221</u> <u>August 200221 August</u> <u>20023 June 2002</u>

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756/PMP/8029e/A756/PMP/8

This is the description of the work order job, a read only information automatically managed by the system.

Start Date, End Date

These dates represent the beginning and ending dates of the work permit validity interval. They are automatically computed by the system as work order schedule date and work order schedule date delayed with work order duration.

Type

Reference:

This is the type of work permit requested, a mandatory information. It must exist in the directory of work permit types.

A selector trigger button (or F2 key) linking to Work Permit Type Selector is available.

Right-mouse click (or F7 key) will activate the Work Permit Type Details window for the current code.

Request Date

This is the date when the request for work permit was raised. It is read-only information automatically updated with the system date when new work permits are requested.

Close Date

This is the date when the work permit was closed. It is a read-only information automatically updated with the system date when work permits passed to closed status.

Details tab:

Request Date

This is the date when the request for work permit was raised. It is read-only information automatically updated with the system date when new work permits are requested.

Closed Date

This is the date when the work permit was closed. It is a read-only information automatically updated with the system date when work permits passed to closed status.

Job Request

This is the job request of the work order for which the work permit is raised. It is a read-only information automatically managed by the system.

Plan

This is the plan number of the work order for which the work permit is raised. It is a read only information automatically managed by the system.

Granter

This is the identifier of the person who approved the work permit, a read-only information automatically managed by the system.

Authority

This is the authority to which the work permit is raised. It is actually the authority under which the work order equipment belong to. It is a read only information automatically managed by the system.



Keppel Steria Consortium (KSC)

Reference:

756/PMP/8029e/A756/PMP/8

MAINTENANCE MANAGEMENT SYSTEM
COSWIN WORKCOSWIN WORK
Date: 21 August 200224

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KSC Version: <u>2.12.12.1</u>2.0

August 200221 August 20023 June 2002

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Requester

This is the identifier of the person who requested the work permit, a read-only information automatically managed by the system. It is the planner identifier for specific work permits raised based on a plan or job request, or the user name for work permits raised with Work Permit module.

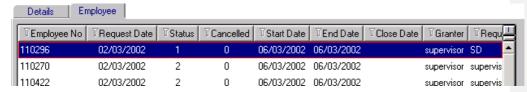
Requester Authority

This is the authority of the requester. It is a read only information automatically managed by the system. It is the authority under which the requester is placed.

Employee tab:

This tab displays the list of employees requesting for permit to work under a work permit.

The Employee tab of Work Permit Details window looks by default as follows:



Double click on any of the displayed employees details will activate the Work Permit Employee Details window.

Employee List Box

Employee No This is the identifier of the employee for whom the work permit

is raised and granted.

Request Date This the date when the request for the work permit was raised.

Status This is the individual work permit status:

0 - Just raised, 1 - Not Approved, 2 - Approved, 3 - Closed

Cancelled flag This flag denotes if the permit for the employee has been

cancelled.

Start Date This is the beginning of the work permit validity interval.

End Date This is the end of the work permit validity interval.

Close Date This is the date when the individual work permit was closed.

Granter This is the identifier of the person who approved the work

permit.

Requester This is the identifier of the person who requested the work

permit.

12.2.1 To Raise a New Work Permit

The following conditions must be met when raising a request for Work Permit:





Keppel Steria Consortium (KSC)		C756
Reference:	MAINTENANCE MANAGEMENT SYSTEM	Page: 406
756/DMD/80206/A756/DMD/8	COSMINI MORKCOSMINI MORK	Date: 21 August 2002

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KSC Version: 2.12.12.12.0

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20023 June 2002

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The work order equipment or equipment job requires work permit (with work permit type defined)

- The work order is released into Work In Progress
- Employees are allocated to the work order

Minimum information to add a new work permit to the database is:

- Code
- Start Date
- **End Date**
- o Work order identifier

Work permits are always created with status 0 - Just Raised.

Click on the icon to launch the ADD window.

12.2.2 To Modify a Work Permit

The only information that can be modified, is:

- o Work permit status
- Work permit validity interval

The status cannot be changed from 3 - Close to 2 - Approved or 0 - Just Raised. No modification of validity interval is allowed for closed work permits.

Click on the licon to save the modification made.

12.2.3 To Delete a Work Permit

Work permits cannot be deleted if they are of 2 - Approved status and their validity interval is not finished. Just raised and closed work permits can be deleted.

Click on the icon to delete the current work permit.

12.2.4 Work Permit's Employee Details

This module specifies the details on an employee requesting for permit to work.

The Work Permit Employee Details looks by default as follows:





MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

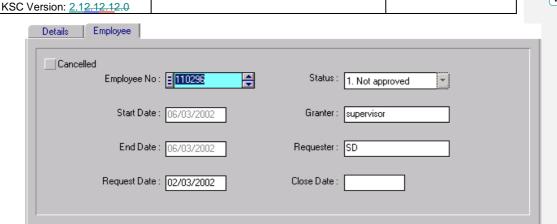
C756 Page: 407

Date: 21 August 200221 August 200221 August 20023 June 2002

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Detailed Field Descriptions:

Employee No

Reference:

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This is the identifier of the employee for whom the work permit is raised and granted. It is a mandatory information and must exist in the directory of Employees. It is unique among the work permit requested.

A selector trigger button (or F2 key) linking to Employee Selector is available.

Right-mouse click (or F7 key) will activate the Employee Details window for the current code.

Status

This is the identifier of the individual work permit status, a mandatory information. The possible values are 0 – Just raised, 1 – Not Approved, 2 – Approved, 3 – Closed.

Start Date, End Date

These dates represent the beginning and ending dates of the work permit validity interval. They are automatically computed by the system as work order schedule date and work order schedule date delayed with work order duration.

Granter

This is the identifier of the person who approved the work permit, a mandatory read-only information automatically managed by the system.

Requester

This is the identifier of the person who requested the work permit, a mandatory read-only information automatically managed by the system. It is the planner identifier for specific work permits raised based on a plan or job request or the user name for work permits raised with Work Permit module.

Request Date

This is the date when the request for individual work permit was raised. It is a mandatory read-only information automatically initialised with the system date when new individual work permits are requested.

Close Date





C756

Reference:

756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/PMP/8029e/- MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

Page: 408 Date: 21 August 200221

August 200221 August 20023 June 2002

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KSC Version: 2.12.12.1

This is the date when the individual work permit was closed. It is a mandatory read-only information automatically initialised with the system date when individual work permits passed to closed status.

12.2.4.1 To Raise a Permit to Work for an Employee

Minimum information required to raise a permit to work for an employee, under a work permit, is:

- Employee identifier
- Start Date
- o End Date

Added employee's work permits will have status 0 – Just Raised.

Click on the icon to launch the ADD window.

12.2.4.2 To Modify a Permit to Work of an Employee

The information that can be modified for an individual work permit is:

- Start Date
- o End Date
- o Employee's work permit status

Click on the 🔲 icon to save the modification made.

12.2.4.3 To Delete a Permit to Work of an Employee

Only just raised individual requests for permit to work can be deleted.

Click on the icon to delete the current Meter.





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 409

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8

12.3 INTERNET PTW - TO BE COMPLETED

Detailed Field Descriptions:

Code

Reference:

This is the reference code of the work permit, mandatory information. It must be unique among all the permits in the database.

Type

This is the type of work permit requested, a mandatory information. It must exist in the directory of work permit types.

The Work Permit type description is also displayed.

Description

This is the description of the work permit type. It is read only information automatically managed by the system.

WOID

This is the identifier of the work order for which the work permit is raised and granted. The work order identifier is accessible only in ADD mode. It must be an existing Work Order identifier in the database.

Job Description

This is the description of the work order job, a read only information automatically managed by the system.

Status

This is the identifier of the work permit status, a read only information automatically managed by the system. The possible values are 0 – Just raised, 1 – Not Approved, 2 – Approved, 3 – Closed.

Authority

This is the authority to which the work permit is raised. It is actually the authority under which the work order equipment is placed. It is a read only information automatically managed by the system.

Authority Description

This is the description of the authority of the Work Permit. It is read only information automatically managed by the system.

Plan

This is the plan number of the work order for which the work permit is raised. It is a read only information automatically managed by the system.

Job Request

This is the job request of the work order for which the work permit is raised. It is a read-only information automatically managed by the system.

Requester





MAINTENANCE MANAGEMENT SYSTEM

C756 Page: 410

COSWIN WORKCOSWIN WORK

Date: 21 August 200221 August 200221 August 20023 June 2002

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756/PMP/8029e/A756/PMP/8 029e/A756/PMP/8029e/A756/ PMP/8029e/-

KSC Version: <u>2.12.12.1</u>2.0

Reference:

This is the identifier of the person who requested the work permit, a read-only information automatically managed by the system. It is the planner identifier for specific work permits raised based on a plan or job request, or the user name for work permits raised with Work Permit module.

Requester Authority

This is the authority of the requester. It is a read only information automatically managed by the system. It is the authority under which the requester is placed.

This is the identifier of the person who approved the work permit, a read-only information automatically managed by the system.

Start Date, End Date

These dates represent the beginning and ending dates of the work permit validity interval. They are automatically computed by the system as work order schedule date and work order schedule date delayed with work order duration.

Request Date

This is the date when the request for work permit was raised. It is read-only information automatically updated with the system date when new work permits are requested.

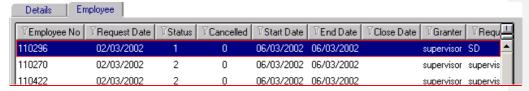
Close Date

This is the date when the work permit was closed. It is a read-only information automatically updated with the system date when work permits passed to closed status.

Employee tab:

This tab displays the list of employees requesting for permit to work under a work permit.

The Employee tab of Work Permit Details window looks by default as follows:



Double click on any of the displayed employees details will activate the Work Permit Employee Details window.

Employee List Box

Employee No This is the identifier of the employee for whom the work permit

is raised and granted.

Name This is the description of the employee **Status** This is the individual work permit status:

0 - Just raised, 1 - Not Approved, 2 - Approved, 3 - Closed

This is the identifier of the person who requested the work Requester





 Keppel Steria Consortium (KSC)
 C756

 Reference:
 756/PMP/8029e/A756/PMP/8
 MAINTENANCE MANAGEMENT SYSTEM
 Page: 411

 029e/A756/PMP/8029e/A756/PMP/8029e/A756/PMP/8029e/ COSWIN WORKCOSWIN WORK
 Date: 21 August 200221

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permit.

<u>Granter</u> This is the identifier of the person who approved the work

permit.

<u>Start Date</u> This is the beginning of the work permit validity interval.

<u>End Date</u> <u>This is the end of the work permit validity interval.</u>

Request DateThis the date when the request for the work permit was raised.Close DateThis is the date when the individual work permit was closed.Cancelled flagThis flag denotes if the permit for the employee has been

cancelled.

An apache web server for Windows 2000 will be required to be running in the Administration Terminal.

12.3.1 To Raise a New Work Permit

COSWIN shall allow adding of unlimited Work Permits.

Minimum information to add a new work permit to the database is:

Code

Start Date

KSC Version: 2.12.12.1

- End Date
- Work order identifier

Selection facility will be available for:

- Work Order
- Work Permit type

Work permits are always created with status 0 – Just Raised. The work order should have the employee already allocated

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MAINTENANCE MANAGEMENT SYSTEM COSWIN WORKCOSWIN WORK

C756
Page: 412

Date: <u>21 August 200221</u> August 200221 August 20023 June 2002 Formatted: Font: 10 pt, Font color:

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KSC Version: <u>2.12.12.1</u>2.0

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