



SAP

PPM

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About the Tutorial

SAP Plant Maintenance (SAP PM) is a software product that manages all maintenance activities in an organization. Plant Maintenance module consists of key activities to include inspection, notifications, corrective and preventive maintenance, repairs, and other measures to maintain an ideal technical system.

Audience

This tutorial has been prepared for anyone who has a basic knowledge of Plant Maintenance activities like inspection and maintenance. After completing this tutorial, you will find yourself at a moderate level of expertise in Plant Maintenance activities and possess fair knowledge of the key functions mentioned in this tutorial.

Prerequisites

Before you start proceeding with this tutorial, we assume that you are well-versed with the basic meaning of terms like inspection, maintenance, breakdown and other key terms related to Plant Maintenance.

You should also have a basic understanding of other SAP modules like Material Management, Sales and Distribution, and Production Planning. If you are not aware of these concepts, then we recommend that you first go through an overview chapter of any of these modules.

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1. SAP PM – Overview

SAP Plant Maintenance (SAP PM) application component provides an organization with a tool for all maintenance activities to be performed. All the activities that are performed under maintenance are interconnected and hence this module is closely integrated with other modules - Production Planning, Material Management, and Sales and Distribution.

Using SAP PM, you can perform automatic repairs and facilitate maintenance requests in an organization. It allows you to record problems in SAP system, plan labor and material activities, and to record and settle the cost.

In an organization, you can identify, document, manage problems and perform enterprise asset management for any required assets.

To perform these activities, Plant Maintenance contains the following submodules:

- Management of technical objects and equipment master record.
- Planning of maintenance task.
- Manage workflow notifications and work orders under maintenance order management.

Key Functions of Plant Maintenance

Following activities are performed under Plant Maintenance:

Inspection

Inspection is done to check the actual condition of a technical system.

Preventive Maintenance

Preventive maintenance is used to maintain high availability of the technical system. It includes maintenance planning and work scheduling activities for technical objects.

Repair

Repair involves all measures that can be performed to restore the ideal condition. Repair process can be performed at many planning stages - like work scheduling, resource planning and initial costing, etc. You can respond immediately w.r.t to a damage events causing production shutdown. You can create required purchase requisition and processed work orders to reduce the downtime.

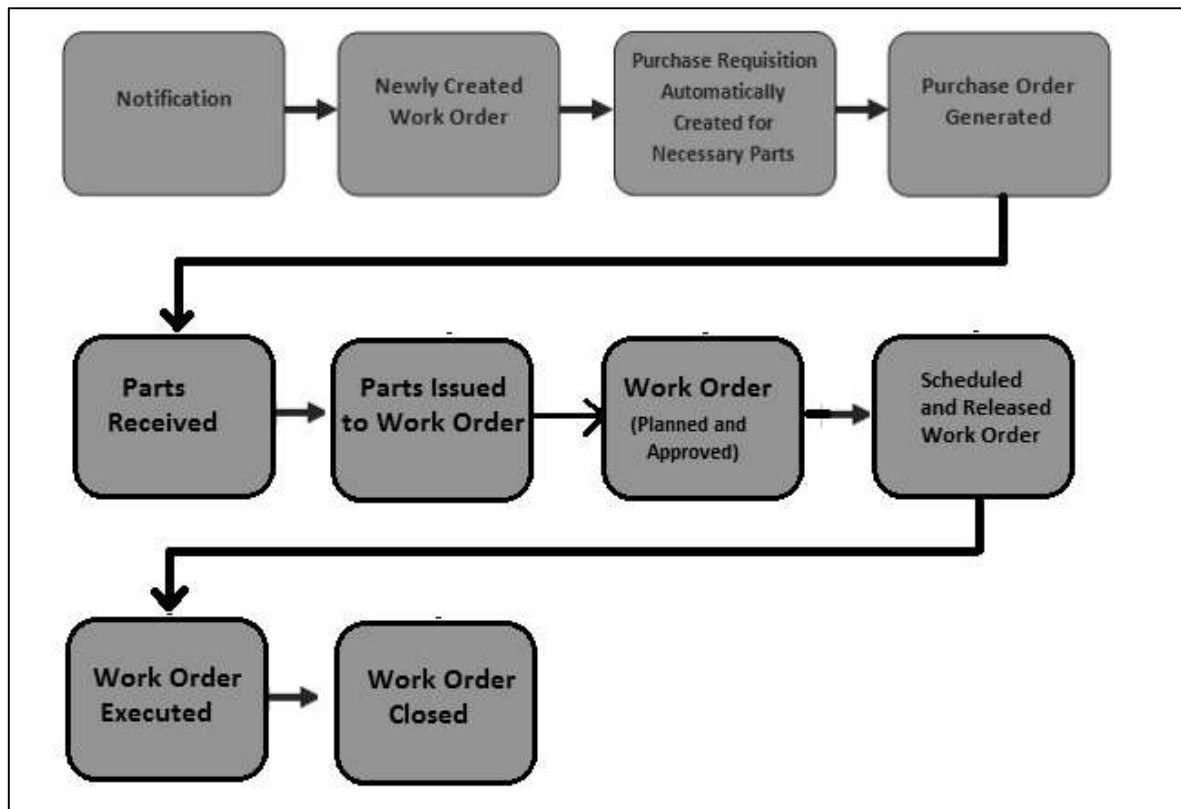
Integration with Other Modules

In SAP PM, you can integrate with other modules such as Material Management, Production Planning, Personnel Management, and Sales and Distribution. These modules are used to keep the current data as per the requirement in Plant Maintenance and are initiated automatically to maintain the current data in the system.

Following are the key modules in which integration is performed with Plant Maintenance:

- Material Management
- Sales and Distribution
- Personnel Management
- Controlling
- Production Planning

The following figure depicts a work order notification process and shows how it is executed under Plant Maintenance.



The key steps involved are:

- Notification
- Newly Created Work Order
- Creation of Purchase request for work orders
- Purchase Order created and parts Received
- Parts issues to Work Order
- Approval and Planning of Work Order
- Scheduling and Releasing Work Order
- Work Order Execution
- Closing a Work Order

2. SAP PM – Technical Objects

To effectively manage SAP Maintenance activities in an organization, you need to divide the existing maintenance structure into technical objects. Technical objects are used to define the machine types that exist in an organization and using the object characteristics, you can further define other technical objects.

To show technical objects in the system, you should know about maintenance planning and structure in the organization. This involves the task of defining the maintenance plant and maintenance of the planning activities in the system.

Maintenance Plant

Maintenance plant for a technical object is known as a plant in which you perform the maintenance tasks for the objects and planning is done. You can perform the following activities in Maintenance Planning Plant:

- Define the task list as per the maintenance plan
- As per BOM in the task list, perform material planning
- Manage and schedule maintenance plans
- Create and execute maintenance orders

Example

Let us say the maintenance plant for a modelling plant P1 is 001 and maintenance planning tasks for this plant is assigned to plant 002. In plant 002, you have maintenance planner group works and in SAP system it is shown as maintenance planning plant. So maintenance planning plant for Plant P1 is 002 and maintenance planner group works for plant 001 and 002.

Maintenance Planning

As per the structure of the organization, maintenance planning can be performed. You define the tasks under maintenance planning as per the structure and defined technical objects. Following types of maintenance planning is possible:

- Centralized Maintenance Planning
- Decentralized Maintenance Planning
- Partially Centralized Maintenance Planning

Centralized Maintenance Planning

Within an organization, centralized planning supports the following structures:

- There is only one plant for all the technical objects which is the **maintenance planning plant** and maintenance plant.

- In other scenarios, it is possible that an organization has multiple maintenance plants, but there is one plant where maintenance planning is performed.

According to the above example:

- Plants: 001, 002
- Maintenance Plants: 001, 002
- Maintenance Planning Plant: 002
- Plants assigned to maintenance planning plant: 001

Decentralized Maintenance Planning

In this scenario, the organization consists of multiple plants and each plant acts as its own maintenance planning plant. In SAP system, all plants are mentioned as maintenance planning plant.

- Plants: 001, 002
- Maintenance Plants: 001,002
- Maintenance planning plants: 001, 002

Partially Centralized Maintenance Planning

In partially centralized maintenance planning, an organization consists of multiple plants and some of the plants act as maintenance plants and maintenance planning plants, while the other plants can act as maintenance planning plants. The plants which are not responsible for maintenance planning, they are assigned to other maintenance planning plants.

- Plants: 001, 002, 003,004
- Maintenance Plants: 001, 002, 003, 004
- Maintenance Planning Plant: 001, 004
- Plants assigned to maintenance planning plant 001: 001, 002
- Plants assigned to maintenance planning plant 004: 003, 004

Structure of Technical Objects

Different types of structures can be used for technical object as per the structure of the organization. Following are the options:

Functional Structuring

In this type of structure, you divide your technical system as per functional locations. With the division of the product line into functional locations, an individual unit can act as functional locations in the system.

Object Related Structuring

In this structuring, you divide your technical system into pieces known as equipment. An equipment is an individual object, which can be placed in a technical system or a part of the technical system.

Functional and Object-based Structuring

It is a combination of both the functional and object-related structuring using equipment and they are divided as per functional location.

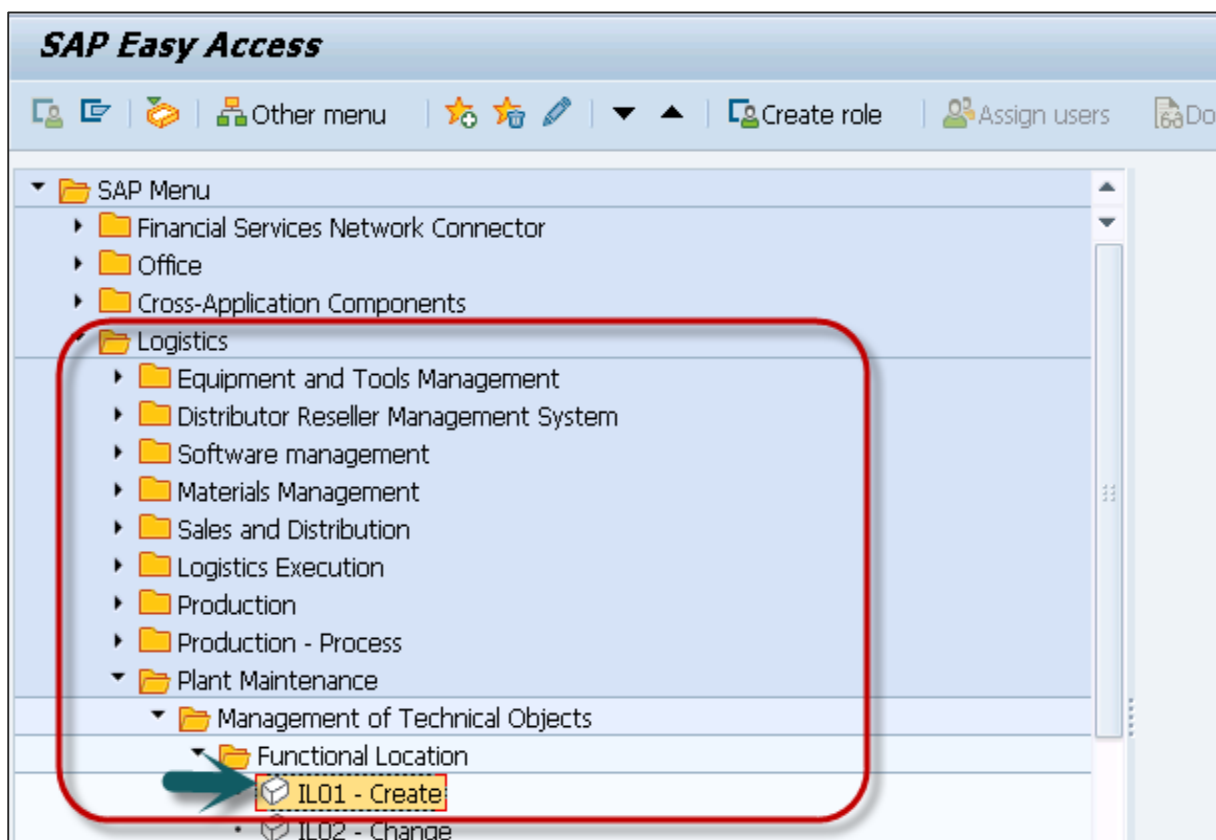
In this structuring, your functional location tells where the technical tasks are performed and equipment represents the object with which tasks have to be performed.

Note: In short, it can be said that a functional location is an organizational unit that is used to maintain the objects of a company as per the functional area, process-related or spatial criteria. A functional location represents the place at which a maintenance task is to be performed.

- Example of functional area: Pumping station
- Example of process related criteria: Modeling
- Example of spatial criteria: Store room

Creating a Functional Location

Step 1: To create a functional location, navigate to Logistics -> Plant Maintenance -> Management of Technical Objects -> Functional Location -> Create



Step 2: In the next window, you have to select the structure indicator you require and click Continue.

Create Functional Location: Initial Screen

Functional location structure indicator (1) 45 Entries found

Restrictions

Functional Loc. TEST_FL

Edit mask XXXX-XXX-AA-MN

HierLevels 1 2 3 4

Labeling system A IDES AG

StrIndicator A Structure

FuncLocCat. M Technical system

Copy from

FuncLocation

RefLocation

Default value for superior functional location

SupFuncLoc.

Description

Str.	StructIndText for FunctLocations	Edit mask
A	Structure A	XXXX-XXX-AA-MN
B	Structure B	AAN-ANNN-NNNN
C	Structure C	XX-XNN-N-X/X
FRBAT		XXXXX-SNN-NNNN
FRVEH		XXX-XXX
GEOG	Geographical Location	AAAAAAA-AAAAA
ICE	Ice cream plant	AAA-AX-XX-XX
IDTGK	Utilities 1	XXXXX-XX-XXX-XX
IECPP	Structure profile power station (E&C)	AAAAA-NN-NN-NN
KKS		XXXXXXXXXXXXXXXX
MINE	Mining Structure	AAA-AXXX
PMEC	PM-EC Integration	SSS-SS-SS-SS-SS
PMEHS	PM-EH&S Integration	SSS-SS-SS-SS-SS
PROP	Real Estate	AXXX-XX-XX-XX
RE-FX	Real Estate Extension	SSSSSSSSSSSSSS
RE01	Real estate 01	XXXXXXXX/XXXXXX
RF		XXX-X-XXX-XXX-XX

The system displays the edit mask for the location label as well as its hierarchy levels.

Step 3: You can also select the functional location label and a technical location as a reference if necessary. Click the Continue button.

Create Functional Location: Initial Screen

Functional Loc.

Edit mask

HierLevels

Labeling system IDES AG

StrIndicator General structure profile 03 (KA)

FuncLocCat. Technical system - standard

Copy from

FuncLocation

RefLocation

Default value for superior functional location

SupFuncLoc.

Description

Navigation icons: Save, Back, Forward, Cancel, Print, etc.

In the next window, you can see the screen Create Functional Location: Master data.

Step 4: Enter all the details in the master data to create the functional location. If you want to classify the functional location, click the Classification option.

Create Functional Location: Master Data

Classification | Measuring points/counters | Data origin...

Functional loc. AA-AA Cat. M Technical system - st ...

Description

Status CRTE

General | Location | Organization | Structure | Partner

General data

Class

Object type

AuthorizGroup

Weight

Size/dimension

Inventory no.

Start-up date

Shift Note Type

Reference data

AcquistnValue

Acquisition date

Manufacturer data

Manufacturer

ManufCountry

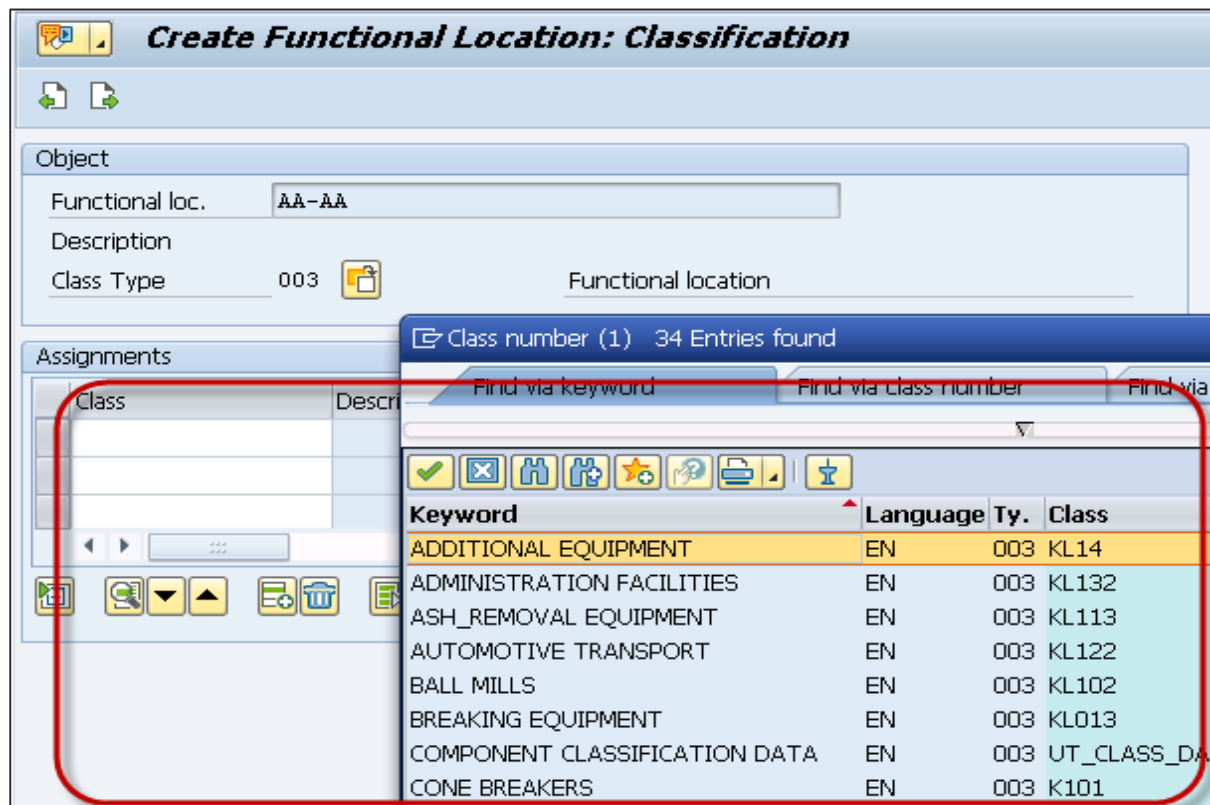
Model number

Constr.yr/mth

ManufPartNo.

ManufSerialNo.

Step 5: Once you click Classification, it will open Create Functional Location: Classification window.

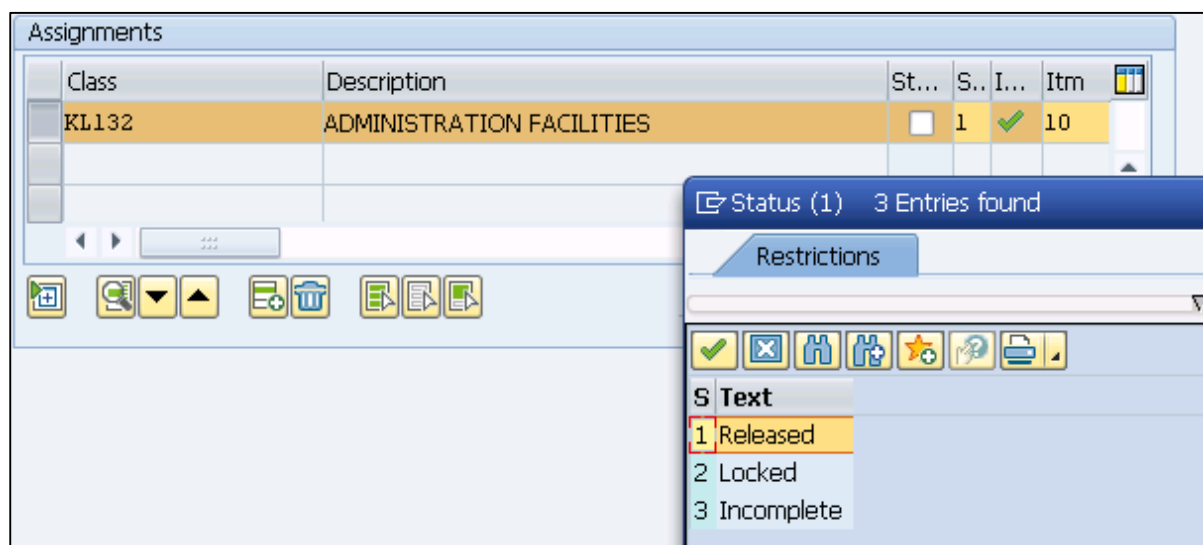


Step 6: Enter the classes to which you want to assign the functional location in the column Class.

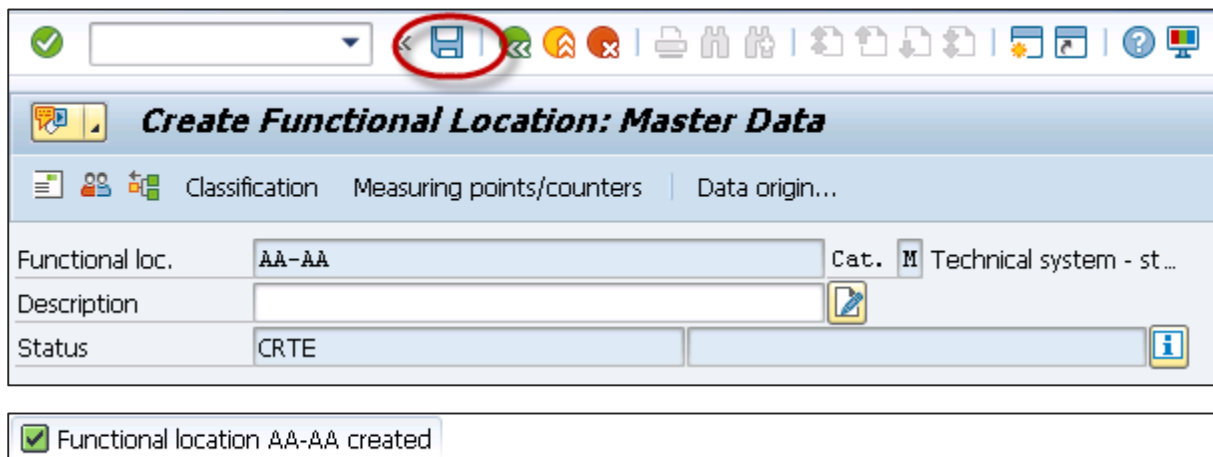
Step 7: Select the class that is to be the standard class for the functional location in the field StdClass.

Step 8: To specify value entries for the class, position your cursor on the class you require and choose Edit Values.

Step 9: Select the status as shown in the following screenshot:




Step 10: Once you define all the fields for the master record, go to the main screen using the arrow buttons. Click the Save button at the top to save the Functional location.



The screenshot shows the SAP 'Create Functional Location: Master Data' screen. The top toolbar contains various icons, with the 'Save' icon (a floppy disk) circled in red. Below the toolbar, the title 'Create Functional Location: Master Data' is displayed. The main form area has several tabs: 'Classification', 'Measuring points/counters', and 'Data origin...'. The 'Classification' tab is active. The form contains the following fields:

Functional loc.	AA-AA	Cat.	M	Technical system - st...
Description				
Status	CRTE			

At the bottom, a message bar indicates:  Functional location AA-AA created

3. SAP PM – Equipment Master Record

An equipment is known as an individual object in the system that is maintained independently. Equipment can be installed at different functional locations. You can create an individual equipment in an organization based on the object-based structure of a technical system.

The use of an equipment at a functional location are documented over the course of time. You always define Equipment master record for each technical object in the system.

Using an equipment, you can perform the following functions in the system:

- You can manage an individual data from a maintenance perspective in the SAP system.
- You can perform an individual maintenance task for each technical object in the system.
- You can use this to maintain a record of all the maintenance tasks performed for a technical object.
- In case you want to see data for an object for a longer time, you can use an equipment master record for the same.

An Equipment master record should be created in the following scenarios:

- When you manage individual data for the technical object.
- When you perform the maintenance tasks for technical objects.
- When you collect and record technical data for the objects for long time periods.
- When you monitor the cost of maintenance tasks.
- When you want to record the technical objects at functional locations.

Equipment records can be used in the following functional application areas:

- Material Management
- Sales and Distribution
- Production Planning
- Controlling

Representing an Object as an Equipment or as a Functional Location

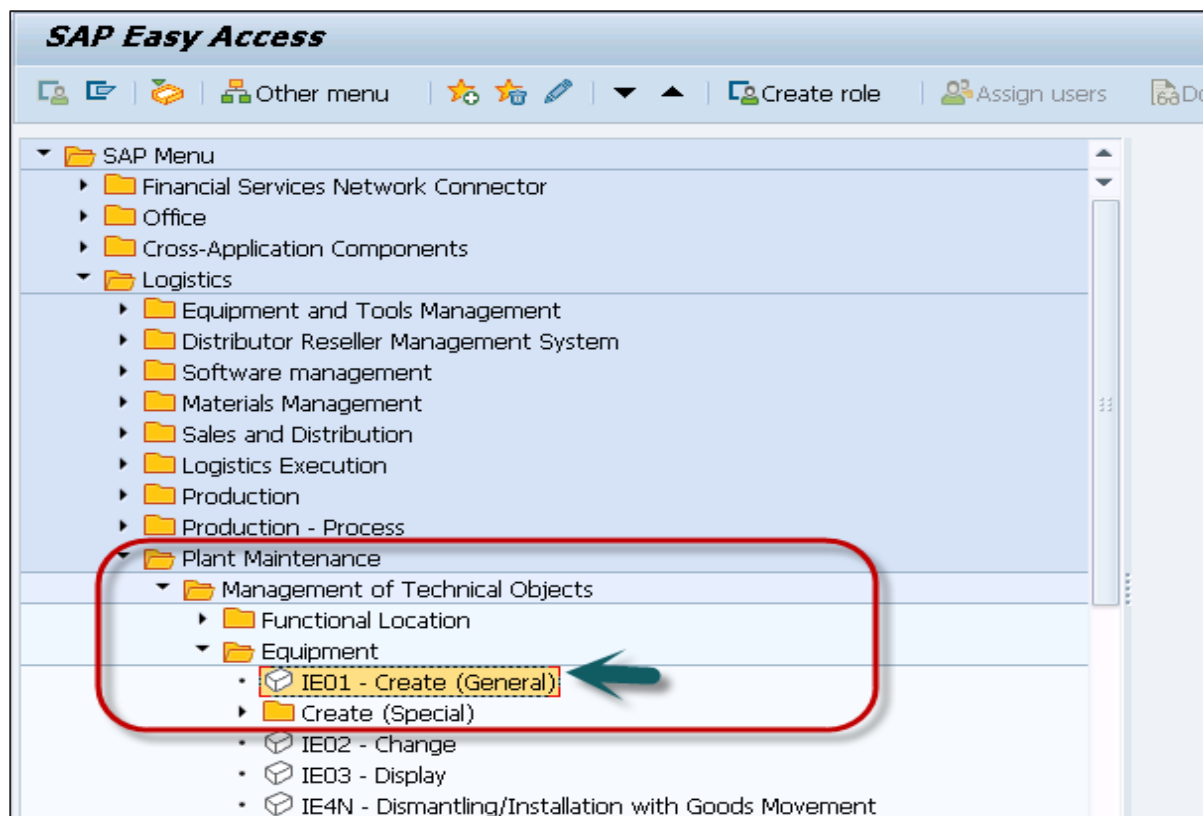
In case of breakdown, you should represent an object as a Technical Object if it is repaired. When you define an object as a Technical object, you can maintain the service history of the object in the system. **Note** that you can't change the equipment number once it is created in the system. If you have entered an incorrect number mistakenly you need to achieve this to change it.

When you are using a multiple piece of equipment you need to classify the equipment to perform a quick search.

When you exchange an object in case of a breakdown due to its low value, in this case you don't need to maintain a service history. For each functional location, you have to define a structure indicator as mentioned earlier. When you maintain a functional location in another functional location, you can't store the installation location history.

Creating a Master Record For a Piece of Equipment

Step 1: To create a master record for a piece of equipment, navigate to Logistics -> Plant Maintenance -> Management of Technical Objects -> Equipment -> Create



Step 2: To refer any other material/equipment, you can select under Reference option.

Create Equipment : Initial Screen

Equipment

Valid On 23.08.2015

Equipment category M Machines

Reference

Equipment

Material

Step 3: Select any equipment/master number and a new window will be displayed to select which data of the reference equipment should be copied to the new equipment. Then choose Continue and you return to the screen General Data.

Create Equipment : Initial Screen

Equipment

Valid On 23.08.2015

Equipment category A Machines

Reference

Equipment 10006381

Material

Copy Equipment

Reference

Equipment 10006381

Description Application Server TIGU-X

Sub-objects to be copied

- ☒ InstallLocation
- ☒ Long text
 - ☐ All languages
- ☒ Internal note
- ☒ Classification
- ☒ Document assignments
- ☒ Partner allocations
- ☒ Permits
- ☒ Address
- ☒ MeasPoints/Counters
 - ☒ w/ Long text
 - ☒ w/ Classification
 - ☒ w/ Document allocations
- ☒ Configuration
- ☒ ETM data

Step 4: You will see the Create Equipment screen. Enter the details as per the requirement.

Create Equipment : General Data

Class overview Measuring points/counters

Equipment: TM0000000001IE Category: A Machines

Description: Application Server TIGU-X Intern.note

Status: AVLB 0001

Valid From: 23.08.2015 Valid To: 31.12.9999

General Location Organization Structure Partner Sales and Distr...

Step 5: Click the Save button at the top of the screen.

☒ Equipment created with the number 10006796

You can also create a piece of equipment without using any reference.

Create Equipment : Initial Screen

Equipment category (1) 25 Entries found

Restrictions

Equipment: 100063721

Valid On: 23.08.2015

Equipment category: M Machines

Reference

Equipment:

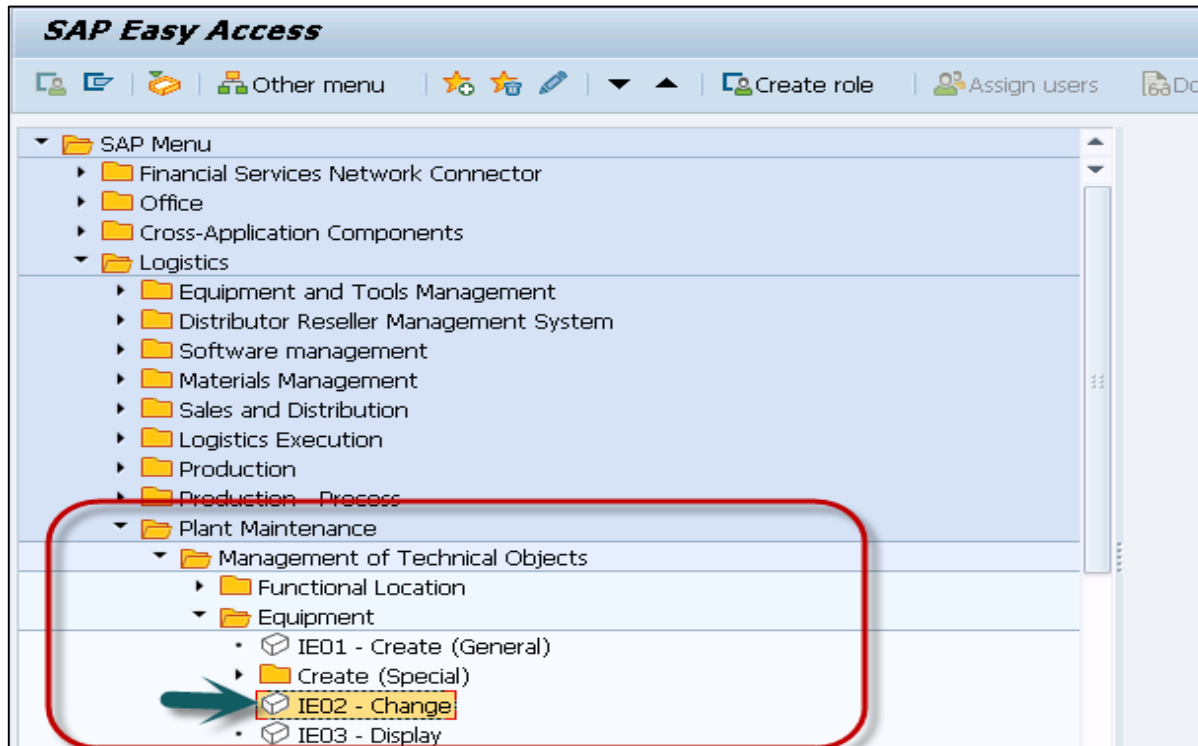
Material:

Equipment category description

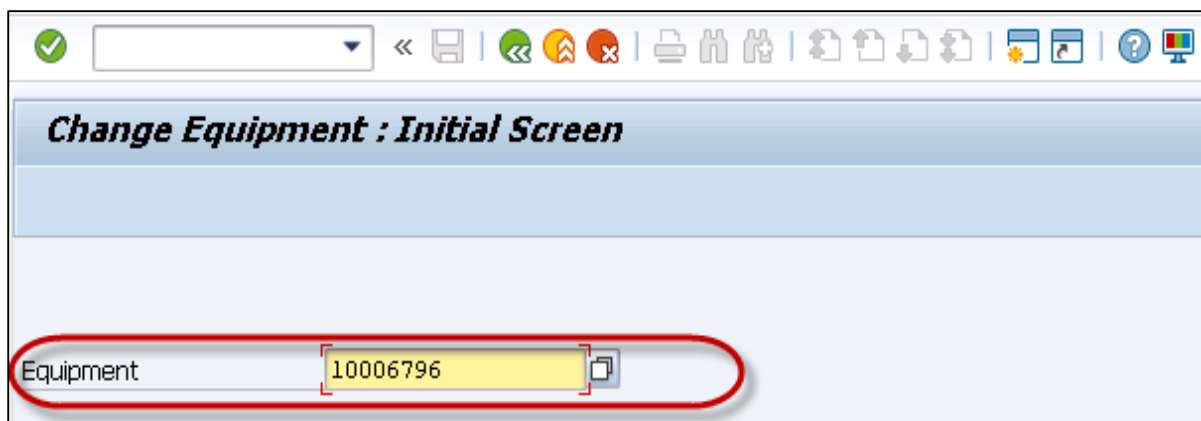
- A Machines
- B Construction machinery
- C RFID Equipment with Serial Num
- D DSD vehicle
- E Rolling stock serialized comps
- F Vehicles
- G GG Equip Category (IS-HT-SW)
- H Medical Devices
- I IT-Equipment
- J Containers
- K Vehicles
- L Linear equipment
- M Machines
- N Mining Equipment
- O Transmitter Equipments
- P Production resources/tools
- Q Test/measurement equipment
- R Rolling stock
- S Customer equipment
- T TTC Rolling Stock

Changing a Piece of Equipment

You may also need to make changes to an equipment master record. There is a possibility that data has been changed, or you have mistakenly entered wrong data, and you have to change the master record.



Step 1: Enter the Equipment number that you want to change and click the ENTER button.



Step 2: You will see the Change Equipment screen. In this window, make all the necessary changes in this screen. To change further data, go to the required screens.

Step 3: You can change the equipment category. Choose Edit.

Change Equipment : General Data

Class overview Measuring points/counters

Equipment 10006796 Category A Machines

Description Application Server FIGU-Y Intern.note

Status AVLB 0001

Valid From 23.08.2015 Valid To 31.12.9999

General Location Organization Structure Partner Sales and Distr...

General data

Class

Object type SERVER Server

AuthorizGroup

Weight Size/dimension

Inventory no. Start-up date

Shift Note Type

Reference data

AcquistnValue Acquisition date

Manufacturer data

Manufacturer ServStar Inc. ManufCountry US

Model number 5444664 Constr.yr/mth /

ManufPartNo. 845424-X

ManufSerialNo.

Step 4: In the dialog box, you can select new Equipment category. Click the Save button to save the data.

✓ Equipment 10006796 changed

Changing the Maintenance Plant

You may also require to change the maintenance plant as per the requirement. You can change the maintenance plant for a piece of equipment when it is no longer installed at the functional location. When you change a maintenance plant, following fields in the master record effects:

- The fields that are dependent on the maintenance plant gets cleared.
- The company code also changes. Hence all fields that are dependent on the company code gets cleared.
- With the change in the company code, the controlling area may also change. Hence the fields associated with the controlling area gets cleared.

Step 1: To change the maintenance plant, open the equipment master record. Select the equipment master record from the available list.

Change Equipment : Initial Screen

Equipment: 10006796

Step 2: Go to the Location data tab -> Change Maintenance

Change Equipment : Location

Equipment: TEQ-00 Category: M Machines

Description: Electric pump 001

Status: INST

Valid From: 01.01.1999

Location data:

Plnt	Search Term 2	Search Term 1	Postl Code
0005	1000	HAMBURG	22299
0006			10001
0007	1000	HAMBURG	22299
0008			10001
006			10001
007			22299
0099			69185
1000	1000	HAMBURG	22299
1100			13156

You will receive a warning of changing the maintenance plant.

Step 3: To continue, click the Continue button.

Step 4: Save the changes to the master record.

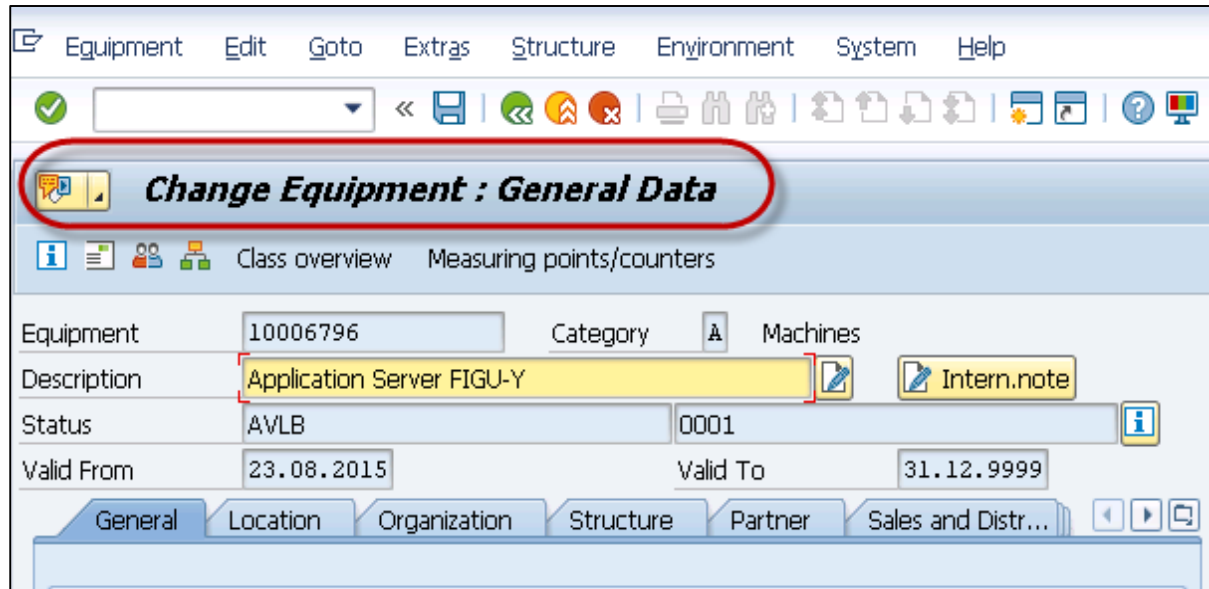
Change Equipment : Location

Equipment TEQ-00 changed

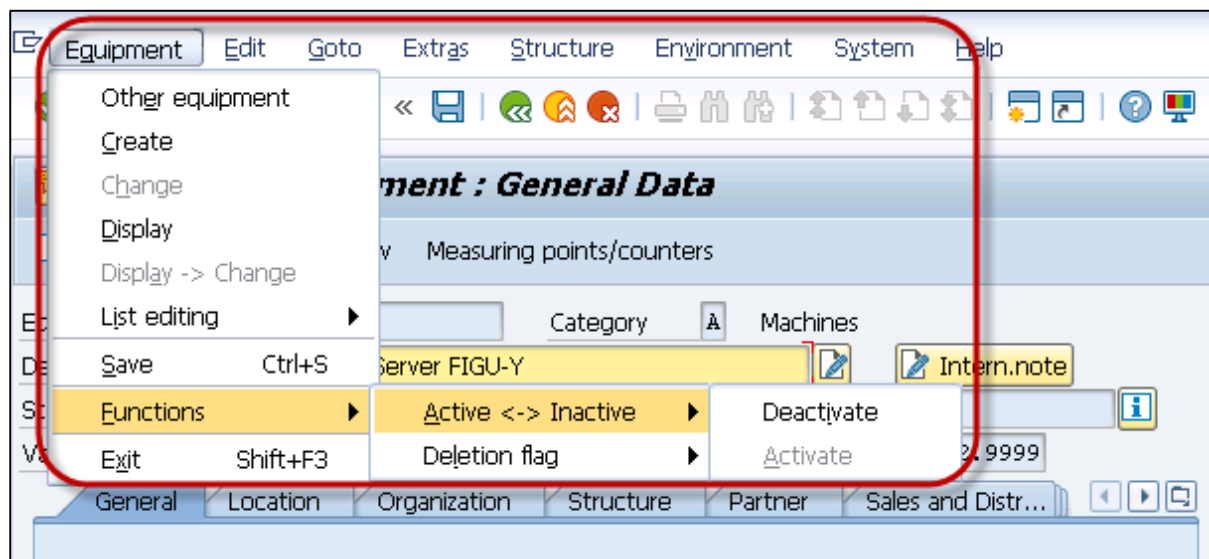
Activating/Deactivating an Equipment Master Record

When you want to deactivate an equipment master, you should know the results of the action.

Step 1: To perform this, open the equipment master in create/change mode.

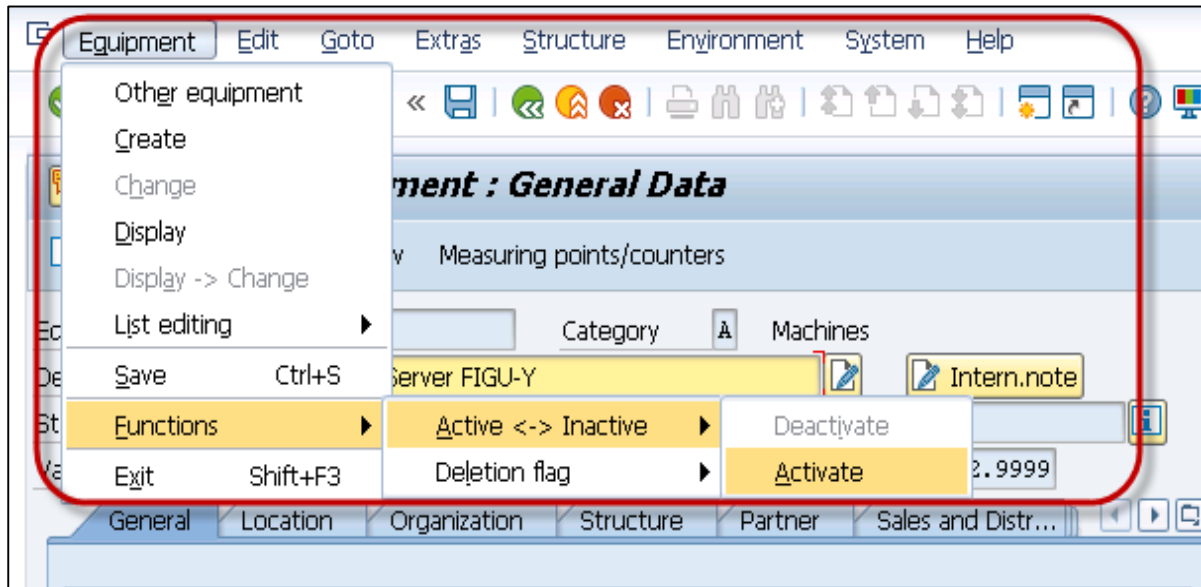


Step 2: Go to the Equipment tab at the top -> Functions -> Active-Inactive -> Deactivate



The system then shows the status - Object deactivated-> Save the master record.

Step 3: To activate the Equipment, go to the Equipment tab at the top -> Functions -> Active-Inactive -> Activate



4. SAP PM – Functions of Technical Objects

You can perform different functions on the equipment master record and functional location.

Data Transfer

It is possible to transfer master data from one functional location to other functional location or between the functional location and the piece of equipment.

Using data transfer function, you can maintain data at a superior level in the hierarchical structure or you can also maintain data for objects assigned to functional locations.

You can divide data transfer into the following types:

Hierarchical Data Transfer

In the hierarchical structure, you can maintain data at a high level and the system will automatically transfer the changes to the level below.

Horizontal Data Transfer

Using the horizontal data transfer, you can transfer data from the reference location to the functional location or from the functional location to a piece of equipment.

You can use reference functional location to transfer a specific data to the corresponding functional locations or to a piece of equipment.

When you create a functional location, the following rules can be applied for data transfer:

- You can refer to a functional location, using which you can maintain data using data transfer in an assigned master record.
- When you use another location as copy, the system also copies reference functional location.

Transferring Data from the Installed Equipment

Step 1: To transfer the data from the installed equipment, go to the equipment master record.

The screenshot shows the 'Change Equipment : Initial Screen' in SAP. At the top, there is a toolbar with various icons. Below the title bar, the main area contains a red-bordered box with the label 'Equipment' and a text field containing the value '10006796'. To the right of the text field is a small icon of a document with a plus sign.

Step 2: Go to equipment master record -> choose Structure tab -> Change InstallLoc to display the dialog box Change Equipment Installation Location.

The screenshot shows the 'Change Equipment : General Data' screen in SAP. The title bar indicates 'Change Equipment : General Data'. Below the title bar, there are tabs for 'Class overview' and 'Measuring points/counters'. The main area contains a red-bordered box with the following data:

Equipment	10006796	Category	A Machines
Description	Application Server FIGU-Y		
Status	AVLB	0001	Intern.note
Valid From	23.08.2015	Valid To	31.12.9999

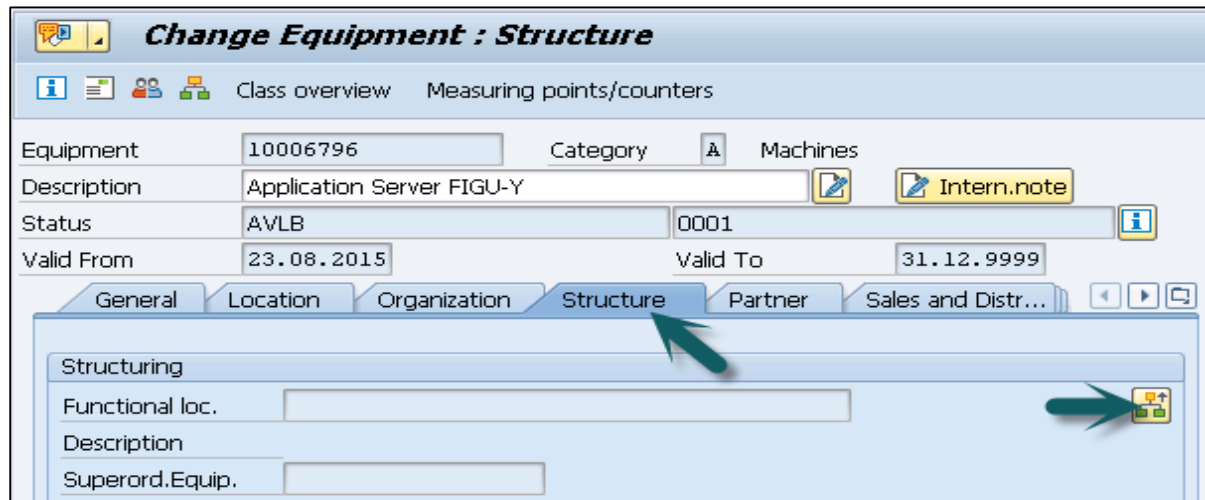
Below the data fields, there are tabs for 'General', 'Location', 'Organization', 'Structure', 'Partner', and 'Sales and Distr...'. The 'Structure' tab is selected, and a green arrow points to it. The 'Structure' tab contains the following data:

General data	
Class	
Object type	SERVER Server
AuthorizGroup	
Weight	
Inventory no.	
Shift Note Type	
Size/dimension	
Start-up date	
Reference data	
AcquistnValue	
Acquistn date	
Manufacturer data	
Manufacturer	ServStar Inc.
Model number	5444664
ManufPartNo.	845424-X
ManufSerialNo.	
ManufCountry	US
Constr.yr/mnth	/

You can proceed by selecting one of the following options:

Install a Piece of Equipment

Step 1: Select the required superior equipment or functional location in the dialog box - > Install w. Data Transfer.



Change Equipment : Structure

Class overview Measuring points/counters

Equipment: 10006796 Category: A Machines

Description: Application Server FIGU-Y Intern.note

Status: AVLB 0001

Valid From: 23.08.2015 Valid To: 31.12.9999

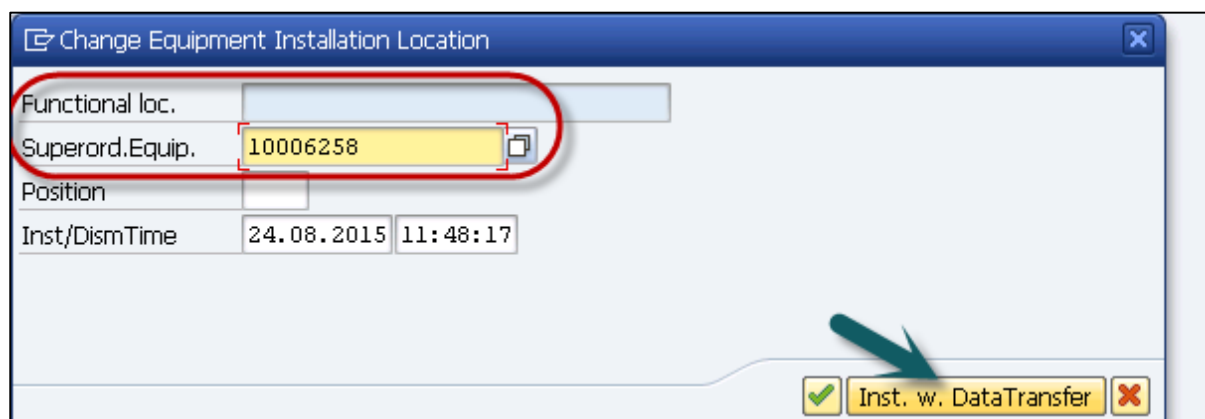
General Location Organization **Structure** Partner Sales and Distr...

Structuring

Functional loc. Add

Description

Superord.Equip. Add



Change Equipment Installation Location

Functional loc. Add

Superord.Equip. 10006258 Add

Position

Inst/DismTime 24.08.2015 11:48:17

Inst. w. DataTransfer

Step 2: In the next window, you can see the screen Data Transfer: Install Equipment.

Step 3: In this window, you have to select which data should be transferred from the master record of the superior piece of equipment or the functional location into the equipment master record.

Data Transfer: Install Equipment

InstallLoc. (whole) Equipment (all)

InstallLocation (SupEquipmt) IL EQ Equip. before installation

0000000000010006385 ☐ 10006796

BIZ 4.0 Application Server FIGU-Y

Location

Location	<input checked="" type="radio"/>	<input type="radio"/>
Room	<input checked="" type="radio"/>	<input type="radio"/>
PlantSectn	<input checked="" type="radio"/>	<input type="radio"/>
Work ctr	<input checked="" type="radio"/>	<input type="radio"/>
ABC indic.	<input checked="" type="radio"/>	<input type="radio"/>
Sort field	<input checked="" type="radio"/>	<input type="radio"/>

Account assignment

Bus. Area	<input checked="" type="radio"/>	<input type="radio"/>
Cost Ctr	<input checked="" type="radio"/>	<input type="radio"/>
WBS Elem.	<input checked="" type="radio"/>	<input type="radio"/>
StdgOrd.	<input checked="" type="radio"/>	<input type="radio"/>
SetlmtOrd.	<input checked="" type="radio"/>	<input type="radio"/>

Plant Maintenance

PIPlnt/Grp	<input checked="" type="radio"/>	<input type="radio"/>
Mn.wk.ctr	<input checked="" type="radio"/>	<input type="radio"/>
Cat. Prof.	<input checked="" type="radio"/>	<input type="radio"/>

Sales and distribution

Sales org	<input checked="" type="radio"/>	<input type="radio"/>
-----------	----------------------------------	-----------------------

Step 4: Select the appropriate fields in the column IL -> which data should be individually maintained in the equipment master.

Step 5: To do this, select the appropriate fields in the column EQ.

The other option is to **Dismantle the Piece of Equipment**.

Dismantle the Piece of Equipment

Step 1: Select the option **Dism. W. DataTransfer** as shown in the following screenshot.

In the next window, you can see Data Transfer: Dismantle Equipment.

Step 2: Select which data for the installation should be retained for the piece of equipment after the dismantling.

Step 3: Click Goto -> Back. You have to confirm the dismantling and save the equipment master record by clicking the Save button at the top.

Displaying and Changing Data Origin

In some scenarios, you have to change the type of data transfer for technical objects.

Step 1: To change the data origin for location, go to the screen in which you want to make the changes in create or change mode.

Step 2: Click on edit -> Data Origin.

Step 3: In the next window, you have to select the required information for the field you selected.

Step 4: Save the changes to the master record by clicking the Save button at the top.

Change Equipment : General Data

Class overview Measuring points/counters

Equipment 10006796 Category A Machines

Description Application Server FIGU-Y Intern.note

Status AVLB 0003

Valid From 23.08.2015 Valid To 31.12.9999

General Location Organization Structure Partner Sales and Distr...

General data

Class

Object type SERVER Server

AuthorizGroup

Weight Size/dimension

Inventory no. Start-up date

Shift Note Type

Classification of the Objects

In SAP PM, it is possible to classify all technical objects that are shown by a master record. Classification can be done when you create the master record or using the change option at a later stage.

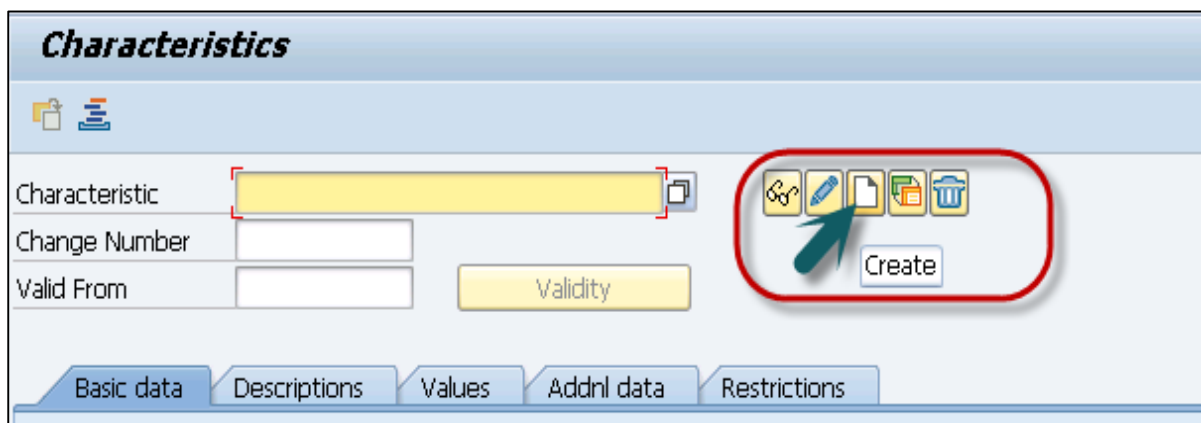
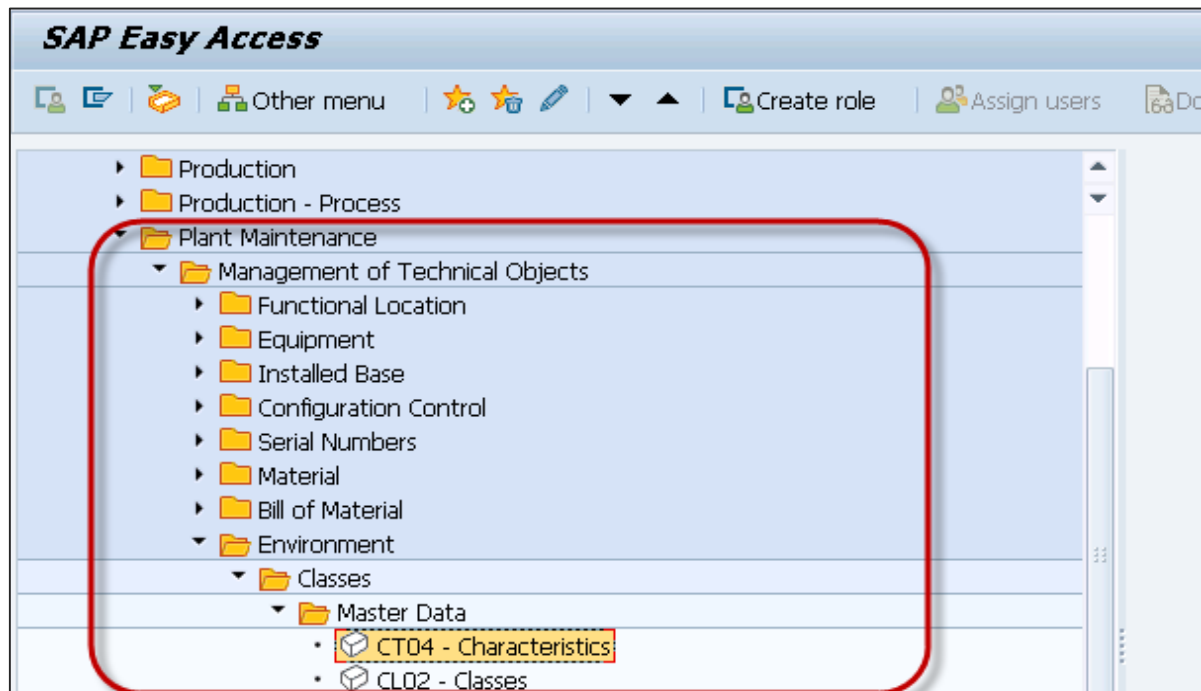
Using the classification of technical objects, you can easily create a hierarchical classification system for the company and hence you can find existing special classes.

Creating and Changing the Characteristics and Classes

You have to first create the characteristics and then you have to create a class and define a class type.

Create Characteristics

Step 1: Navigate to Logistics -> Plant Maintenance -> Technical Objects -> Environment -> Classes -> Master Data -> Characteristics -> Create/Change



Step 2: Click the Create button and you will see the following window.

Create Characteristic

Characteristic: C000
 Change Number:
 Valid From: 24.08.2015
 Validity:

Basic data | Descriptions | Values | Addnl data | Restrictions

Basic data

Description: TEST
 Chars Group: AUTOMOTIVE
 Status: Released
 Auth. Group:

Format

Data Type: Character Format
 Number of Chars: 10
☐ Case Sensitive

Value Assignment

☒ Single Value
☐ Multiple Values
☐ Restrictable
☐ Entry Required

Template: CCAA----CCCCAAA

Step 3: You will see the initial screen with characteristics. Enter the required information in all the fields. You can obtain additional data by choosing Goto Additional data.

Create Characteristic

Characteristic: C000
 Change Number:
 Valid From: 24.08.2015
 Validity:

Basic data | Descriptions | Values | **Addnl data** | Restrictions

Reference to Table Field

Table Name:
 Field Name:

Document

Document:
 Document Type:
 Document Part:
 Doc. Version:

Procedure for Value Assignment

☐ Not Ready for Input
☐ No Display
☐ Display Allowed Values

User Entry Handling

☐ Unformatted Entry
☐ Propose Template

Step 4: You can assign the characteristic to a particular class type. To do this, choose Go to Restr. to class types.

Create Characteristic

Characteristic: C000

Change Number:

Valid From: 24.08.2015

Validity:

Basic data | Descriptions | Values | Addnl data | **Restrictions**

Valid Class Types

Class Type	Description

Step 5: Save the data.

Create Characteristic

Characteristic: C000

Change Number:

Valid From: 24.08.2015

Validity:

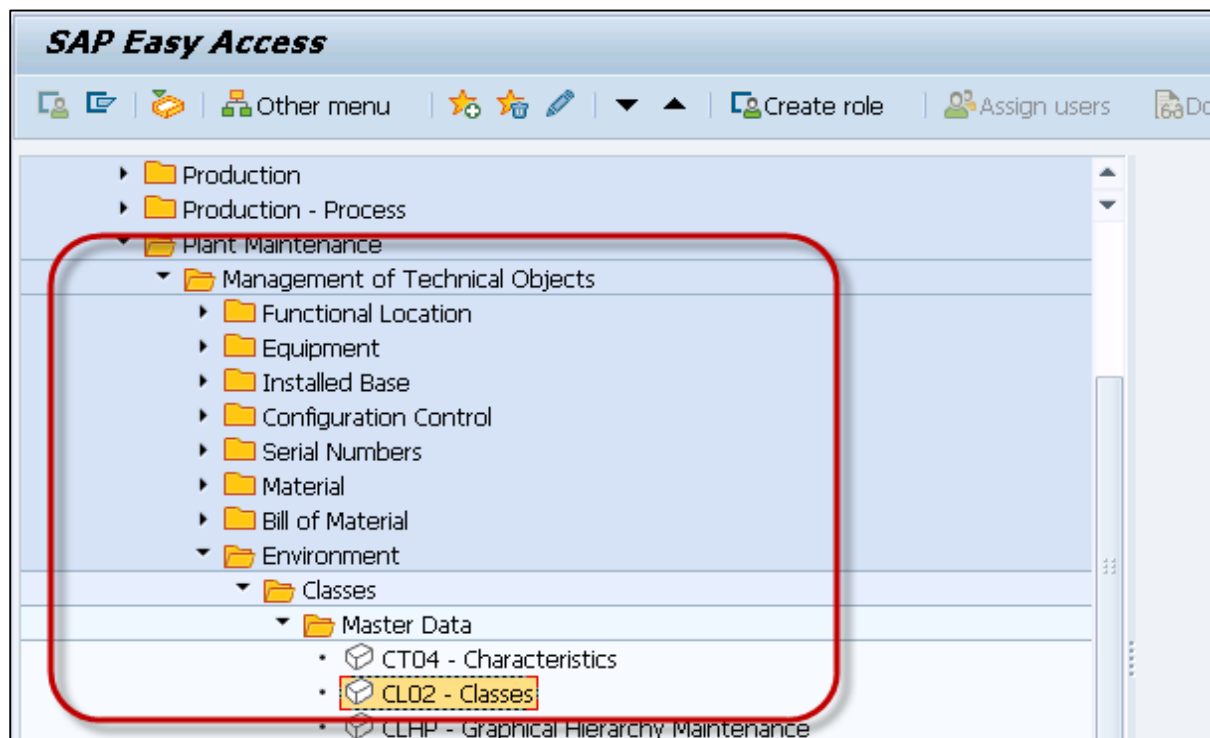
Basic data | Descriptions | Values | Addnl data | **Restrictions**

Valid Class Types

Class Type	Description
002	

Create Class

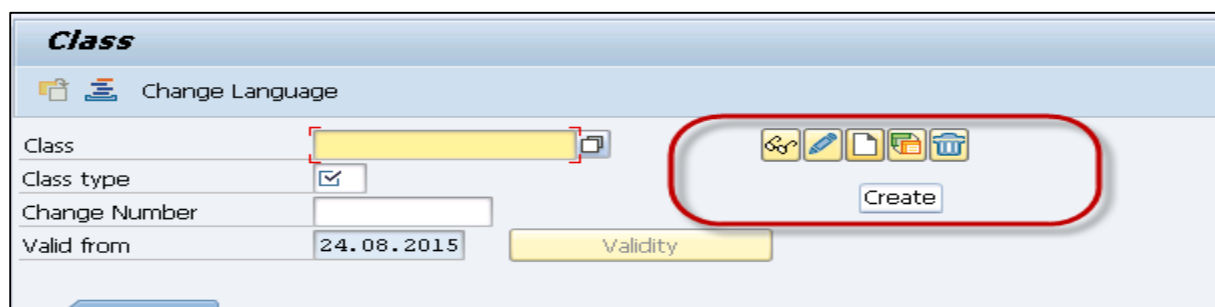
Step 1: Navigate to Logistics -> Plant Maintenance -> Technical Objects -> Environment -> Classes -> Master Data -> Classes -> Create/Change



Step 2: In next field, you have to enter the following details:

- Enter Class Name
- Class Type

Step 3: Click the Create button.



Step 4: Enter the required information in all the fields. To make class easily searchable, enter the Keywords.

Create Class:

Change Language

Class: TESTCL

Class type: 002 Equipment class

Change Number:

Valid from: 24.08.2015

Validity:

Basic data | Keywords | Char. | Texts

Basic data

Description:

Status: Released

Class group:

Organizational area:

Valid From: 24.08.2015

Valid to: 31.12.9999

Local class: ☐

Same classification

☒ Do not check

☐ Warning message

☐ Check with error

Authorizations

Class maintenance: ☐

Classification: ☐

Find object: ☐

Create Class:

Change Language

Class: TESTCL

Class type: 002 Equipment class

Change Number:

Valid from: 24.08.2015

Validity:

Basic data | Keywords | Char. | Texts

Keyword: TEST

Step 5: To assign a characteristic to these calls, go to Characteristics.

In the next window, you can see the screen for maintaining characteristics is displayed.

Step 6: Enter the required information in this screen.

Create Class:

Change Language

Class: TESTCL

Class type: 002 Equipment class

Change Number:

Valid from: 24.08.2015 Validity

Basic data | Keywords | Char. | Texts

Char.	Description	Dat...	N...	D...	Unit	R...	Org.	Areas	Std ...	O. I...	Origin	P...S...
C001						<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Search Relevant
						<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	

Step 7: To save the data, click the Save button at the top of the screen.

☒ Class type 002: Class TESTCL created

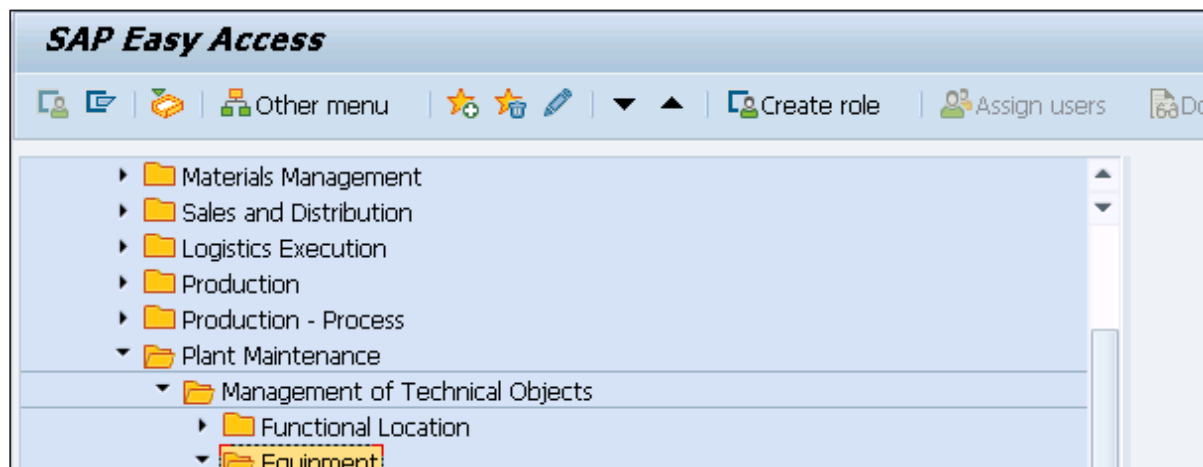
5. SAP PM – Creating Multilingual Text

In many organizations, SAP PM module is managed in different languages. It is possible to create multilingual **short texts** and **long texts** for each functional location and piece of equipment.

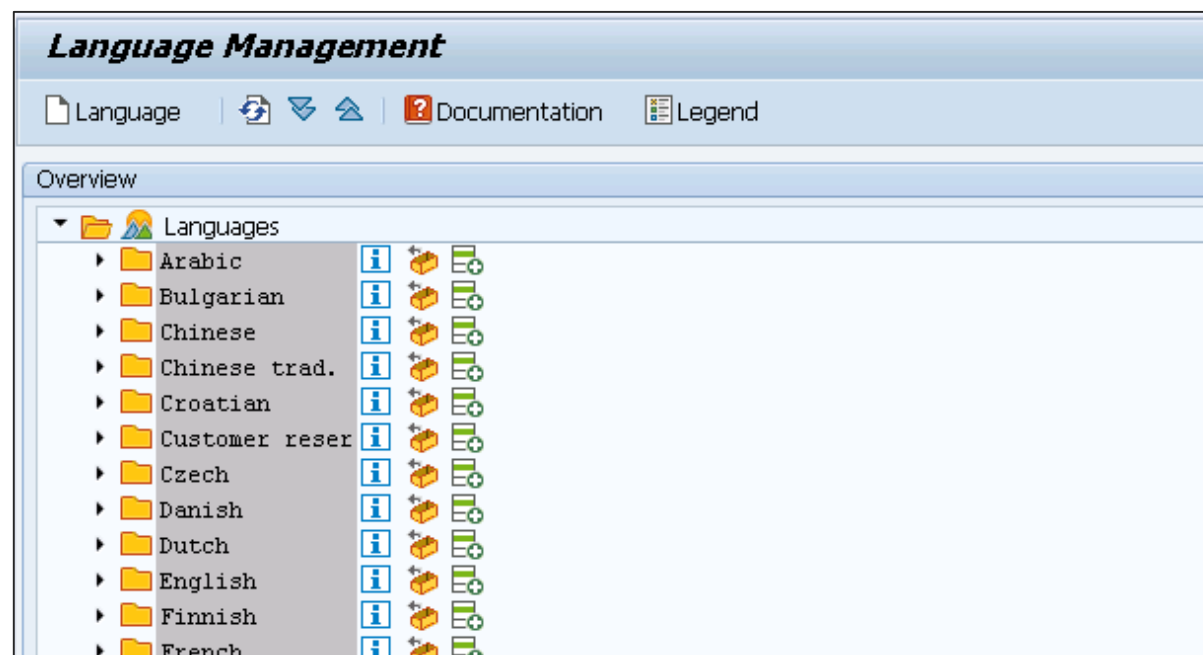
Using short texts, the maintenance planner can identify the technical objects, whereas long texts contain the technical data in different languages.

You can create multilingual text only when the equipment category is set to allow this.






To do so, navigate to Logistics -> Plant Maintenance -> Equipment and Technical Objects -> Technical Objects -> Equipment -> Allow multilingual text maintenance by EquipCategory.




To add a new language in SAP system, use **T-Code: SMLT**




Equipment anzeigen : Allgemeine Daten






     Klassenübersicht Meßpunkte/Zähler

Equipment  Typ Maschinen

Bezeichnung

Status 

Gültig ab Gültig bis

Allgemeine Daten

Klasse

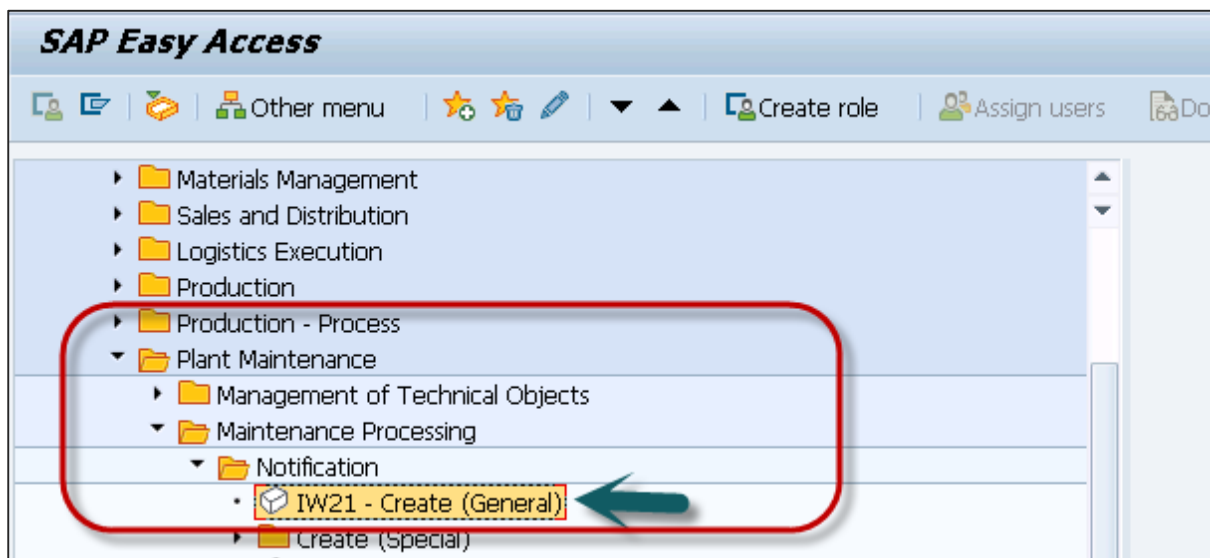
6. SAP PM – Breakdown Maintenance

In SAP PM, when there is a malfunction of any of the equipment, which requires a response from Maintenance team, the process of correcting this situation is known as **Breakdown maintenance**. Breakdown maintenance is required in the following situations:

- Equipment is not working properly.
- Production is affected when a technical equipment breaks down.
- You create a M2 malfunction notification and PM02 order type and equipment is repaired at the site. In breakdown maintenance, you use catalogs and codes in notification.

Creating a Notification

Step 1: To create a notification, navigate to Logistics -> Plant Maintenance -> Maintenance Processing -> Notifications -> Create or use **T-code: IW21**




Step 2: Click Create Notification and you will be prompted to select a Notification type.

Step 3: Click to get the dropdown list and select the field. Select the notification type as M2: Malfunction report

Create PM Notification: Initial Screen

Notification

Notification type ☒ 

Notification

Reference

Notification

Notification type (1) 27 Entries found

Restrictions

Notification type


EC	Engineer Change Note
GC	Geom. Car Inspection
HI	Hi-Rail Inspection
I1	Malfunct.report RE
M1	Maintenance request
M2	Malfunction report
M3	Activity report
M4	RF & RFID Maint Req
M5	Malfunction report E

As the system is to be configured for internal notification, there is no need to enter any other information.

Step 4: Click the tick mark at the top.

Create PM Notification: Initial Screen

Notification

Notification type ☒ **M2** 

Notification

Reference

Notification

Step 5: In the next window, enter the notification description. To get the functional location, go to the functional location field and search from the available list.

Create PM Notification: Malfunction report

Notification: 10003047 M2

Notific. Status: OSNO

Order:

Reference object: Functional loc. (selected)

Equipment:

Assembly:

UII:

Functional Location (1) 500 Entries found

Functional Location	Description of function
K1	Clarification plant
K1	Clarification plant
K1	Clarification plant

Step 6: Next is to select the Equipment. Select the Equipment number by technical Id number and click the tick mark button to populate this.

Create PM Notification: Malfunction report

Notification: 10003047 M2 TEST

Notific. Status: OSNO

Order:

Reference object: Functional loc. K1

Equipment (selected)

Assembly:

UII:

Equipment Number (1) 1 Entry found

Technical IdentNo.	Equipment	Equipment description
23150002	PP-FHME	MILLING HEAD

Step 7: Enter the value for the following fields:

- Planner group field
- Main WorkCtr. field
- Person respons. Field
- Reported by field
- Subject Long Text field

Step 8: Once you enter all the fields, click the green tick mark at the top.

Create PM Notification: Malfunction report

Notification: 10003047 M2 TEST

Notific. Status: OSNO

Order:

Reference object:

Functional loc.: K1

Equipment: PP-FHME

Assembly:

UII:

Responsibilities:

Planner group: 010 / 0001

Main WorkCtr: /

Person Responsl: 00080061

Person Responsl: 00088841

Reported by: AAMANAGER

Notif.date: 24.08.2015 13:01:56

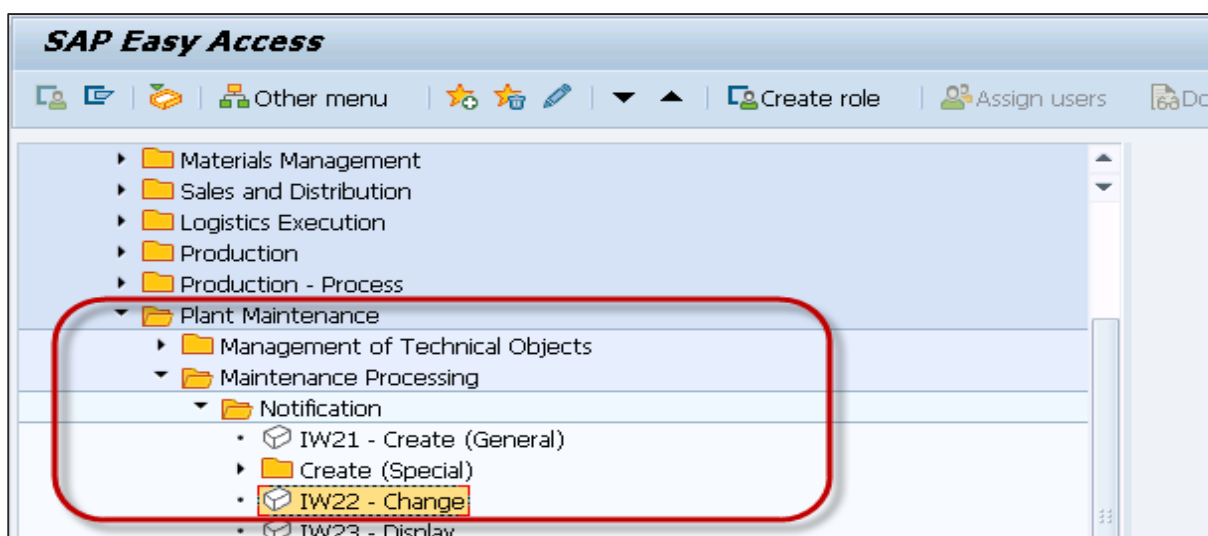
Subject:

Step 9: To save the notification, click the Save button.

✓ Notification 10003047 saved

Changing the Notification

To change the notification, go to Logistics -> Plant Maintenance -> Maintenance Processing -> Notifications -> Change or use **T-code: IW22**



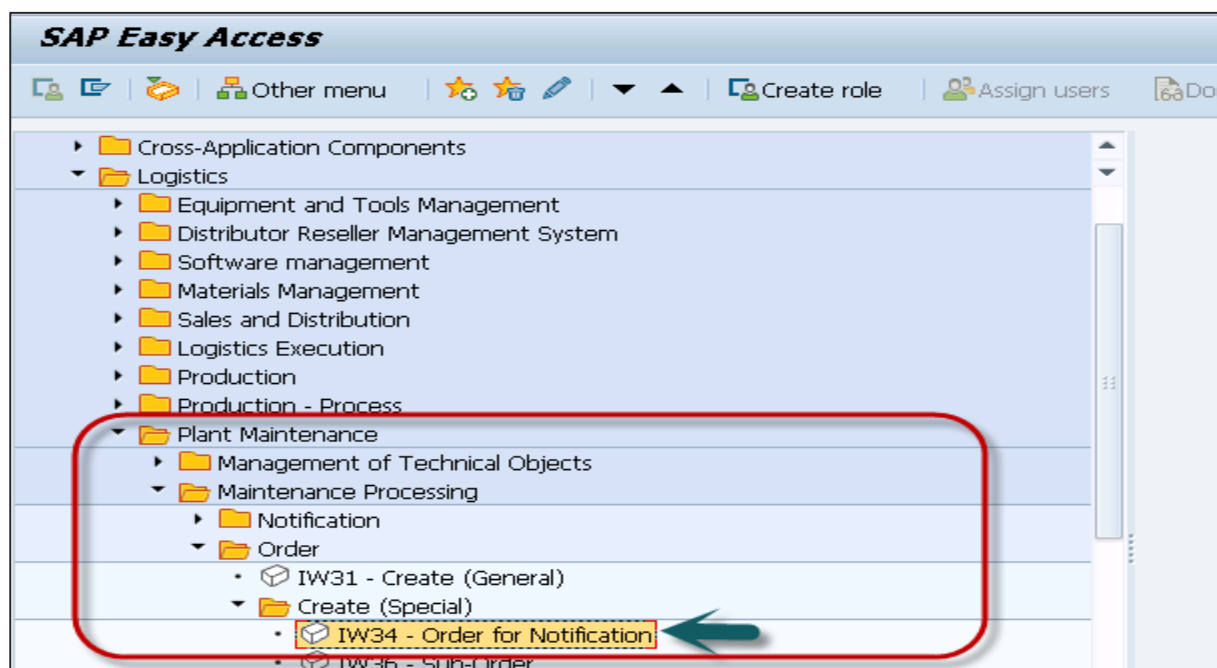
Enter the notification number and click the tick mark at the top.

The screenshot shows the 'Change PM Notification: Initial Screen' in SAP. At the top, there is a toolbar with a green checkmark icon circled in red. Below the title bar, there is a 'Notification' label. At the bottom, there is a text input field containing the number '10003047', which is also circled in red. To the right of the input field is a small icon of a document with a checkmark.

Creating Breakdown Order for Notification

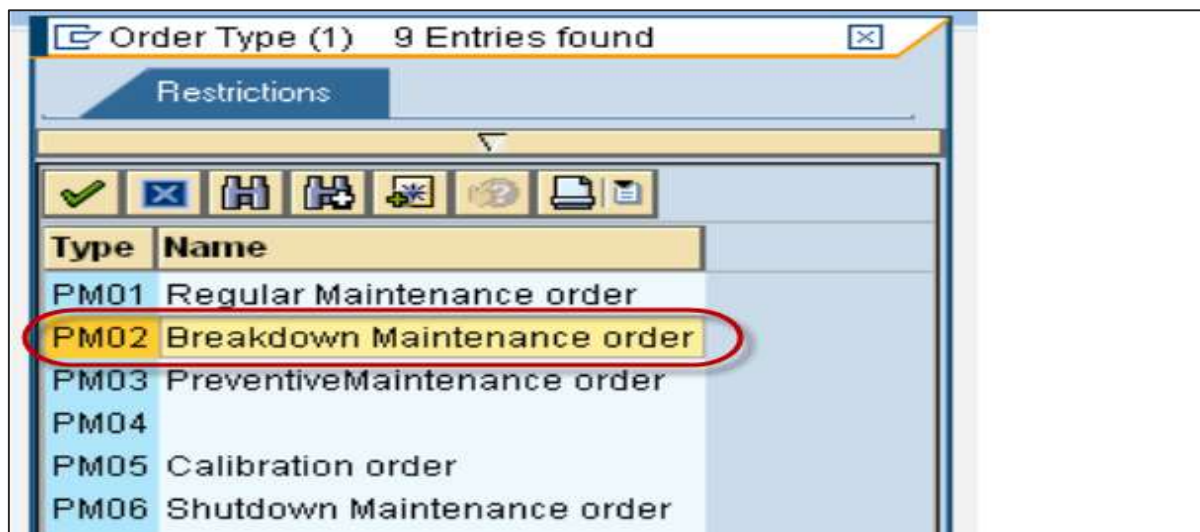
Step 1: To create a breakdown maintenance order for notification, navigate to Logistics -> Plant Maintenance -> Maintenance Processing -> Order -> Create (Special) -> Order the notification.

Or use **T-code: IW34**

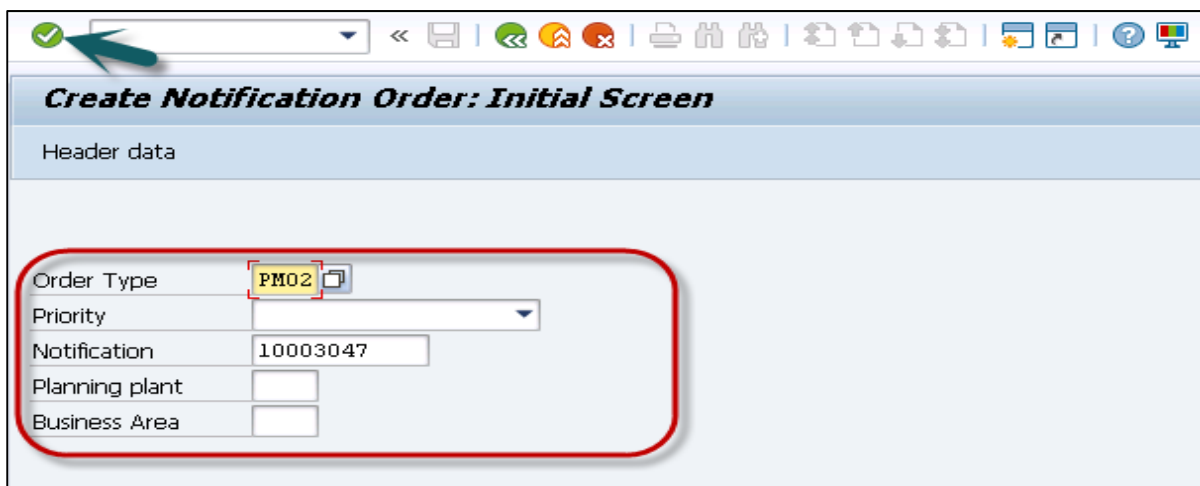


Step 2: Enter the notification number.

Step 3: Select the order type as PM02 Breakdown Maintenance Order.



Step 4: Once you enter the details, click the tick mark at the top.



Step 5: Key in all the positions in Header data.

Create Regular Maintenance Order : Central Header

HeaderData | Operations | Components | Costs | Partner | Objects | Additional Data

Person responsible

PlannerGrp 100 / 1000

Mn.wk.ctr 1310 / 1000 Pre-Assembly I

Person Res... 88841 Mr. Yachi Aahna

Notifctn 10003047

Costs EUR

PMActType 102 Regular mainte...

SystCond.

Address

Dates

Bsc start 24.08.2015

Basic fin.

Priority

Revision

Reference object

Func. Loc. K1

Equipment PP-FHME milling head

Assembly

UII

First operation

Operation

WkCtr/Plnt 1310 / 1000 Ctrl key PP01 Acty Type

Work durtn HR Number Oprtn dur. HR

Person. no

Cckey Calculate duration

PRT

Comp.

Step 6: Go to Operations tab and enter all the details. Add other operations as required.

Create Regular Maintenance Order : Operation Overview

Order PM02 100001000001 TEST

Sys.Status CRED PLANC NTU?

HeaderData | Operations | Components | Costs | Partner | Objects | Additional Data | Location | Planning | Control

Op...	SO...	Work ctr	Plant	Co...	StTextK	S...	Operation short text	LT	Actual work	Work	Un	N...	Dur.	Un	Earlstart...	Earlstar...	EarlstedEn...	Earlsted...	ActTyp	CKey
0010		1310	1000	PP01	PP00001		Spindle is not working	2	0.0	HR				HR	24.08.2015 07:00:00	24.08.2015 07:00:00				Calculate du.

Step 7: Click the Component tab to assign components that are required for the operations.

Order: PM02 %000000000001 TEST

Sys.Status: CRTD MANC NTUP

HeaderData Operations **Components** Costs Partner Objects Additional Data Location Planning Control

Item	Component	Description	LT	Reqmnt Qty	UM	IC	S..	SLoc	Plnt	Op...	Batch	Proc. C
0010	R-B400											

Step 8: Enter the following details as shown in the screenshot.

Item	Component	Description	LT	Reqmnt Qty	UM	IC	S..	SLoc	Plnt	OpAc
0010	4000000038	PINION PART NO. 9542			1	NOSL			1000	0010
0020	4000000015	DOL STARTER, O/L:45-75A, PC-4, MAKE P			1	NOSL			1000	0020
0030										
0040										

Step 9: Select both the component entries and click on the icon shown in the following screenshot to check material availability.

Create Regular Maintenance Order : Component Overview

General Internal **External** Dates Act. Data Enhancement

Step 10: To enter procurement of external services, go to Operations tab and click the EXTERNAL button at the bottom.

General Internal **External** Dates Act. Data Enhancement

Step 11: Click the green tick mark to validate the order. To save the order, click the Save button at the top.

7. SAP PM – Corrective Maintenance

Corrective maintenance contains all the process steps involved in preventive maintenance and regular maintenance process. Corrective maintenance involves the following steps under Plant Maintenance:

- The plant maintenance user enters a notification in SAP System to request maintenance and to repair defective equipment.
- The maintenance planner creates, plans, and schedules a maintenance work order in the system.
- The work order is received by the technician.
- An authorized person in the PM system approves and completes the work as per the work order.

Corrective Maintenance & Preventive Maintenance

In Preventive Maintenance, routine checks are performed according to the company's maintenance strategy to ensure that machines are running as per the required parameters. In SAP PM, using routine maintenance plans you can create a preventive work order.

In Corrective Maintenance, you correct a malfunction or a machine failure by raising a notification in the system. The work order is received by the technician who enters the information. An authorized person in the PM system approves and completes the work as per the work order.

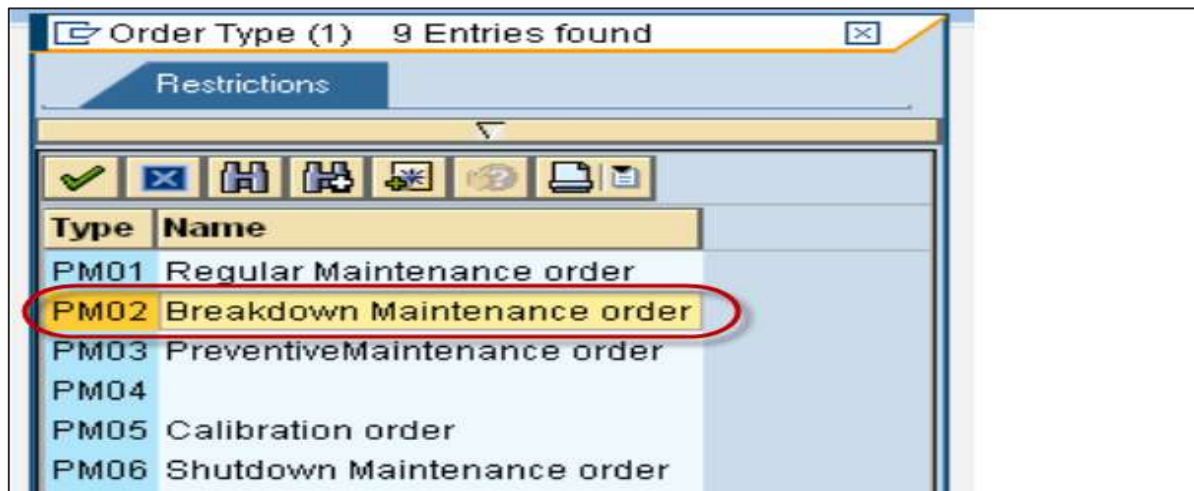
In certain scenarios, a corrective work order is created as a result of preventive work order. When a routine checkup is performed, the technician finds a failure or a malfunction in the operating machine and a corrective work order is created to clear the fault.

Note: In SAP system, PM01 is the order type to perform Corrective maintenance and PM03 is to perform Preventive maintenance.

Corrective Maintenance & Breakdown Maintenance

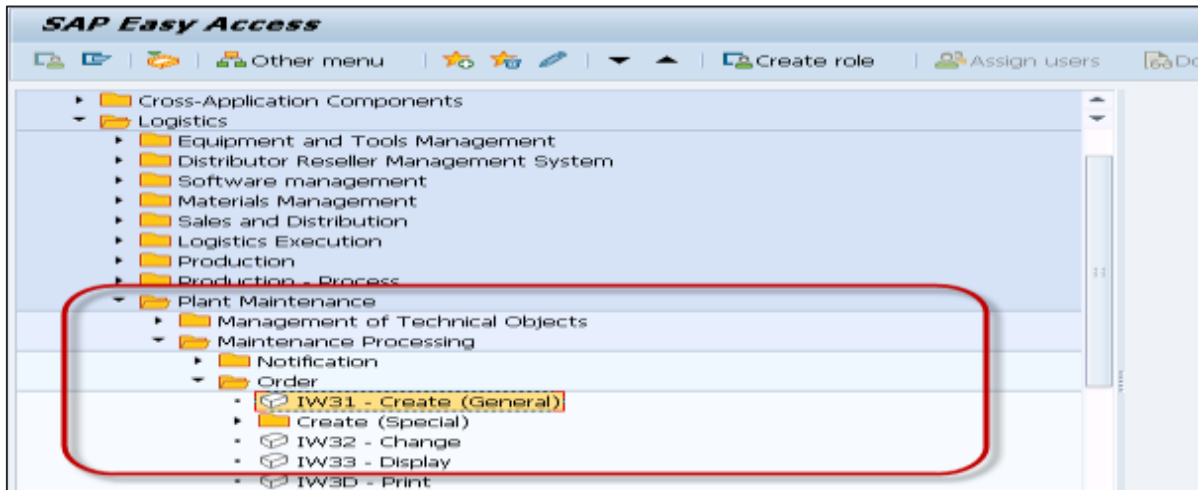
You perform Corrective Maintenance to improve the working condition of the machine. It is performed when a malfunction is detected and the machine is not operating properly as per the designated function.

Breakdown Maintenance is carried out when your equipment has a breakdown and is not working. In Breakdown maintenance, production is affected. In SAP system, PM02 order type is used to perform Breakdown Maintenance.



8. SAP PM – Creating/Planning MO

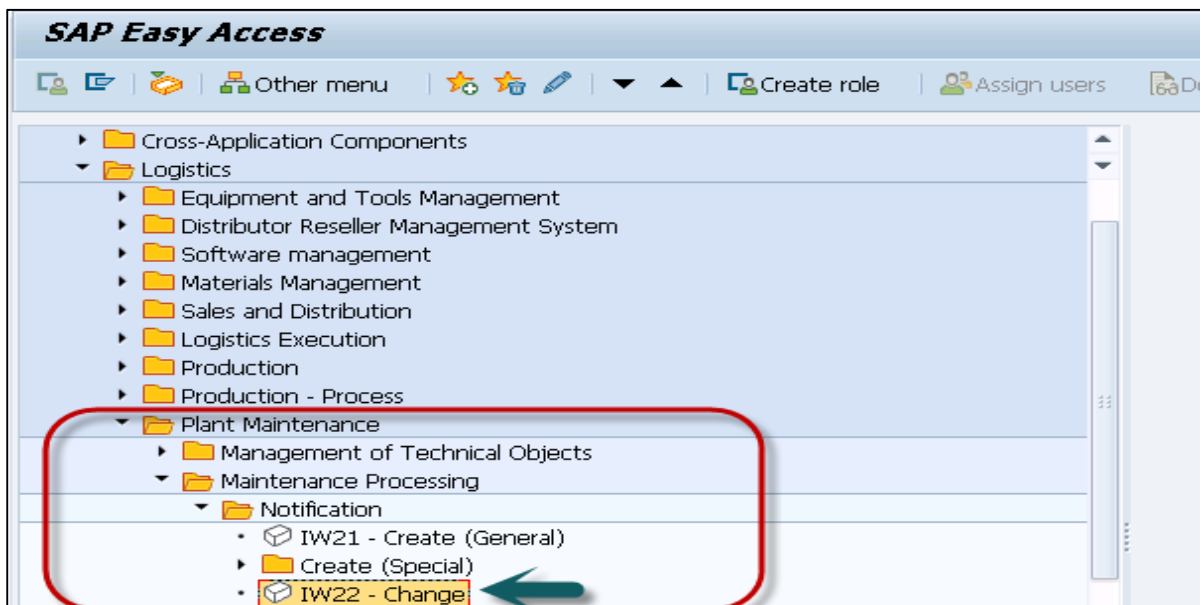
You can create, change, or display Maintenance Orders in SAP Plant Maintenance using SAP UI tool. You can use different **T-Codes IW31, IW32, and IW33** to maintain Maintenance Orders in Plant Maintenance.



Converting a Notification to Maintenance Order

You can convert a notification into Maintenance Orders. Notifications are created as part of Corrective maintenance or Breakdown maintenance.

Step 1: To convert a notification into Maintenance Order, navigate to Logistics -> Plant Maintenance -> Maintenance Processing -> Notification -> Change



Step 2: In the following screenshot, in the Notification field, input the notification number recorded -> Choose Notification

The screenshot shows the 'Change PM Notification: Initial Screen' in SAP PM. The Notification field is highlighted with a red box and contains the value 10003047. The field is labeled 'Notification'.

Step 3: In the Change PM Notification, Maintenance Request screen, proceed to create a maintenance order by choosing Create next to the Order field.

The screenshot shows the 'Change PM Notification: Malfunction report' in SAP PM. The Order field is highlighted with a red box, and the 'Create' button is visible. The Notification field contains the value 10003047, and the M2 field contains the value TEST. The Notific. Status field contains the value OSNO.

Step 4: The default Order Type is PM01. The Main work center, plant and the Planning plant are copied from the functional location at which this equipment is installed.

Click the Continue button.

The screenshot shows the 'Create Order' dialog box in SAP PM. The Order Type field is highlighted with a red box and contains the value PM01. The Planning plant field is checked. The Business Area field contains the value 1000. The Main work center field contains the value 1310 / 1000 Pre-Assembly I. The 'Continue' button is highlighted with a green arrow.

The maintenance order description is copied from the notification description, which can be changed if it is in the change mode. If the object information about the existing orders pops up, choose Enter to continue.

Step 5: On the Create Maintenance order: Central Header screen -> Click the Save button.

Create Maintenance Order : Central Header

Order: PM01 %000000000001 TEST

Sys.Status: CRTD MANC NTUP

HeaderData | Operations | Components | Costs | Partner | Objects | Additional Data

You will see the following message regarding Maintenance Order creation.

✓ Order 820240 saved with notification 10003047

9. SAP PM – Preventive Maintenance

Preventive Maintenance in an organization is used to avoid system breakdown and production breakdown. Using Preventive Maintenance, you can achieve various benefits in your organization. Preventive maintenance term is used to perform inspections, preventive maintenance and repairs. Maintenance plans are used to define dates and the extent of preventive and inspection maintenance tasks which can be planned for technical objects.

Following are the key benefits of using Preventive Maintenance in an organization:

- The activities that are performed in Preventive Maintenance are stored in the form of task lists.
- You define the extent and inspection work, and when the preventive maintenance should be performed with details of the functional location or pieces of equipment.
- You also define the cost-based assignment of Preventive maintenance task lists.
- You can also perform a review to find the cost of preventive maintenance activities to be performed in future.

Task Lists

Task list in Preventive Maintenance is defined as the sequence of activities that are performed as part of Preventive Maintenance in an organization. They are used to perform the repeated tasks as part of Preventive Maintenance and to perform them efficiently.

Using Task lists, you can reduce the effort by standardizing the work sequence. All the updates are performed at one specific spot in the corresponding maintenance task list and all the maintenance orders and maintenance items in the system receive the updated status of work sequences. With the help of task lists, it helps in reducing the effort required to create maintenance orders and maintenance items as you can refer back to the Task list to see the work sequences.

Following are the key functions of task lists in SAP Plant Maintenance:

- Planned Maintenance
- Ongoing Maintenance

Planned Maintenance

All the scheduled activities such as inspection, maintenance, and repairs come under Planned Maintenance. In Plant Maintenance, you define the time intervals when the work steps have to be executed and work sequences in which they have to be executed. Task lists are assigned to a maintenance plan in maintenance planning.

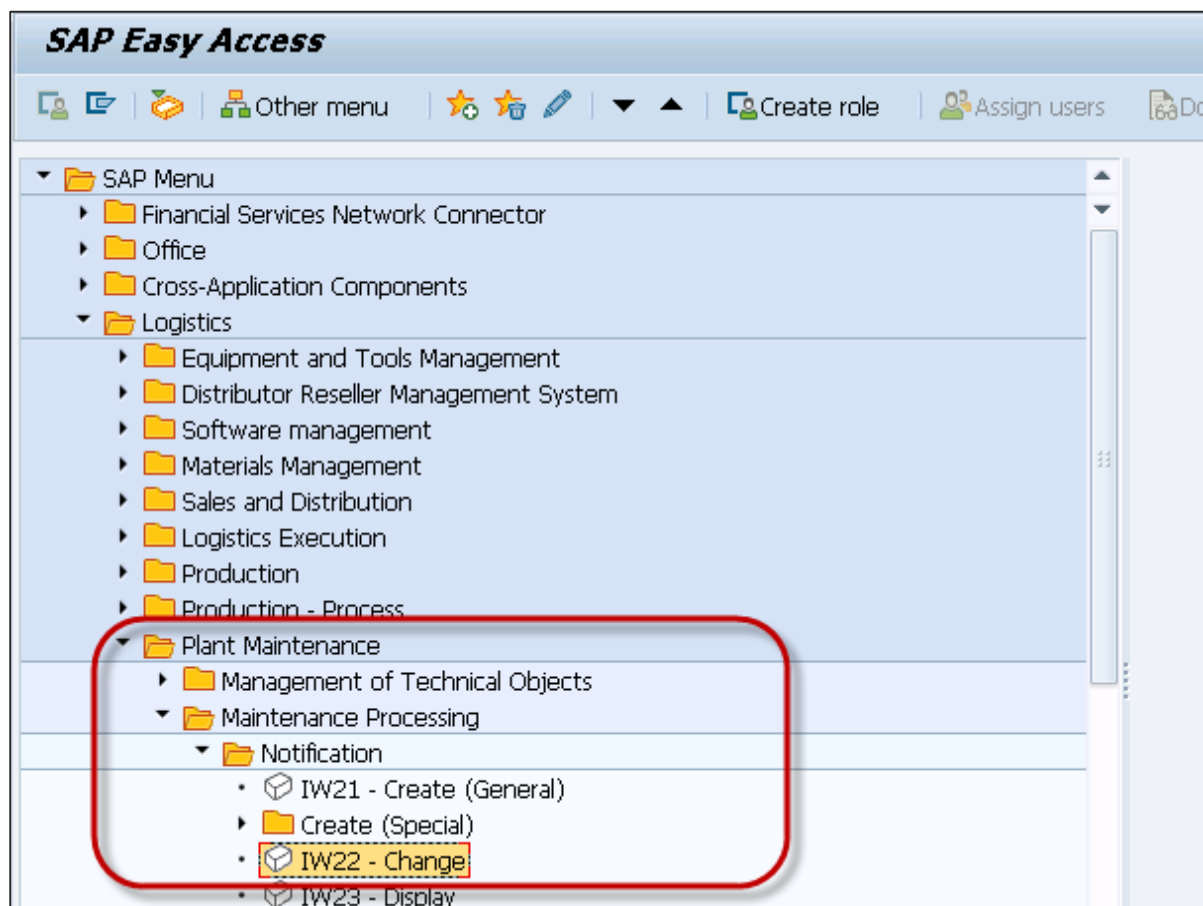
Ongoing Maintenance

The task list for ongoing maintenance contains the work sequences based on current inspection. All inspection that is done without a regular schedule comes under ongoing maintenance.

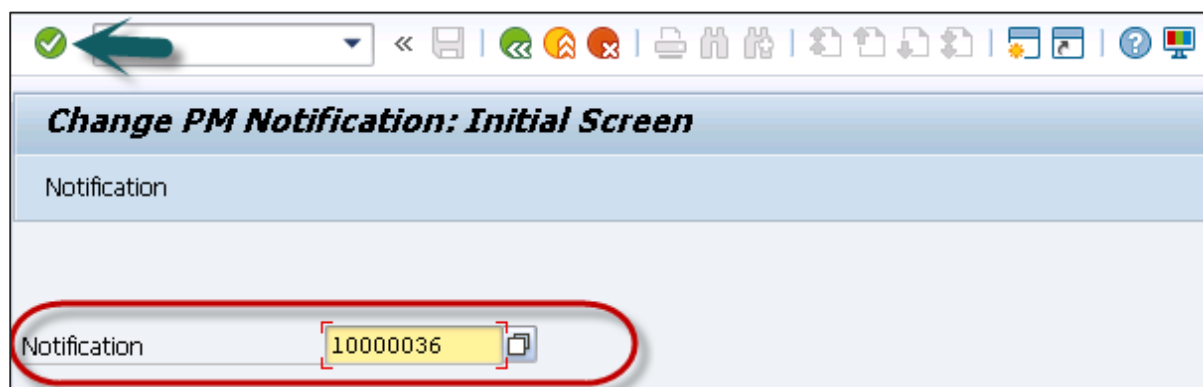
Assigning a Task List to a Notification

You can assign a task list to a notification and if there is any associated maintenance order, the task list is assigned to Maintenance Order.

Step 1: To assign a task list to a Notification, open the notification in Change mode.



Step 2: Enter the Notification number and click the tick mark at the top.



Step 3: Go to Task list tab and enter the details of the task list you want to assign to this notification:

- Task Code
- Task Text
- Code Group
- Person Responsible
- Planned Start Date
- Planned finish Date and other fields as shown in the following screenshot.

No.	Code g.	Tm.	Task code text	Task text	Tm.	Task Status	User Status	Task processor	Responsible	List name	Planned st.	Plan.	Planned f.	Plan.
1	PM01	2000	Work To Be Covered by	TEST				Person Respo.	00080061	Claude Kellar	26.08.2015 00:00		26.08.2015 00:00	
								Person Respo.				00:00		00:00
								Person Respo.				00:00		00:00

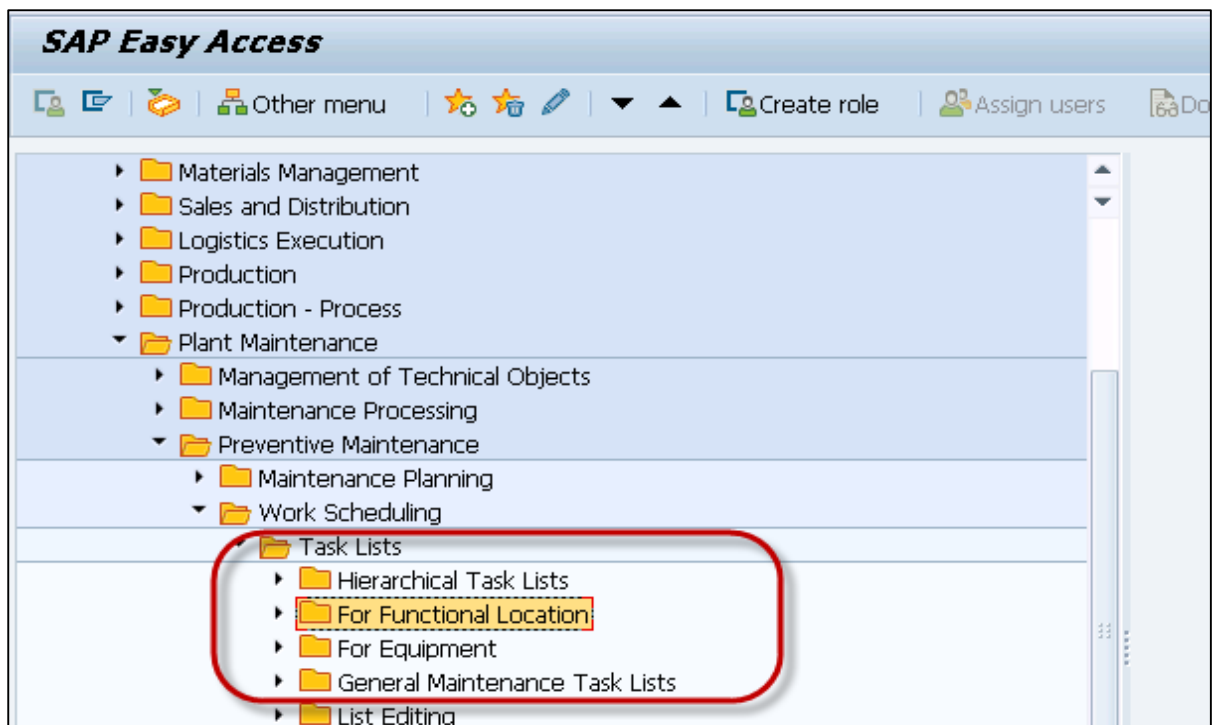
Step 4: To save the notification, click the Save button at the top.

☒ Notification 10000036 saved

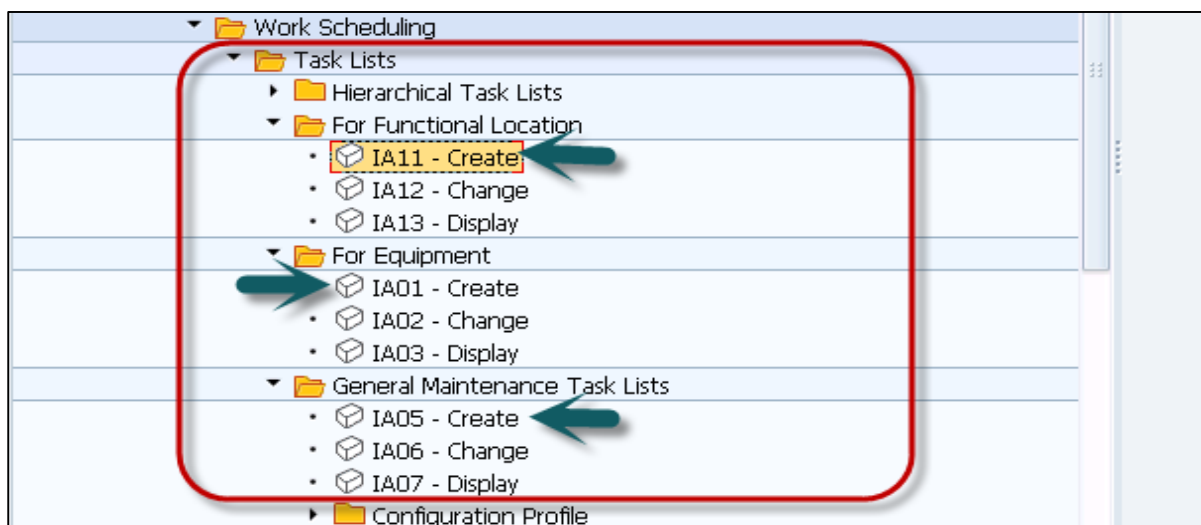
Creating a New Maintenance Task List

You can create a new maintenance task list to add a sequence of new maintenance activities to be performed at regular intervals. You can create an equipment task list, a functional location task list or a general maintenance task list.

Step 1: To create a new task list, navigate to Logistics -> Plant Maintenance -> Preventive Maintenance -> Work Scheduling -> Task Lists



Step 2: To create each type of Task list, you have to enter different details as shown in the following screenshot.



Step 3: To create equipment task list, enter the equipment number and existing profile number. Click the Continue button. You can also use copy as reference option to copy an existing task list.

Create Equipment Task List: Initial Screen

Task list

Equipment

User defaults

Profile

Change Number

Key date 25.08.2015

Step 4: To create functional location task list, enter identification of functional location and profile number. Click the Continue button.

Create Functional Location Task List: Initial Screen

Task list

Functional Location

User Defaults

Profile

Change Number

Key date 25.08.2015

Step 5: To create General Maintenance task list, enter no data and click on Continue. You can enter an existing group number and click Continue.

Create General Task List: Initial Screen

Task list

Group

User defaults

Profile

Change Number

Key date 25.08.2015

Step 6: Once you click continue, you have to enter the header data in the task list.

Create General Task List: Header General View

Navigation: < > | Operation Task list

Group 79

Group 79

Group Counter 1

Planning plant ☒

External ID

Assignments to Header

Work center /

Usage

Planner group

Status ☒

System Condition

Maintenance strategy

Assembly

Ref. Element PM/PS

☐ Deletion flag

QM Data

Inspection points

Ext. numbering Ext. numbering of orig. values possible

Step 7: To save the task list, click the Save button at the top.

10. SAP PM – Maintenance Planning

Maintenance planning in SAP PM is used to avoid any equipment breakdown or production breakdown. It is used to represent inspection, preventive maintenance and repairs for which you plan time and scope of work in advance. By performing effective maintenance planning, you can remove the breakdowns, which can result in environmental hazards.

Maintenance planning component is integrated with different components of other modules and subcomponents in Plant Maintenance:

- Maintenance task lists
- Maintenance orders
- Maintenance notifications
- Work clearance management

There are various components of Maintenance Planning that integrates with other modules such as Quality Planning and Material Management.

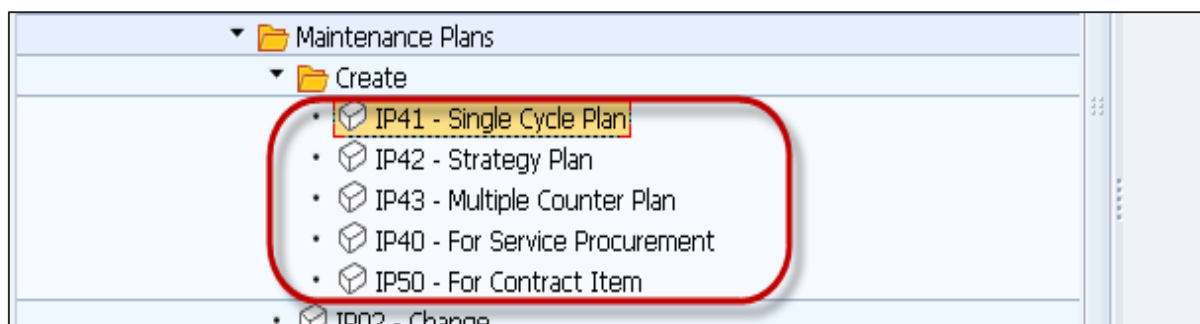
Maintenance planning is used describe date and inspection activities to be performed for technical objects. It ensures that technical objects work with breakdown and hence improve the optimization of all the objects.

Maintenance Plans

Maintenance plan defines the schedule and list of tasks to be performed under Maintenance Planning. A maintenance plan can be created as per organization's work such as different objects can be maintained on different dates and the scope can be different as per the object type.

Following procedures can be used to create Preventive Maintenance Plan:

- Single Cycle Plan
- Strategy Plan
- Multiple Counter plan
- Maintenance plan for service procurement
- Maintenance plan for an outline agreement



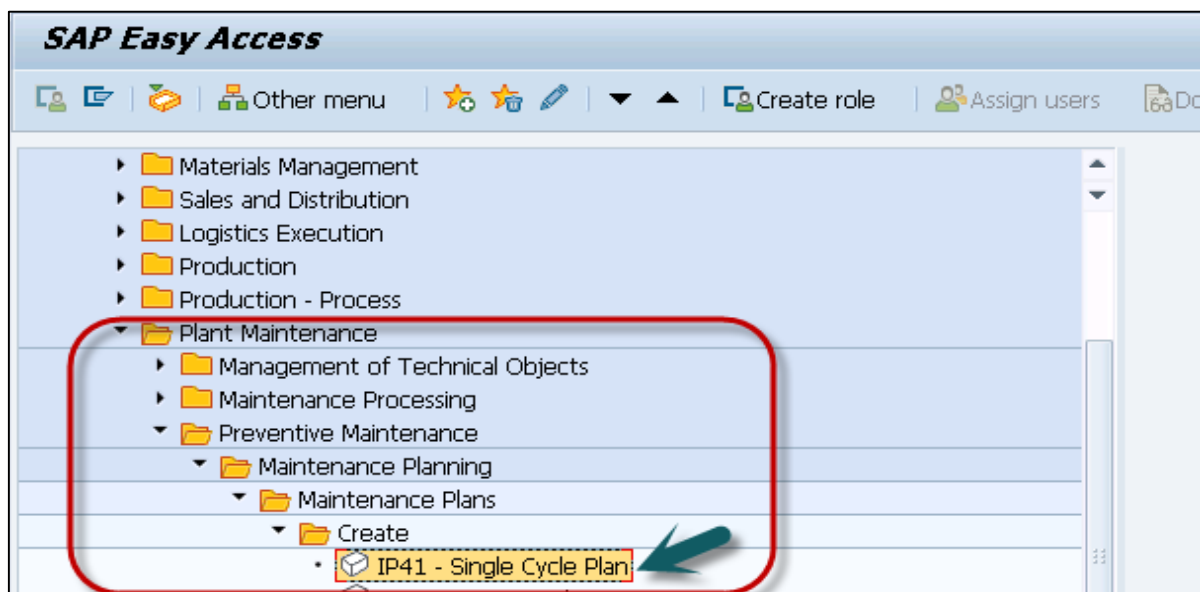
Single Cycle Plan

Single cycle maintenance plan is used to define exactly one time-based or performance-based maintenance cycle, in which you specify the interval at which the maintenance plan should be executed. It is one of the simplest maintenance plan used for Maintenance planning.

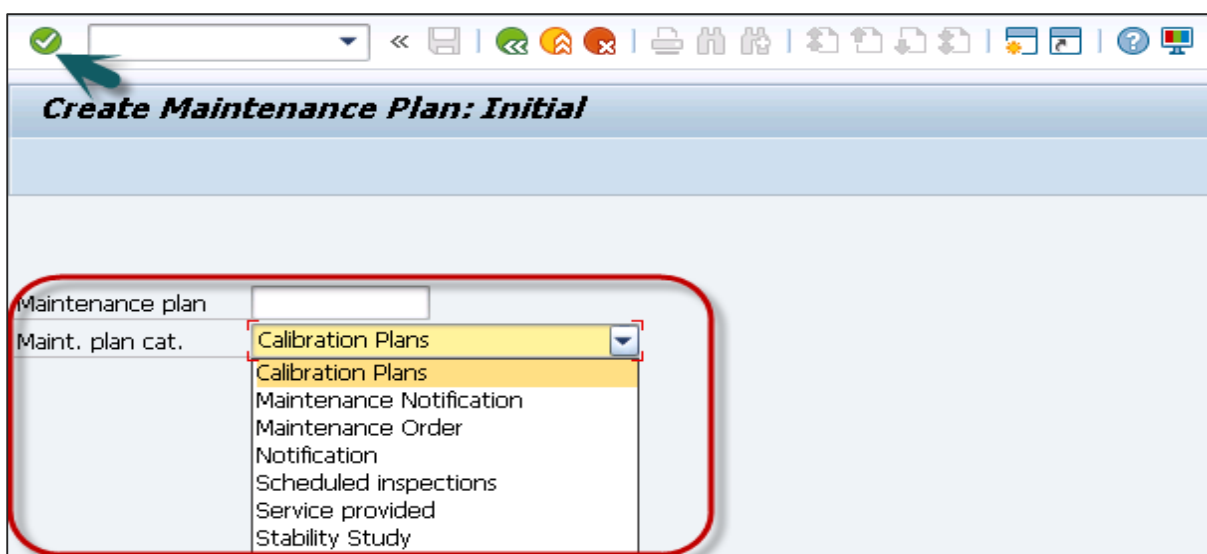
Example

Annual maintenance of a car or service of a Printer after 1 million copies.

Step 1: To create a single cycle plan, navigate to Logistics -> Plant Maintenance -> Preventive Maintenance -> Maintenance Planning -> Maintenance Plans -> Create -> Single Cycle Plan or **T-Code: IP41**



Step 2: In the next window, enter the plan name and Maintenance plan category and click Continue.



Step 3: Enter the necessary data.

When you enter a performance unit for the cycle, the system automatically selects the first counter suitable for the reference object as a default value.

You can also maintain the scheduling parameters if required.

You can only maintain the scheduling parameters for the maintenance plan, if you have entered a unit in the section Interval for the cycle. From the unit, the system can recognize whether the single cycle plan is performance-based or time-based and provides the corresponding scheduling parameters.

Maintenance plan Preventive Maintenance Plan for Equipmen

Maint. plan head

Maintenance plan cycle Maintenance plan scheduling parameters Maintenance plan additional data

Cycle/Unit 1 MON

Cycle text One Month

Offset/Unit 0 MON

Counter

Item Item location

Maintenance item Preventive Maintenance Plan for Equipmen

Reference object

Functional loc.

Equipment 102000001715 Battery 1

Planning data

Planning plant 5303 STSR - CHENNAI Planner group 201

Notifictn type B1 Preventive Maint. Priority 2 Major

Main WorkCtr D0100260 / 5303 CNI GUMMIDIPOONDI DTS MTCE TEAM

Sales Document /

☐ Determine tasks

Task list

Cat TL group GrpCr Description

Step 4: To select the task list, click the icon at the bottom.

Step 5: Select the task list type and enter the functional Location/Equipment number.

☒ FunctLoc. Task List
☒ Equip.Task List
☒ Gen.Task List

Task List Selection

Functional location		↔		↔
Equipment	102000001715	to		↔
Group		to		↔
Group Counter		to		↔
Key date	13.09.2011			
Class Selection	FunctLoc		Equipment	

Header Data

Usage		to		↔
Plant	5303	to		↔
Work center		to		↔
Status	2	to		↔
Planner group		to		↔
Maintenance strategy		to		↔
Assembly		to		↔
Short Text		to		↔
System Condition		to		↔
Controlling Area		to		↔
Deletion flag		to		↔

Step 6: Select the tasks from the task list and click the Execute button.

Display Task Lists: List of Task Lists

Task list


S	Type	Group	GrC	Task list description	Plant	Usage	Stat	PIGrp	Strategy	Work ctr	Functional location	Equipment
A	18	6		quarterly mtce3	5303	4	4			D010858D		
T	82	1		DTS DENKANIKOTTAH	5303	4	4			S0307D02	3053-03-5303-07-002-0815	
A	1958	1		Calibration Task List	5303	4	4	MNT	PM0002	O010812D		
A	2154	1		pr mtce	5303	4	4					
A	2170	1		Mtce Plan for eqpt	5303	4	4			O030404D		

Step 7: Next, go to Maintenance Plan Scheduling parameters and enter the relevant data - scheduling period and the start of the cycle.

The screenshot shows the 'Maintenance plan scheduling parameters' tab. A red box highlights the 'Date determination' and 'Call control parameter' sections. A green arrow points to the 'Maintenance plan scheduling parameters' tab.

Date determination		Call control parameter		Scheduling indicator	
Shift Factor Late Compl.	%	Call horizon	100 %	<input checked="" type="radio"/> Time	
Tolerance (+)	%	Scheduling period	365 DAY	<input type="radio"/> Time - key date	
Shift Factor Early Compl.	%	<input type="checkbox"/> Completion Requirement		<input type="radio"/> Time - factory caldr	
Tolerance (-)	%				
Cycle modification factor	1.00				
Factory calendar					
		Start scheduling			
		Start of cycle		13.09.2011	

Step 8: Click the Maintenance plan additional data tab and maintain the relevant data.

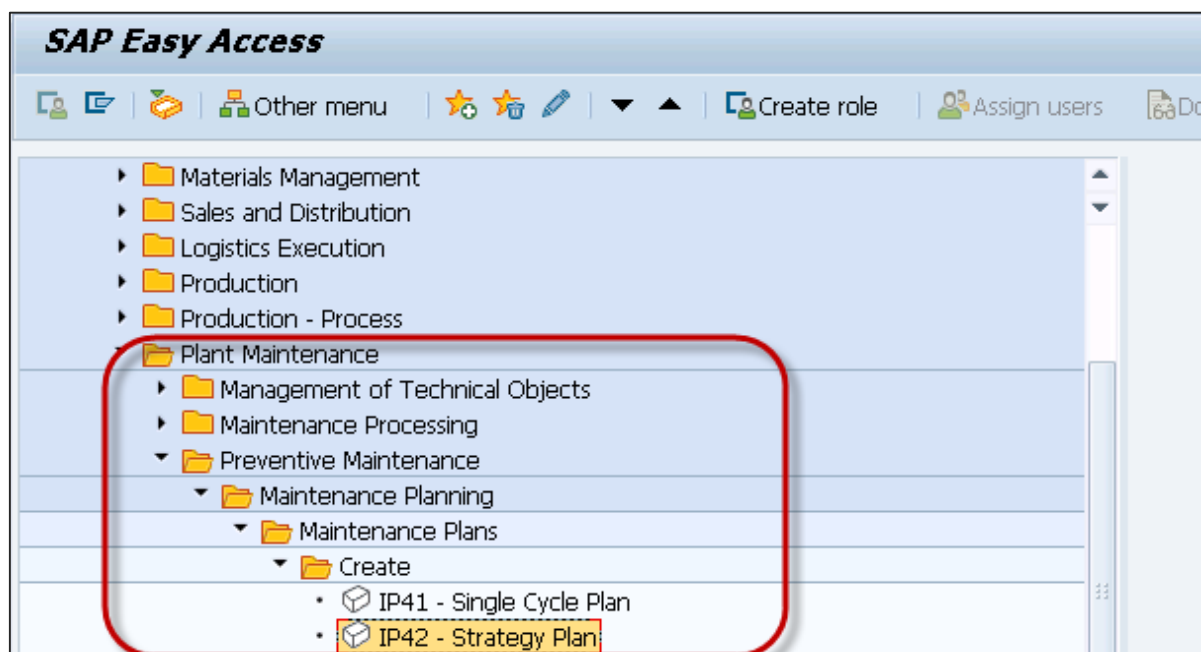
Step 9: Click on  to save the single cycle plan.



Strategy Plan

In SAP PM, you can use strategy plans to show complex maintenance cycles. You create a strategy plan and assign a maintenance strategy in which you have defined the maintenance cycles.

A maintenance strategy contains general scheduling information, and you can assign a maintenance strategy to many maintenance plans and maintenance task lists.



Multiple Counter Plan

A multiple counter plan can be created without a maintenance strategy and is used for performance-based maintenance. In a multiple counter plan, you create maintenance cycles and allocate counters of equipment or functional locations with different dimensions to them.

In live scenarios, you use multiple counter plan for individual activities or for individual groups of activities.

Example

Multiple counter plan is suited for the airline industry. You can capture where dimensions like inspections of the landing gear should depend on the number of kilometers flown and the number of take-offs, etc.

Maintenance Plan for Service Procurement

The maintenance plan category for service procurement is used to combine the functions from PM and material management applications. When you create a Maintenance plan for service procurement with plan category MM, you can assign the following:

- External service order
- G/L account
- Settlement order
- Service specifications

Maintenance Plan for an Outline Agreement

Using maintenance plan with outline agreement, allows you to simplify the processing of services as per the outline agreement for different objects. When you create a maintenance plan with an outline agreement, following maintenance call objects are created:

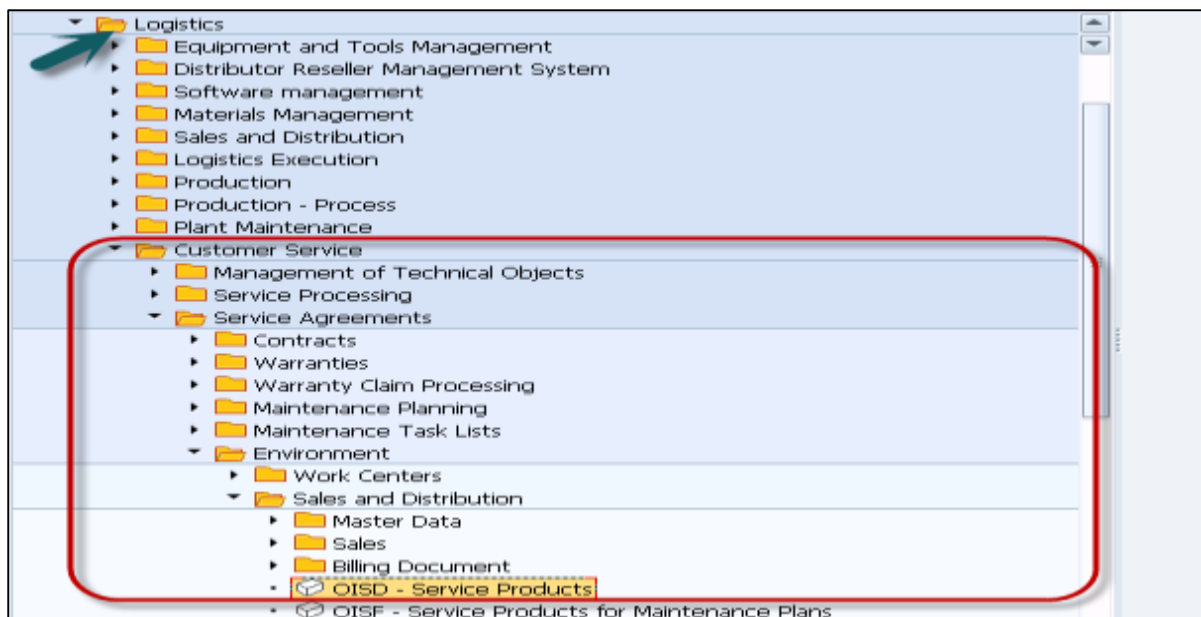
- Service Notification
- Service Order

In SAP PM, the maintenance plan based on an outline agreement combines the functions from different SAP modules:

- Plant Maintenance (PM)
- Sales and Distribution (SD)
- Customer Service (CS)

To create a maintenance plan with an outline agreement, you have to maintain the following data in Sales and distribution:

- Service Product



You have to maintain the following data:

- Plant for maintenance planning
- Work center
- Order type
- Plant of maintenance work center
- Business area
- General maintenance task list

Task List Type

 A screenshot of the SAP 'Create/Process Service Products' transaction. The table below shows the data entered for several service products. The first row is highlighted with a red rectangle.

Plnt	ServiceProduct	Work ctr	Plnt	BusA	Gen TL	G.. T	RTyp	RObj	Ref. equipment
1000	HT-1000	PC-REP	1000						
1000	HT-1010	PC-REP	1000						
1000	HT-1020	PC-REP	1000						
1000	HT-1030	PC-REP	1000						
1000	HT-1040	PC-REP	1000						

An outline agreement meets the following conditions:

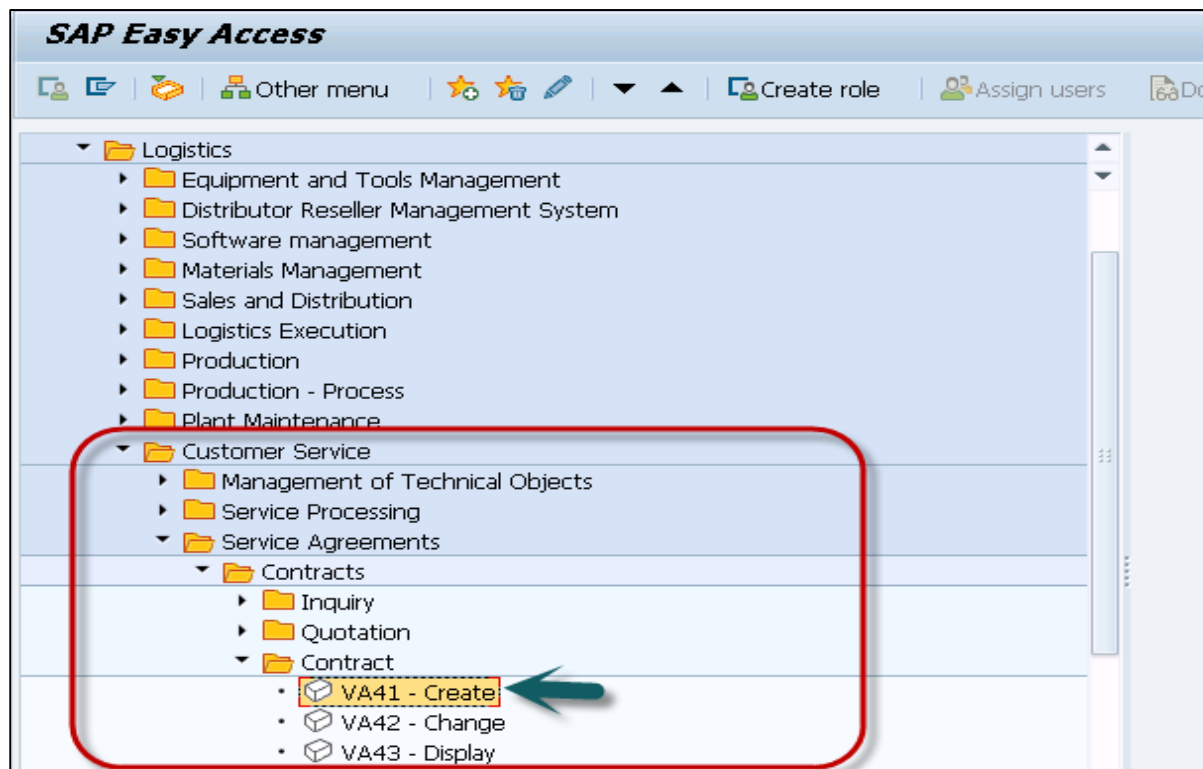
- The contract category is Contract
- The contract type is Service and Maintenance (WV)

On the tab strip Sales, you have specified:

- Start and end dates of the contract
- Service product as outline agreement item

Creating an Outline Agreement

Navigate to Logistics -> Customer Service -> Service Agreements -> Contracts -> Contract -> Create



11. SAP PM – Project-Oriented Maintenance

Using project-based maintenance, you can improve your existing functions in inspection, maintenance, and repair. SAP PM provides various application components under project-oriented maintenance to effectively control and execute maintenance task lists.

Business Function: LOG_EAM_POM

Application Component: Maintenance Event Builder, Log Book

Maintenance Event Builder (MEB)

Using MEB in SAP PM, you can easily manage the maintenance planning consisting of work packages. The capacity of work centers is shown in a graphical manner and you can use a new planning tree for displaying the capacity view of the planning board.

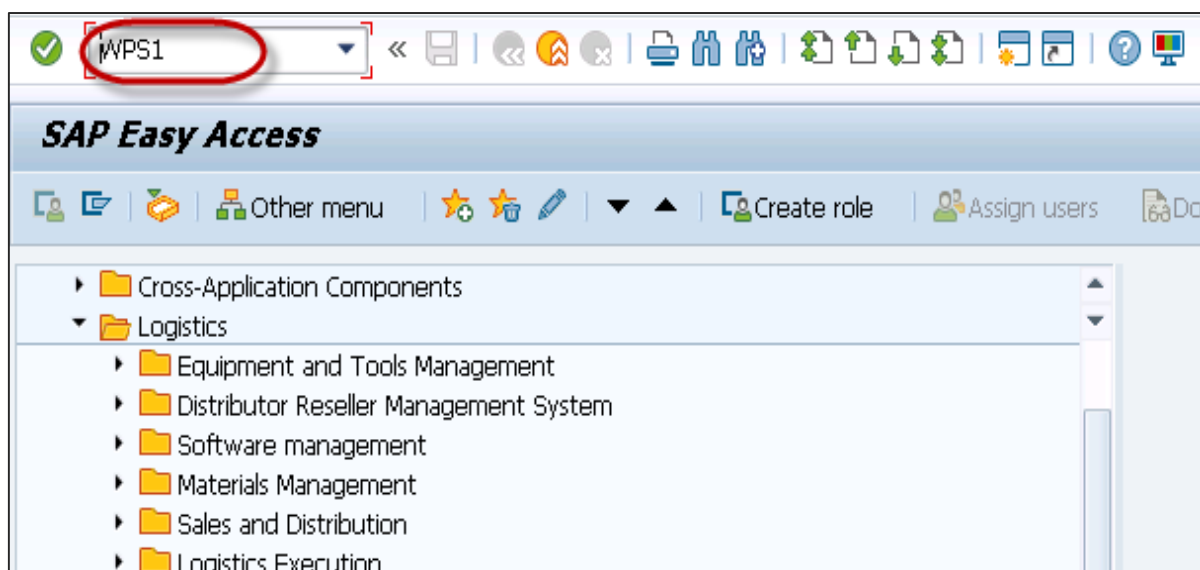
Using MEB, you can plan smaller maintenance projects in the form of individual work packages.

MEB is technically a workbench and it supports the following functions:

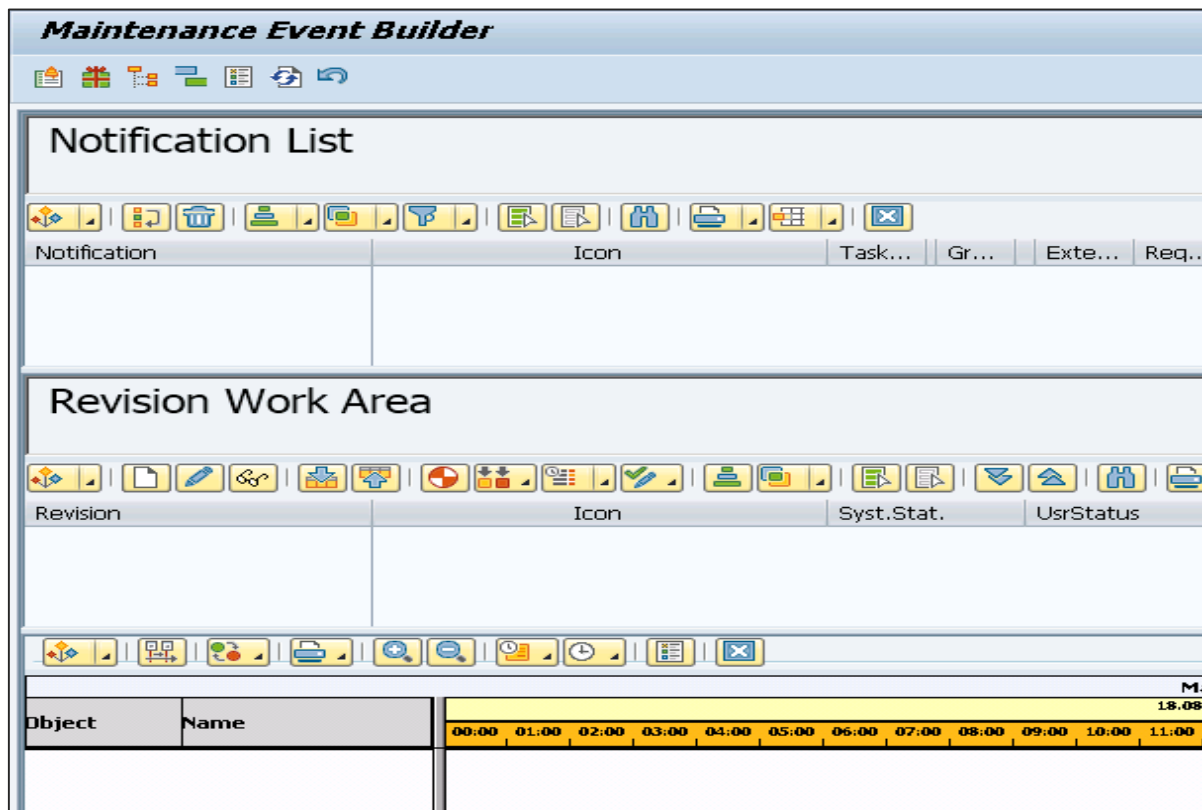
- To see backlog - worklist of notifications.
- To bundle the notifications for revisions.
- To create orders from notifications.
- To assign the orders.
- To display open work requirements, orders, or due dates.

MEB can be used to perform the majority of required planning steps with one transaction.

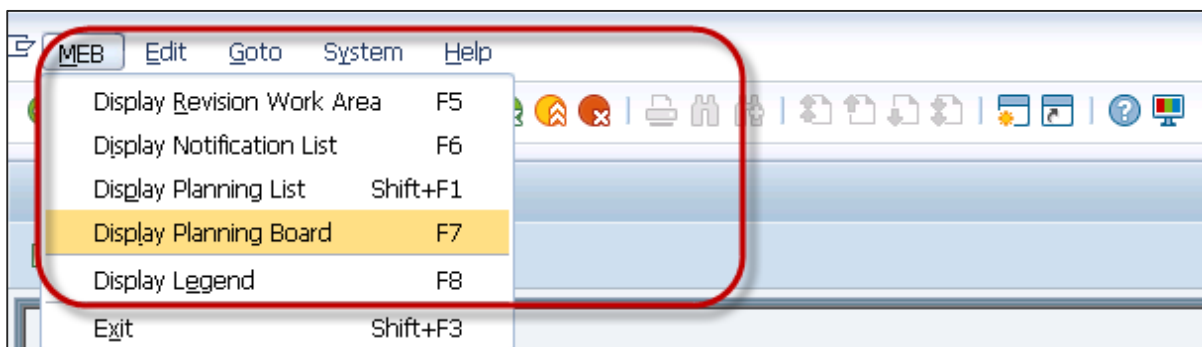
To open MEB workbench, use **T-Code: WPS1**



In the MEB, when orders are created for a revision with WBS elements, the WBS element is updated on the Location tab page as well as the Additional Data tab page.



To display Revision Work Area, Notification List, Planning List, Planning board and Legend, you can click MEB -> Display



Logbook

Logbook under project-oriented maintenance is used to support the controlling and execution of line maintenance tasks very effectively.

Logbook has the following features:

- You can toggle between change and display mode.
- You can display warranty details of technical object in log notification.

- You can search an appropriate revision for a log notification using the following search options:
 - Revision by technical object
 - Revision by work center
 - Revision by selection screen

Logbook application can run on the following modes:

- With sub-logbooks without the technical object structure synchronization.
- Without sub-logbooks function and with synchronization of the technical object structure.

Creating a Logbook for Equipment and Functional Locations

You can create and hide logbooks in master data when you create equipment and functional location in Plant Maintenance. When you create a technical object, you have an option to set the Logbook duty, and a logbook is created simultaneously. If the indicator is set in change mode, it indicates that a logbook exists for a technical object.

When you set Hide logbook indicator under master data it allows you to hide the logbook in hierarchy. When you select a particular sub-logbook folder, all the application objects - sub-logbooks, log entries, log notification, etc. will be assigned to its superior logbook nodes in the hierarchy.

12. SAP PM – Refurbishment Process

Refurbishment is defined as the process of repairing spare parts and returning the spare parts to the warehouse or to the equipment. You can define a Refurbishment order as Maintenance order by which you can execute the process of refurbishing damaged equipment. To perform this, you need a material and serial # combination.

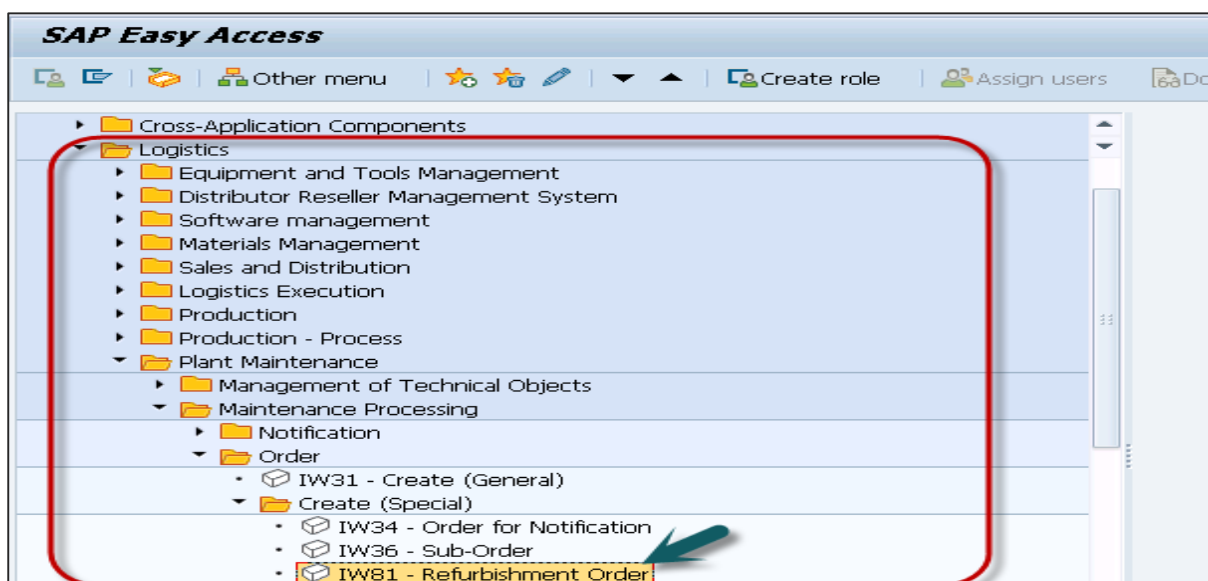
As part of the Refurbishment process, you can uninstall the damaged equipment or material from the maintenance plant and it is moved to the Warehouse using movement type 101. A Refurbishment order is created to collect the cost for the refurbishment process.

Once the Refurbishment process is completed, you change the conditional state of material from damaged to Refurbished state. The Refurbished equipment can be reinstalled in the maintenance plant and the order is closed. Following are the key steps in the Refurbishment process:

- Uninstall the damaged equipment from the Maintenance Plant.
- Movement type 101, to move the material to the warehouse.
- Creation of Refurbishment order to collect the cost for the refurbishment activity.
- When the Refurbishment process is executed, the state of material is changed from damaged to Refurbished.
- Reinstallation of equipment in the Maintenance plant.

Creating a Refurbishment Order in SAP PM

Step 1: Navigate to Logistics -> Plant Maintenance -> Maintenance Processing -> Order -> Create (Special) -> Refurbishment Order or IW81



The initial screen appears for creating refurbishment orders.

Step 2: Enter the required data and click the Continue button at the top.

Order Type for Refurbishment Order: PM04

Create Order: Initial Screen

Header data

Order Type ☒

Priority

Material Number

Serial Number

Equipment

UII

Planning plant

Business Area

Restrictions

Type	Name
AD01	Modification Order
AD02	Repair Order
AD03	Regular Maintenance Service
CS01	Service Order (ClickSchedule)
CS02	Service Order (ClickSchedule w. Appt.)
FP01	Service Order (with Revenues)
FP02	Service Order (with Revenues)
J3GE	Owner order
J3GV	Administrator order
NLM2	NLM Maintenance Order
NLM8	NLM Maintenance Order new
PAM	Maintenance Order
PM01	Maintenance Order
PM02	Regular Maintenance Order
PM03	Preventive Maintenance
PM04	Refurbishment Order
PM05	Order (Incl. Notification)
PM06	Calibration Order
PM07	Investment Order

The header data screen appears for the refurbishment order. The entry of the material number and the sections Quantities and Refurbishment are specific to this order.

Step 3: Go to Quantities, enter the total number of repairable spares, which should be refurbished for this order. Click the Continue button. You can see the total quantity of repairable spares specified is automatically entered as shown in the following screenshot.

Create Refurbishment Order : Central Header

Order: PM04 %000000000001
 Sys.Status: CRTD MANC NTUP

HeaderData | Operations | Components | Costs | Partner | Objects | Additional Data

Person responsible
 PlannerGrp: / 1000
 Mn.wk.ctr: [x] /
 Person Res.:
 Notifctn:
 Costs: EUR
 PMActType: 111 Refurbishment

Material: R-B499 Electronic TURBODRIVE
 Sales Order:
 Sales Ord. Item:
 Equipment:

Quantities
 Target qty: 1 PC Del. qty: 0

Refurbishment
 From Plant: Stor. Loc.:
 To Plant: [x] Stor. Loc.: 0001

Step 4: To identify the repairable spares individually, choose Objects. A dialog box appears, in which you can enter serial numbers for the specified quantity of repairable spares to be refurbished.

Create Refurbishment Order : Central Header

Order: PM04 %000000000001
 Sys.Status: CRTD MANC NTUP

HeaderData | Operations | Components | Costs | Partner | **Objects** | Additional Data

Step 5: To return to the header data screen, choose Continue.

Step 6: Go to the section Refurbishment, enter the following data:

- The plant and storage location from which you want to withdraw the repairable spares to be refurbished.
- The plant and storage location to which you will return the repairable spares to be refurbished.

Create Refurbishment Order : Central Header

Person responsible

PlannerGrp 100 / 1000

Mn.wk.ctr

Person Res...

Notifctn

Costs EUR

PMActType 111 Refurbishment

Material R-B499 Electronic TURBODRIVE

Sales Order

Sales Ord. Item

Equipment

Quantities

Target qty 1 PC Del. qty 0

Refurbishment

From Plant 1000 Stor. Loc.

To Plant 1000 Stor. Loc. 0001

Once you have entered all the required data on the header data screen, you can enter additional planning data for the order. Once all the information is entered, click the Save button at the top.

13. SAP PM – Warranty Claim Processing

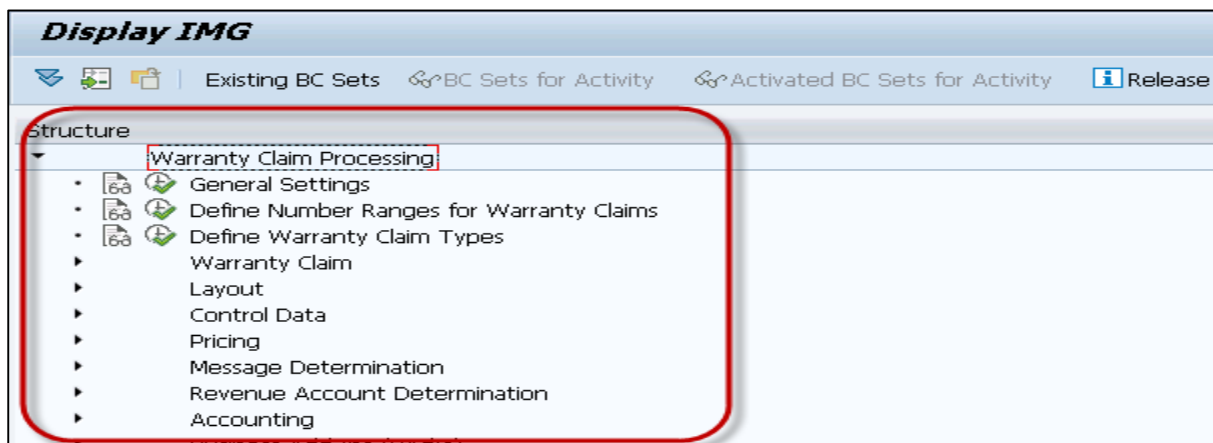
Warranty claim processing function in Plant Maintenance is used to handle large number of claims automatically. This module is developed to meet the needs of vendors, suppliers, and manufacturers for all type of products. Warranty claim processing is a complex process because of the length of the service, the age of the product or to perform different checks in claim processing.

Warranty claim processing component is closely integrated with Material Management, Sales and distribution, Customer Service, and other processes of Plant Maintenance.

Customizing for Warranty Processing, use **T-Code: OWTY**



You can perform various customizing operations in SAP system for Warranty Claim Processing.



Other Transaction Codes

Warranty Object	
IE01, IE02, IE03	Create, change, and display equipment
IL01, IL02, IL03	Create, change, and display functional location
IB51, IB52, IB53	Create, change, and display installed base
IQ01, IQ02, IQ03	Create, change, and display serial number

Warranty Conditions	
CT04	Create, change, and display warranty counter/characteristics
BGM1, BGM2, BGM3	Create, change, and display master warranty
IK01, IK02, IK03	Create, change, and display measuring point
IK11, IK12, IK13	Create, change, and display measurement document

Warranty Claim Processing	
WTY	Create, change, and display warranty claim
WTYQQ	Process worklist
WTYSE	Find warranty claims
WTYAUT	Create, change, and display authorization
WTYRCL	Create, change, and display recall
WTYRP	Change the status of parts to be returned
WTYCL	Create credit memo list
WTY_ARCHIV	Display archived warranty claims

To create a Warranty Claim, use **T-Code: WTY**

You can select from different Warranty Claim Types.

The screenshot shows the SAP 'Process Warranty Claim' interface. A 'Claim' section is visible with a dropdown menu for 'WtyClnType'. The dropdown is open, showing several options. The first option, 'Example for all Actions', is highlighted in yellow. Other options include 'Precrediting', 'Postcrediting', 'All Actions/Interim Posting', and 'All Actions/CO Account Assignment'.

When you click on Claim, you will be prompted to select different values. Select Claim Header, Processing Status, etc. You can select multiple objects to search a claim.

In the Processing status, you can select from different values.

The screenshot shows the 'Process Warranty Claim' dialog. The 'Claim' tab is active. The 'WtyClnType' is set to 'Precrediting'. The 'Claim' field is highlighted with a red circle. The 'Dynamic Search Help Warranty Claim' dialog is open, showing the 'Processing Status' field. The 'Processing Status' field is highlighted with a red circle. The 'Processing Status' field is set to 'B001'. The 'Description of Processing Status' list is visible, showing various status codes and their descriptions.

Initial Status	Description of Processing Status
B001	Warranty Claim New
B002	Claim Being Processed
B003	Claim Checked
B004	Reimbursing Version Created
B005	Authorization in Processing
B006	Authorization Approved
B007	Recall New
B008	Recall Released
B010	Claim Sent to Reimbursing
B011	Correction Claimant Version Posting
B020	Reimbursing Inbound (Reply) Received
B022	Claimant/Reimbursing Version Checked
B025	Reimbursing Version Posted
B028	Claimant Outbound (Reply) Created
B030	Claimant Outbound (Reply) Sent
B031	Claimant Version Posted
B040	In Process
B060	Claim Closed
B061	Claim Rejected and Closed

You can also add new fields to perform a search. Click the New Field Selection.

The screenshot shows the 'Process Warranty Claim' dialog. The 'Claim' tab is active. The 'WtyClnType' is set to 'Precrediting'. The 'Claim' field is highlighted with a red circle. The 'Dynamic Search Help Warranty Claim' dialog is open, showing the 'Processing Status' field. The 'Processing Status' field is highlighted with a red circle. The 'Processing Status' field is set to 'B001'. The 'Description of Processing Status' list is visible, showing various status codes and their descriptions. The 'New Field Selection' button is highlighted with a red circle.

A warranty claim comprises a header and one or more versions of a claim and all these claims belong to different claim types. You create the version in the system manually by copying the existing data or by transferring the data via EDI.

Different warranty checks are possible and they are performed automatically by the system. Following results are possible:

- 00 shows a valid warranty and positive check result.
- 03 shows an invalid warranty and negative check result.
- 01 shows no warranty check possible since the required measuring point is missing in the warranty claim.
- 02 shows no warranty check possible since the required measurement document is missing in the system.
- 04 shows the warranty check date is before the warranty start date.
- 05 shows the warranty check date is after the warranty end date.
- 06 shows the warranty object contains two measuring points with the same warranty counter.
- 99 shows the negative check result. However, it shows a positive check result for the check on the superior/higher-level object.

14. SAP PM – Mobile Applications for EAM

Using mobile application Enterprise Asset Management (EAM), you can perform maintenance processing on any mobile device. Using EAM on mobile devices, field service technicians can access all the work-related information on their mobile devices.

To perform Mobile Asset Management, the following prerequisites should be met:

Architecture	Required	Additional
Backend	R/3 4.6B	R/3 Plug-In 2002.1 for Mobile Asset Management 1.0
	R/3 4.6C	
	SAP R/3 Enterprise Core 4.70	
Middleware	Web Application Server (6.20)	
Mobile end device	Operating system of the device must support JVM Disk space: 64 MB	JVM Mobile Engine 2.1 Mobile Asset Management (Java coding)

You can perform order processing and notification processing using mobile end devices. Various functions w.r.t notifications can be performed on mobile devices:

- Display a Notification List
- Display a Notification
- Create a new Notification
- Create a Notification with reference from Order, technical object or for a Functional Location.
- Change a Notification

Functions Performed w.r.t EAM

You can perform the following functions on mobile devices w.r.t Enterprise Asset Management:

- Order Processing
- Notification Processing
- Enter Measurement Readings
- Stock Processing
- Management of Technical Objects

15. SAP PM – Work Clearance Management

Work Clearance Management in Plant Maintenance is used to control and monitor the safety measures. It provides safe working conditions for employees in the organization and follows the environmental protection regulations.

In an organization, workplace safety depends on multiple factors:

- Task category
- Technical specifications of the system
- Organization within the maintenance department
- Employee skills and education

Work Clearance Management Objects

In SAP system, you create WCM objects that is used to perform various functions, such as:

- Perform and maintain administrative data, responsibilities, location, and planning data.
- Assign partners with different functions.
- Long texts assignment.
- Assign the documents.

WCM Approval

You use approval to define rules that must be followed in Work Clearance Management. Approvals are assigned to WCM objects at the header level.

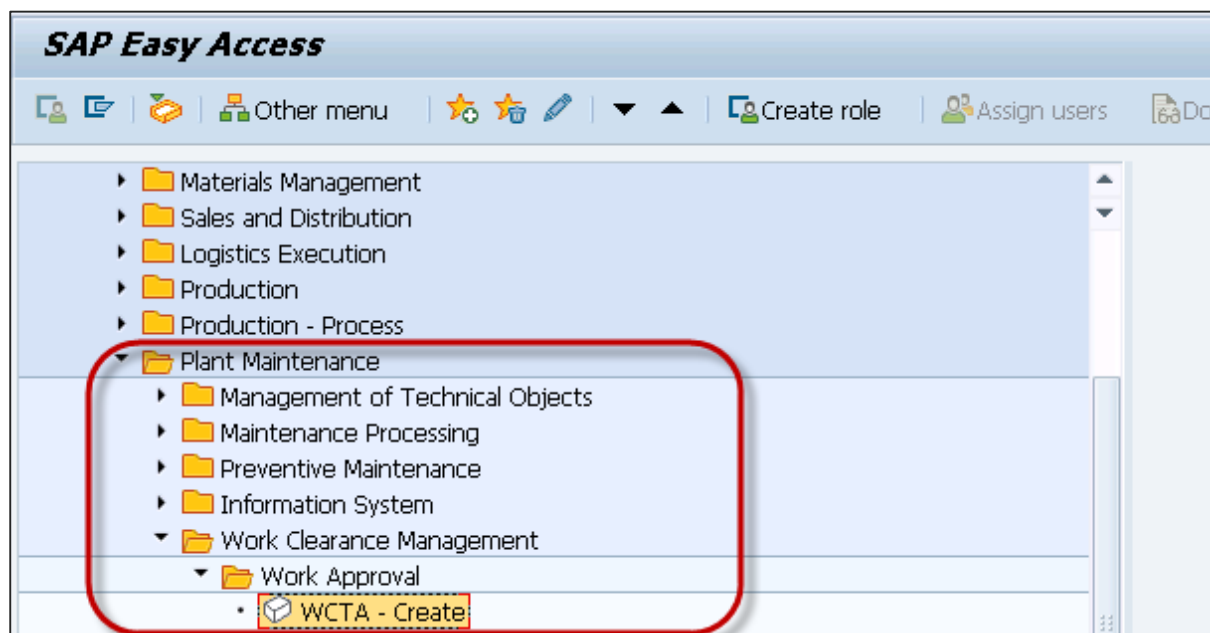
In SAP system, it is possible to assign several approvals to a WCM object and each approval can only be used once per WCM object. You can also assign an approval to several WCM objects but it is not recommended to use this strategy.

You create various authorization objects and authorization profiles in Work Clearance object. Following are the authorization profiles and description:

Authorization Profile	Description
I_WCM_ALL	All authorizations for Work Clearance Management
I_CONF_ALL	All authorizations for checks and simulations
I_FCODE_ALL	All authorizations for function codes
I_WCUSE_ALL	All authorizations for uses
I_VAL_ALL	All authorizations for the valuation
I_PM_ALL	All authorizations for Plant Maintenance

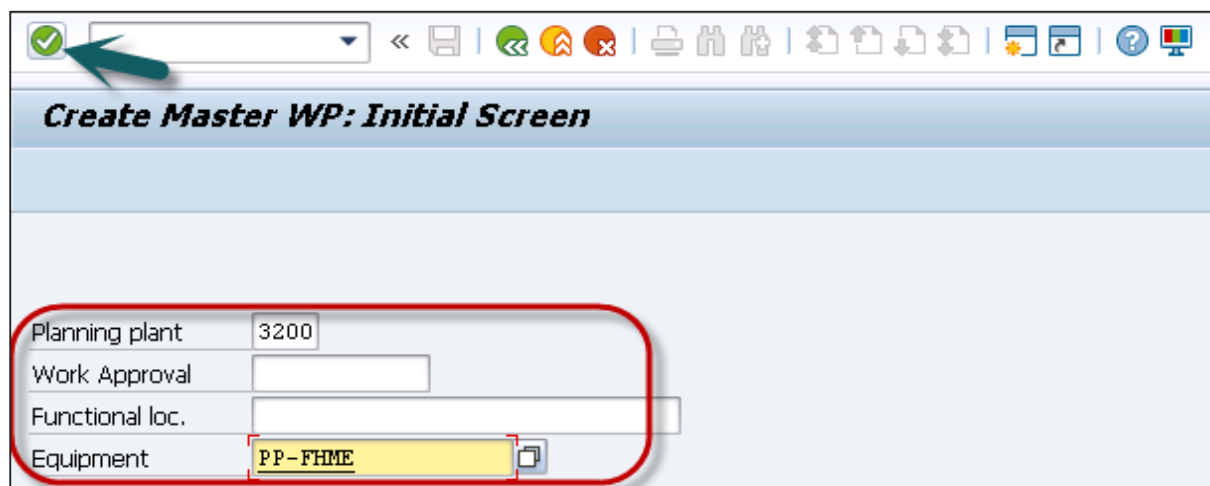
Creating Work Approval

Step 1: To create Work Approval in the system, navigate to Logistics -> Plant Maintenance -> Work Clearance Management -> Work Approval -> Create



Step 2: In the Work Approval creation screen, enter the following details and click Continue.

- Enter the Plant
- Enter Equipment/Functional Location



Step 3: Next, to maintain all the fields in required information, once you enter all the details, click the Save button.

The screenshot shows the SAP PM 'Create Master WP' screen. The top toolbar contains various icons, including a green checkmark, a dropdown menu, and a blue 'Save' icon (a floppy disk) which is highlighted by a green arrow. Below the toolbar, the title bar reads 'Create Master WP'. The main form is divided into several sections:

- Work Approval:** A field containing 'TEST' and a '000' value.
- General Data:**
 - Status: CRTE
 - Valid from: 26.08.2015 00:00:00
 - Valid to: 25.08.2016 00:00:00
- Reference Object:**
 - Functional loc.:
 - Equipment:
 - Train:
- Responsibilities:**
 - Planner group: 100 / 3200
 - Work Center: (highlighted in yellow)
- Templates:** A table with columns: Application, Short Text, Approvals, Functional Location.

16. SAP PM – Information System

In SAP Logistics, you have Information System that contains details about Purchasing Information system, Sales Information system, Plant Maintenance Information system, Quality Management Information system, and Retail Information system.

Plant Maintenance Information system consists of the following fields:

- Information Structure
- Standard Analysis
- Characteristics and Key Figures
- MTTR/MTBR

Information Structure

Following information structures are available under Plant Maintenance:

- S061 Location and Planning Group Analysis
- S070 Breakdown Analysis
- S114 Vehicle Consumption Analysis
- S115 Cost Analysis
- S116 Sales Notification Analysis
- S065 Object Statistics
- S062 Object Class and Manufacturer Analysis
- S063 Single Object Damage Analysis

Standard Analysis

You have the following functions under SAP Plant Maintenance Standard Analysis:

- Object Class
- Manufacturer
- Location
- Object Statistics
- Breakdown Statistics
- Costs Analysis
- Customer Notifications
- Vehicle consumption
- Planning Group
- Damage Analysis

Characteristics and Key Figures

You have the following functions under SAP Plant Maintenance Characteristics and Key Figures:

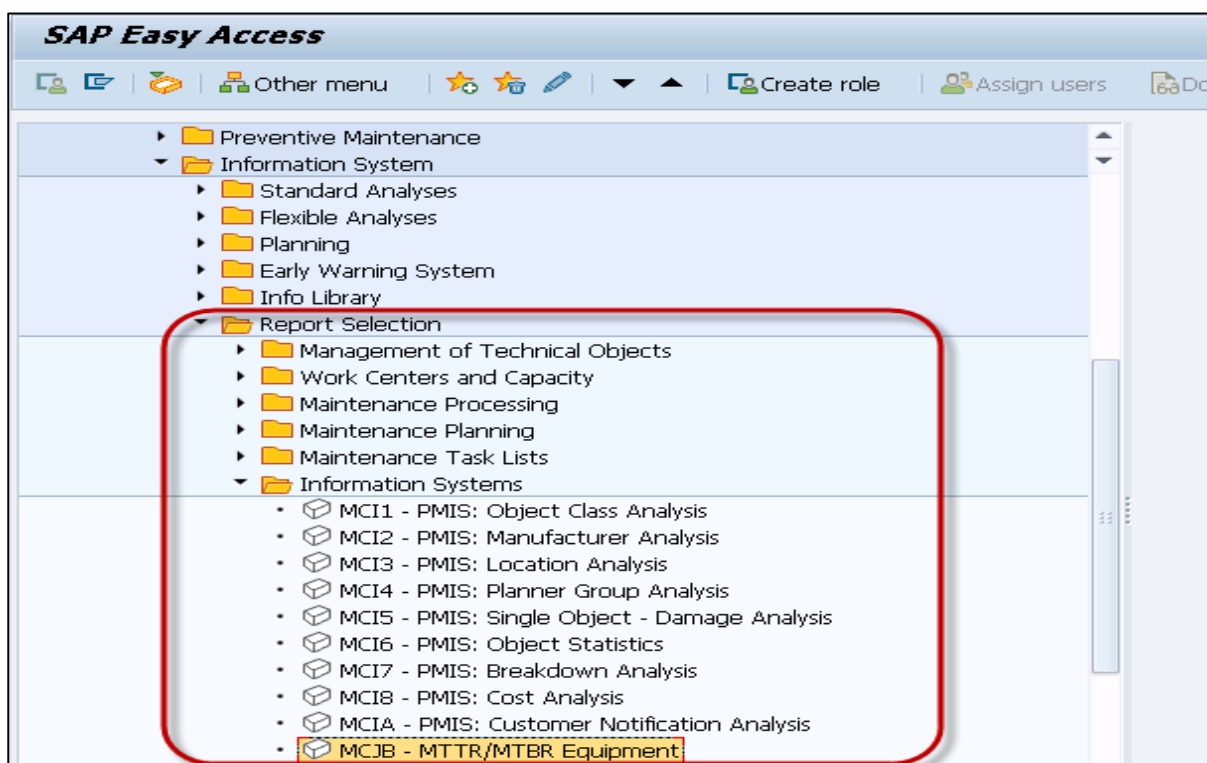
- Damage Analysis
- Object Statistics
- Breakdown Analysis
- Cost Analysis
- Customer Notifications
- Vehicle Consumption Analysis

MTTR/MTBR

You can evaluate **Mean Time to Repair** (MTTR) and **Mean Time Between Repair** (MTBR) for equipment/functional location.

In SAP Plant Maintenance, to perform MTTR/MTBR, you can select one of the following menu paths in the Plant Maintenance or Customer Service menu:

Information System -> Report Selection -> Information Systems -> MTTR/MTBR Equipment



In the next window, select Equipment and click Execute.

PMIS: MTTR/MTBR - Equipment

Equipment: PP-FHME

PMIS: MTTR/MTBR - Equipment

Choose Update |

Equipment	Description of technical object	Mean Time To Repair (H)	Time Between Repairs (H)	Mean Time Between Repairs (H)	Period Breakdowns	Downtime (H)	MTTR (H)	MTBR (H)

Similarly, you can perform MTTR/MTBR analysis as per Functional Location.

Information System -> Report Selection -> Information Systems -> MTTR/MTBR Functional Location

SAP Easy Access







Other menu | Create role | Assign users

- Preventive Maintenance
- Information System
 - Standard Analyses
 - Flexible Analyses
 - Planning
 - Early Warning System
 - Info Library
 - Report Selection
 - Management of Technical Objects
 - Work Centers and Capacity
 - Maintenance Processing
 - Maintenance Planning
 - Maintenance Task Lists
 - Information Systems
 - MCI1 - PMIS: Object Class Analysis
 - MCI2 - PMIS: Manufacturer Analysis
 - MCI3 - PMIS: Location Analysis
 - MCI4 - PMIS: Planner Group Analysis
 - MCI5 - PMIS: Single Object - Damage Analysis
 - MCI6 - PMIS: Object Statistics
 - MCI7 - PMIS: Breakdown Analysis
 - MCI8 - PMIS: Cost Analysis
 - MCI9 - PMIS: Customer Notification Analysis
 - MCI10 - MTTR/MTBR Equipment
 - MCI11 - MTTR/MTBR Functional Location**

- Environment

PMIS: MTTR/MTBR - Functional Location

Functional Location: K1 to K1-BR2-22

PMIS: MTTR/MTBR - Equipment			
Choose Update      			
Equipment	Description of technical object		
Mean Time To Repair (H)	Time Between Repairs (H)	Mean Time Between Repairs (H)	
Period Breakdowns	Downtime (H)	MTTR (H)	MTBR (H)

17. SAP PM – Cross Application Time Sheet

Cross Application Time Sheet (CATS) component is a tool used for recording time and tasks in Plant Maintenance. Employees can record their own data and hence ease the administration workload.

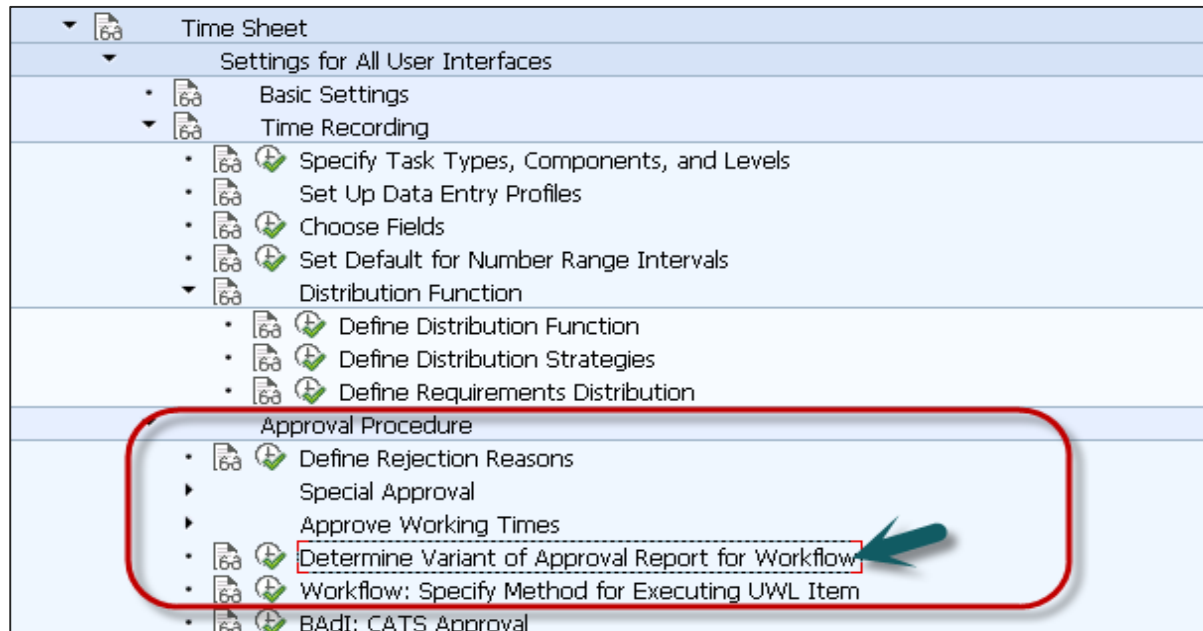
CATS is a cross-application component and you must implement at least one of the components as mentioned in the following table. You can supply data to the components individually, or in combination.

Required Function	Required Component or Solution
Decentralized recording of employee attendances and absences	Time Management (PT)
Decentralized recording of employee remuneration information	Payroll (PY)
Internal activity allocation and entry of statistical key figures	Controlling (CO)
Confirmations	Plant Maintenance (PM) Project System (PS) Customer Service (CS)
Recording external services	External Services Management (PT-IN-ES)
Recording travel expenses with activity reports	Travel Management (FI-TV)

Approval Procedure

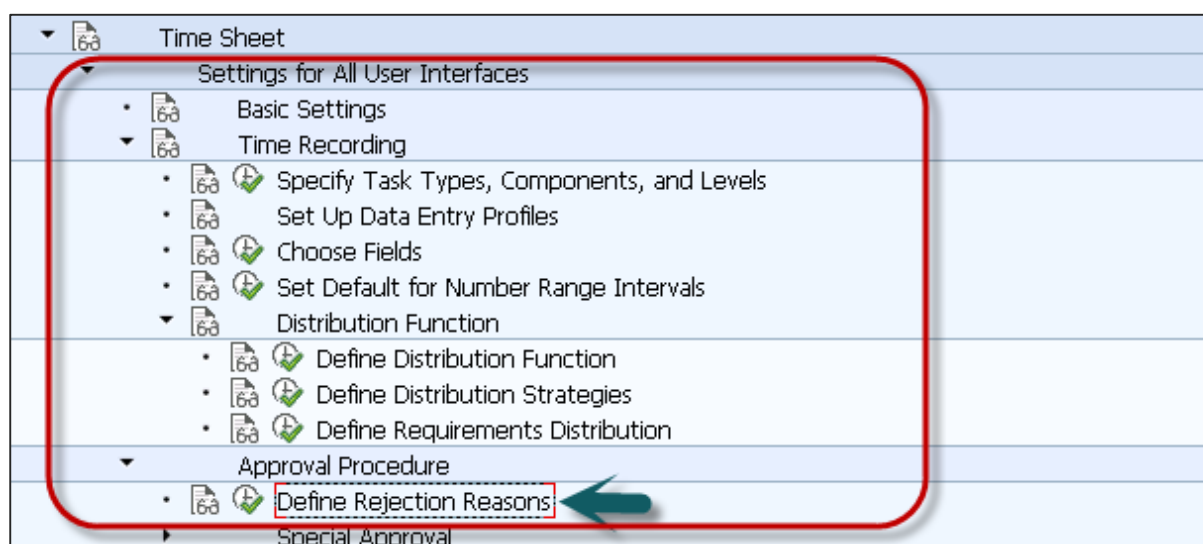
To perform timesheet approval of released time and to raise notifications for rejected time, you can use SAP Business workflows.

Navigate to Cross-Application Components -> Time Sheet -> Settings for All User Interfaces -> Time Recording -> Determine Variant of Approval Report for Workflow



When you do not want to approve the data, you can enter a rejection reason for the employee or other person who has entered the data.

A rejection reason can be defined under Cross-Application Components -> Time Sheet -> Settings for All User Interfaces -> Time Recording -> Define Rejection Reasons



18. SAP PM – Single and Composite Roles

There are various roles that are defined in Plant Maintenance to perform different functions. Key roles include:

Maintenance Manager

In Plant Maintenance system, the maintenance manager is responsible to manage budget, cost and other maintenance activities arising from Maintenance notifications.

The maintenance manager monitors all the maintenance activities in an organization and has the sole responsibility for managing all the tasks.

The maintenance manager is responsible for all people management activities in the plant and the maintenance department which includes tasks-recruitment decisions and assigning tasks to service providers and suppliers.

Technical name of the role: SAP_WP_MAINTENANCE_MANAGER

Maintenance Planner

In SAP Plant Maintenance, the maintenance planner is responsible for planning maintenance tasks based on incoming malfunction reports. The maintenance planner is responsible to raise maintenance orders, order type, scope, resources, and schedule of the tasks delivery.

Technical name of the role: SAP_WP_MAINTENANCE_PLANNER

Maintenance Engineer

In SAP Plant Maintenance, the maintenance engineer is responsible for creating blueprints for technical systems and check the efficiency and maintenance of technical objects.

The maintenance engineer is also responsible for master data - Bills of Material, maintenance plans and notification in Plant Maintenance system.

Technical name of the role: SAP_WP_MAINTENANCE_ENGINEER

Maintenance Supervisor

In SAP Plant Maintenance, the maintenance supervisor is responsible for ensuring that work is executed on time and is the point of contact for technicians, external suppliers and vendors, and other organizations.

The maintenance supervisor is responsible to manage order-related budget allocations to ensure that they remain as per the assigned budget limit.

Technical name of the role: SAP_WP_MAINTENANCE_SUPERVISOR

Technician

In SAP Plant Maintenance, the technician is responsible to execute the daily maintenance work. Various work orders are assigned to technicians and the daily status is posted to Maintenance Work Orders.

Technical name of the role: SAP_WP_MAINTENANCE_TECHNICIAN

Consultants

SAP PM Consultant should have good experience in SAP Plant Maintenance activities. Working experience on Materials Management, Plant Maintenance, Preventative Maintenance, Corrective Maintenance, Breakdown Maintenance and Refurbishment and Warranty Claim Processing.

The consultant needs to have an understanding on establishing pieces of equipment and functional location structure, maintenance BOMs.

The consultant also needs to perform preventive maintenance, measuring points and counters, warranties and permits. Maintenance planning including notifications, calibration, maintenance orders, and execution is also performed by the consultant.

Other responsibilities include, integration of plant maintenance with material management, quality management and production planning modules.

The consultant should have knowledge on how to design and build SAP PM/EAM solution. Fair knowledge on E2E Implementations in SAP ECC is also desired.