



BEC Effectiveness 2021

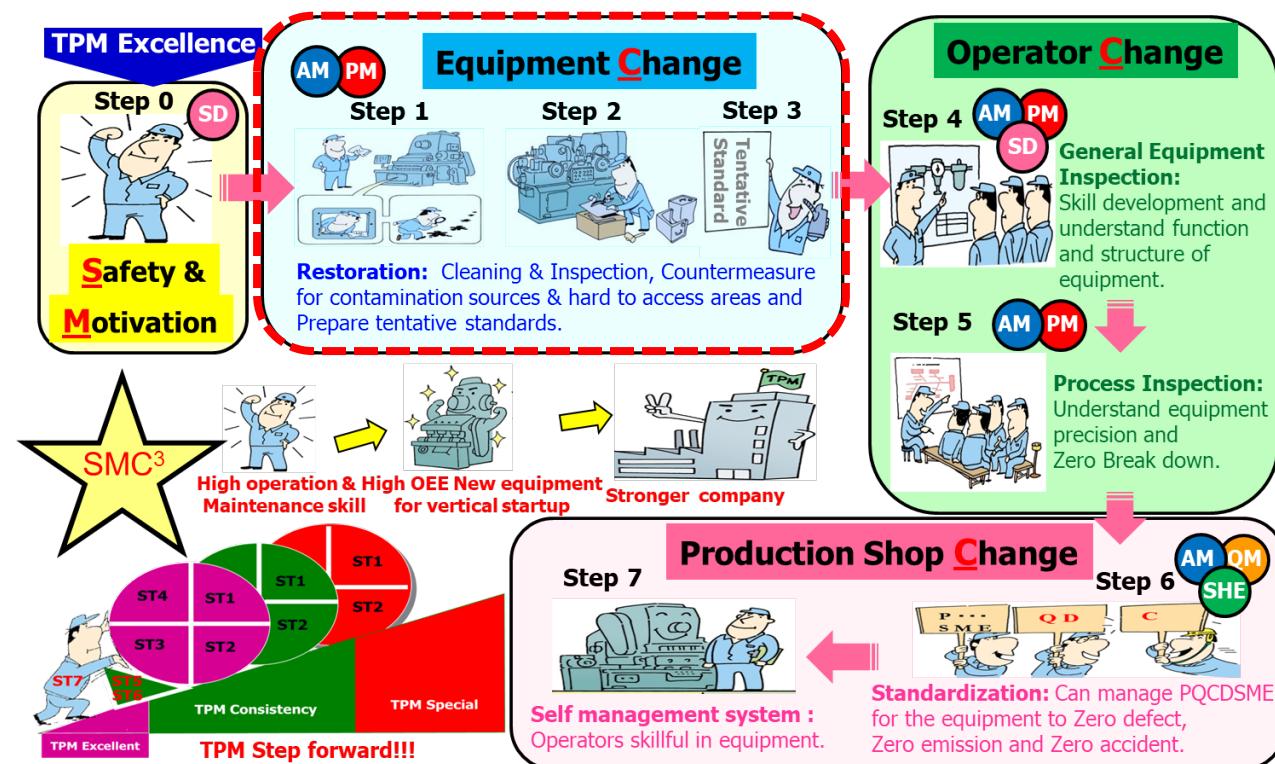
PH-P1

Basic Equipment Care (BEC)

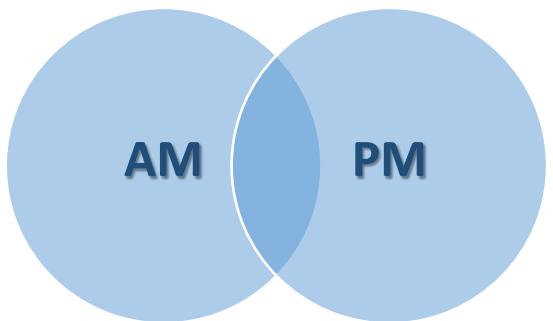
the basic activities on machine or plant equipment, which will sustain and improve the plant safety, reliability, ownership and working environment

P-(T-OP-TM)-002_R1: Basic Equipment Care

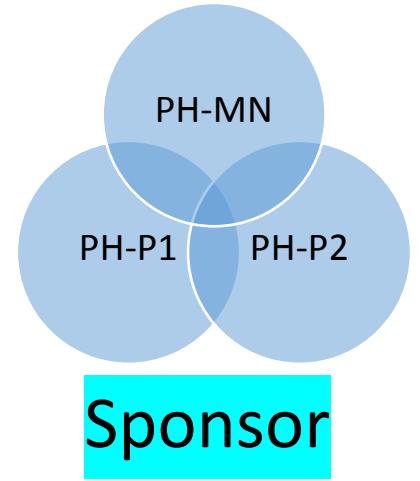
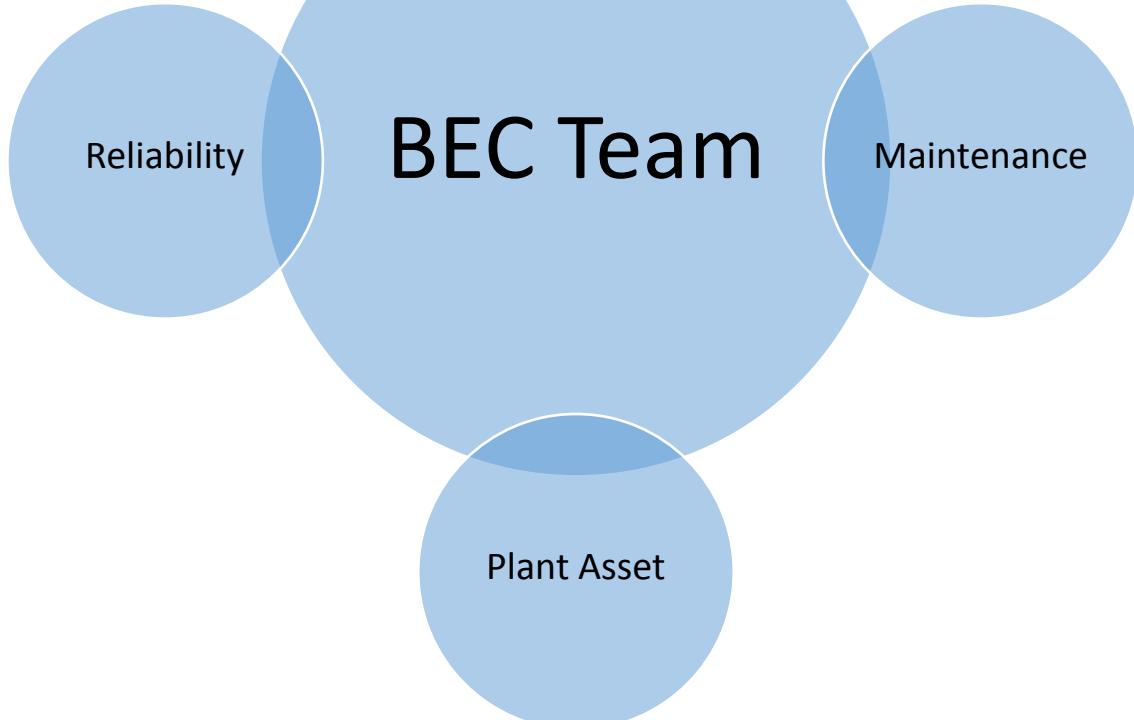
Autonomous Maintenance (AM)



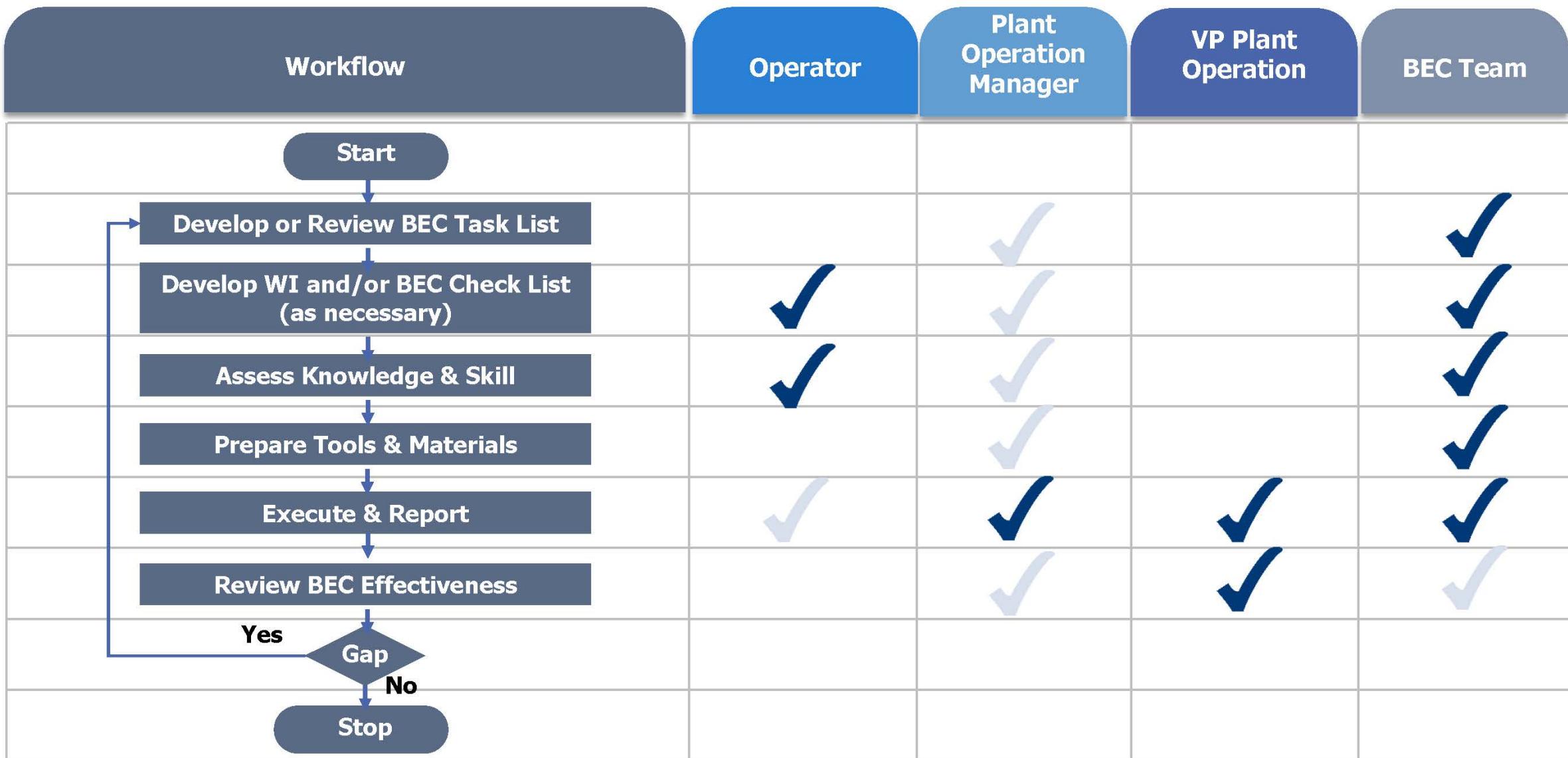
BEC Team



Plant
Operation



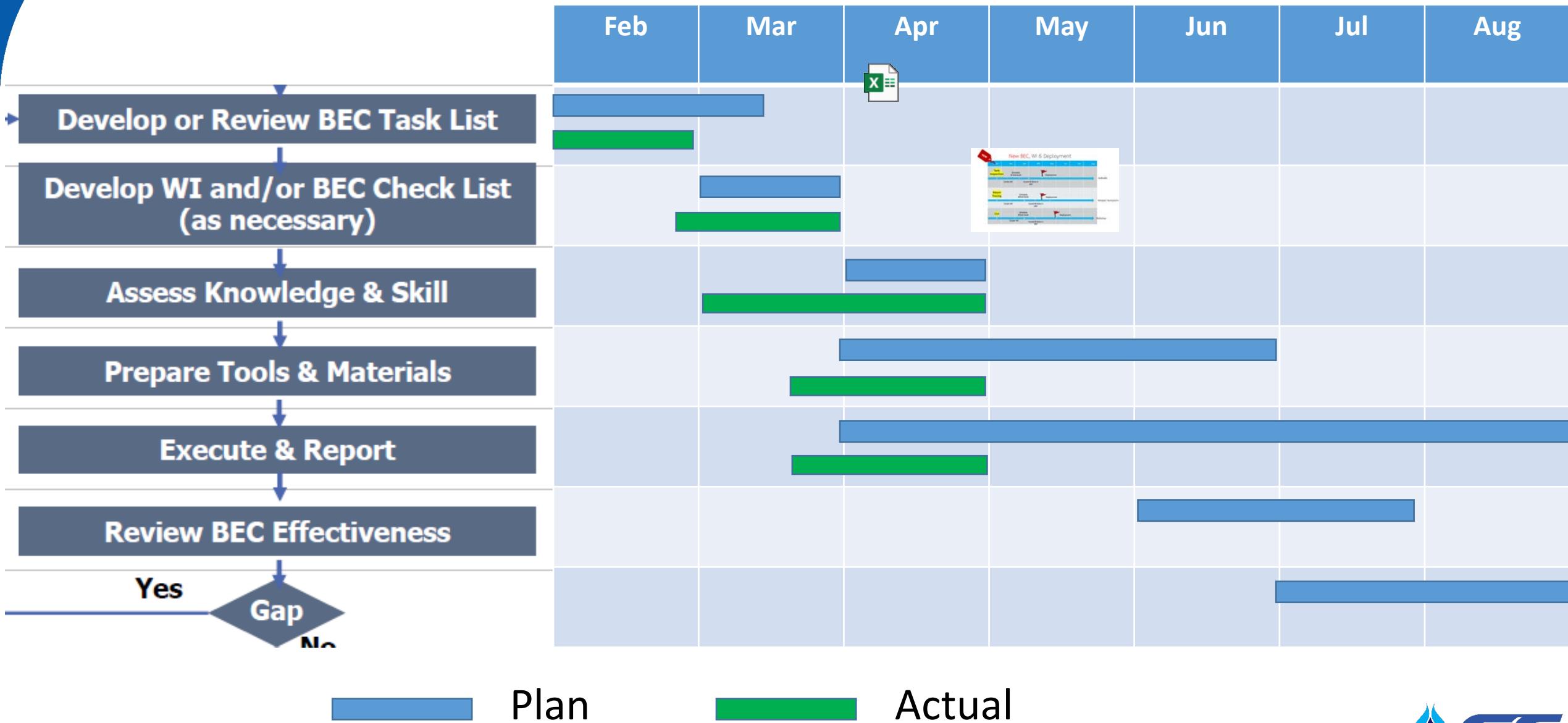
BEC Execution Workflow



Note: Key changes were represented by ✓



BEC Effectiveness Action Plan 2021



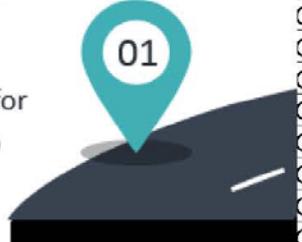
BEC Task List Review

Total Items = 34 Items



We are hear !

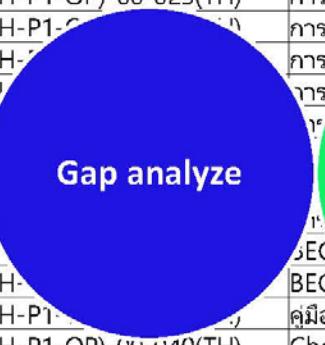
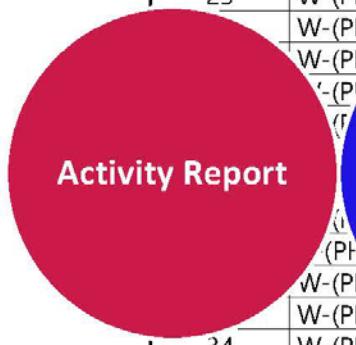
- Re- visit BEC task list
 - Develop WI if require for high skill , high risk job



- Review BEC task list
 - Develop WI if require for high skill , high risk job

Type	Name	Document Code	Title
□	W-(PH-P1-OP)-00-001(TH)	W-(PH-P1-OP)-00-001	BEC_Clean Strainer, Filter and Screen
□	W-(PH-P1-OP)-00-002(TH)	W-(PH-P1-OP)-00-002	BEC_Clean Level sight glass
□	W-(PH-P1-OP)-00-003(TH)	W-(PH-P1-OP)-00-003	BEC_Clean Steam Trap & Air Trap
□	W-(PH-P1-OP)-00-004(TH)	W-(PH-P1-OP)-00-004	BEC_Clean Clean Flow Sight Glass
□	W-(PH-P1-OP)-00-005(TH)	W-(PH-P1-OP)-00-005	BEC_Clean Pump and Motor Base
□	W-(PH-P1-OP)-00-006(TH)	W-(PH-P1-OP)-00-006	BEC_Clean Stem Valve
□	W-(PH-P1-OP)-00-007(TH)	W-(PH-P1-OP)-00-007	BEC_Painting Pipe & Equipment
□	W-(PH-P1-OP)-00-008(TH)	W-(PH-P1-OP)-00-008	BEC_Lubrication Servicing Includes Stock Checking
□	W-(PH-P1-OP)-00-009(TH)	W-(PH-P1-OP)-00-009	BEC_Grease Stem Valve
□	W-(PH-P1-OP)-00-010(TH)	W-(PH-P1-OP)-00-010	BEC_Tap up Seal Pot
□	W-(PH-P1-OP)-00-011(TH)	W-(PH-P1-OP)-00-011	Mengöljön Repressor for Motor (BASIC EQUIPMENT CARE)
□	W-(PH-P1-OP)-00-012(TH)	W-(PH-P1-OP)-00-012	Mengöljön Drain Mechanical Seal Barrier Fluid in Seal Pot (BASIC EQUIPMENT CARE)
□	W-(PH-P1-OP)-00-013(TH)	W-(PH-P1-OP)-00-013	Mengöljön Nut & Bolt Coating by grease (BASIC EQUIPMENT CARE)
□	W-(PH-P1-OP)-00-014(TH)	W-(PH-P1-OP)-00-014	Mengöljön Drain Impulse line of transmitter BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-015(TH)	W-(PH-P1-OP)-00-015	Mengöljön Drain Check Level Sight Glass BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-016(TH)	W-(PH-P1-OP)-00-016	Mengöljön Motor Vibration BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-017(TH)	W-(PH-P1-OP)-00-017	Mengöljön Zero Check Pressure Gauge BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-018(TH)	W-(PH-P1-OP)-00-018	Mengöljön Check steam trap passing BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-019(TH)	W-(PH-P1-OP)-00-019	Mengöljön Stock test control valve (Function test) BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-020(TH)	W-(PH-P1-OP)-00-020	Mengöljön Check dry powder & Fire Equipment cabinet (Visual) BASIC EQUIPMENT CARE
□	W-(PH-P1-OP)-00-021(TH)	W-(PH-P1-OP)-00-021	Mengöljön Drain Check Level Transmitter
□	W-(PH-P1-OP)-00-022(TH)	W-(PH-P1-OP)-00-022	Mengöljön Reset overload motor protection (LV)
□	W-(PH-P1-OP)-00-023(TH)	W-(PH-P1-OP)-00-023	Mengöljön Tighten packing valve (Gate valve)
□	W-(PH-P1-OP)-00-027(TH)	W-(PH-P1-OP)-00-027	Mengöljön Back flush control valve
□	W-(PH-P1-OP)-00-028(TH)	W-(PH-P1-OP)-00-028	Mengöljön Drain Level Oil Seal Pot High
□	W-(PH-P1-OP)-00-029(TH)	W-(PH-P1-OP)-00-029	Mengöljön Balance (zero check) Pressure Transmitter (Phenol plant)
□	W-(PH-P1-OP)-00-030(TH)	W-(PH-P1-OP)-00-030	mrnSwing mrnSwing blind end valves & G's
□	W-(PH-P1-OP)-00-031(TH)	W-(PH-P1-OP)-00-031	mrnDrain check and flush Level Transmitter
□	W-(PH-P1-OP)-00-032(TH)	W-(PH-P1-OP)-00-032	mrnFlush Cooler of Mech. Seal
□	W-(PH-P1-OP)-00-033(TH)	W-(PH-P1-OP)-00-033	mrnVisual Control # motor pump

Work Instruction				
	Type	Name	Document Code	Title
<input type="checkbox"/>	W-(PH-P1-OP)-00-037	(TH)	W-(PH-P1-OP)-00-037	BEC_ Install diaphragm pump
<input type="checkbox"/>	W-(PH-P1-OP)-00-038	(TY)	W-(PH-P1-OP)-00-038	BEC_Clean and assemble diaphragm pump
<input type="checkbox"/>	W-(PH-P1-OP)-00-039	(TH)	W-(PH-P1-OP)-00-039	ผู้ดูแลเครื่องมือที่ต้องใช้ความร้อน(Thermoscan)
<input type="checkbox"/>	W-(PH-P1-OP)-00-040	(TY)	W-(PH-P1-OP)-00-040	Check and adjust steam trap S-40
				Yes
				Yes



Knowledge & Skill

Training Material & WI

New WI for BEC

CUI, Visual Inspection and BEC for insulation (for shift B)

Request control

Leave

Meeting chat

Ammata I <PH-P1-OP-3998> and 22 others joined the meeting.

Suchart S <PH-P1-3950> joined the meeting.

Parintorn B <T-II-IP1/5948> joined the meeting.

7:56 PM Meeting started

Pakkapol No <T-II-IP1> 8:05 PM 2
เอกสารเพื่อเรียนรู้

CUI Training....

Kunanon Th <T-II-IP1/5368> joined the meeting.

Recording has started

Pakkapol No <T-II-IP1>

+26

RC SS PN

Sirwan Srebutkot Karun P <PH-P1-OP-3... Yuttaya B <PH-P1-OP-... Pakkapol No <T-II-IP1>

8:31 PM 2/9/2021 42

5 Top up seal pot 5 5

6 CUI (Corrosion Under Insulation) 4 5

7 การ Flush cooler of Mech. Seal 4 5

8 การ Visual inspection Tankage 4 5

9 Back flush Control valve 4 5

CUI in Stainless steel (ECSCC)

Contamination of Chloride in the insulation and water can cause External Chloride Stress Corrosion cracking (ECSCC) to insulated equipment

1-2 ppm Cl (Rainwater) 47 to 204°C Chloride 6-20 ppm Cl or Higher

Cracking is occurred

Diagram illustrating the formation of ECSCC: Rainwater containing 1-2 ppm chloride reacts with external chloride (47 to 204°C) to form internal chloride (6-20 ppm Cl or Higher). This leads to the formation of cracks in the stainless steel insulation.

GC

02_ข้อสอบ ใช้การปฏิบัติงาน Clean and assemble diaphragm pump (B)
03_ข้อสอบ ใช้การปฏิบัติงาน Regrease for Motor (BASIC EQUIPMENT CA
04_ข้อสอบเรื่อง BEC Corrective steam trap
05_ข้อสอบเรื่อง BEC Top up seal pot(A)
06_ข้อสอบ BEC เรื่อง CUI (Corrosion Under Insulation)
07_ข้อสอบเรื่อง BEC ก้าว Flush cooler of Mech. seal (D)
08_ข้อสอบเรื่อง BEC ก้าว Visual inspection Tankage

HN

การสร้าง BEC ในระบบ SAP(ERP)

Activity BEC - BEC Activity (BEC)

Clear Strainer & Filter & Screen
Drain Impulse line of transmitter
Grease Stem Valve

Mech. Seal trap

CUI (Corrosion Under Insulation)

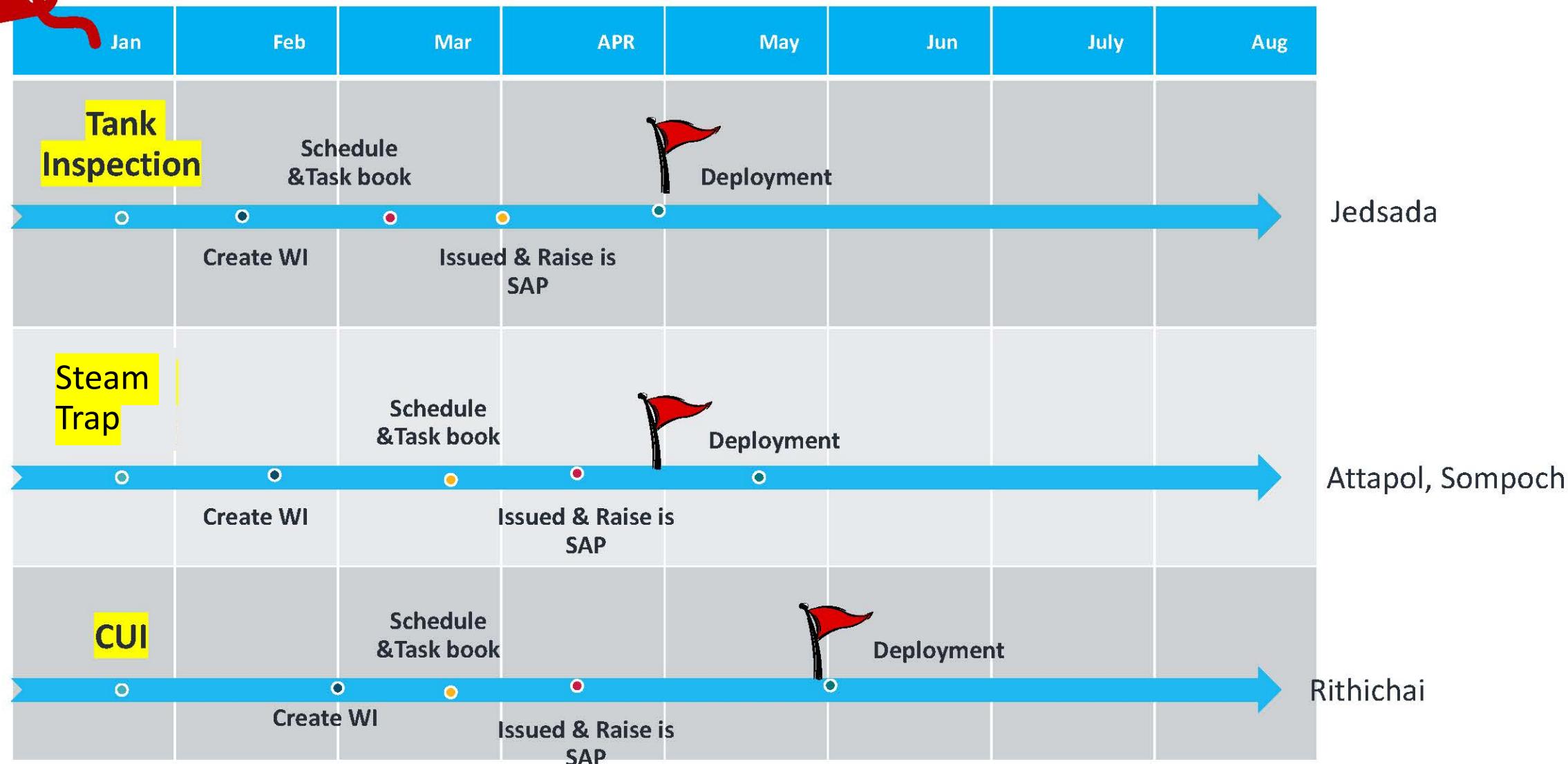
Top up seal pot

Two men wearing face masks and lanyards are standing in an office. One man is holding a large cylindrical object wrapped in blue plastic. The background shows office equipment and a computer monitor.

GC

NEW

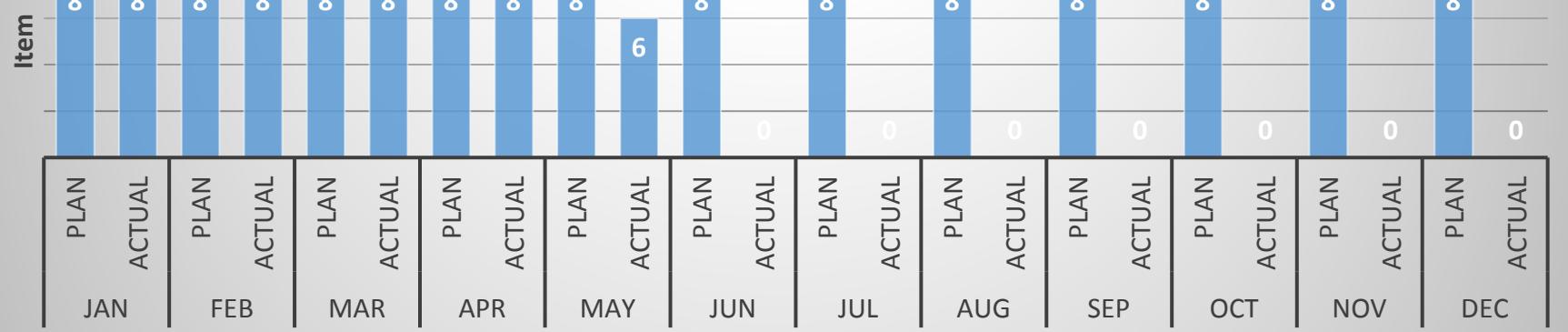
New BEC, WI & Deployment



Tank Inspection

Shift	2021											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
A	OX-1201	TK-4107	TK-2501	TK-4111	TK-4113B	TK-6201	OX-1201	TK-4107	TK-2501	TK-4111	TK-4113B	TK-6201
	TK-1201	TK-1502	TK-4101B	TK-4103B	TK-6401	TK-4163A	TK-1201	TK-1502	TK-4101B	TK-4103B	TK-6401	TK-4163A
B	OX-1202	TK-1601	TK-4102A	TK-4108	TK-4157	TK-6251	OX-1202	TK-1601	TK-4102A	TK-4108	TK-4157	TK-6251
	TK-1401A	TK-2502	TK-4103C	TK-4112A	TK-4163B	TK-6501	TK-1401A	TK-2502	TK-4103C	TK-4112A	TK-4163B	TK-6501
C	OX-2201	TK-2401A	TK-4102B	TK-4109	TK-4162A	TK-6301	OX-2201	TK-2401A	TK-4102B	TK-4109	TK-4162A	TK-6301
	TK-1401B	TK-2601	TK-4104	TK-4112B	TK-5001	TK-6601	TK-1401B	TK-2601	TK-4104	TK-4112B	TK-5001	TK-6601
D	OX-2202	TK-2401B	TK-4103A	TK-4110	TK-4162B	TK-6351	OX-2202	TK-2401B	TK-4103A	TK-4110	TK-4162B	TK-6351
	TK-1501	TK-4101A	TK-4106	TK-4113A	TK-6001	TK-9121A	TK-1501	TK-4101A	TK-4106	TK-4113A	TK-6001	TK-9121A

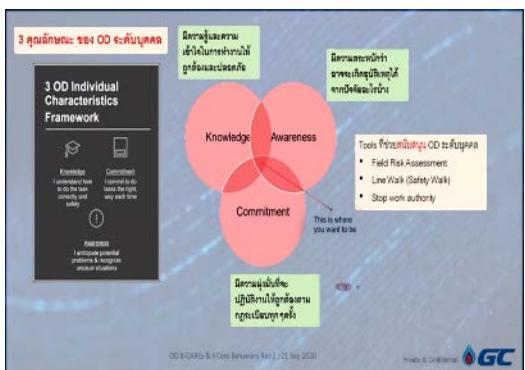
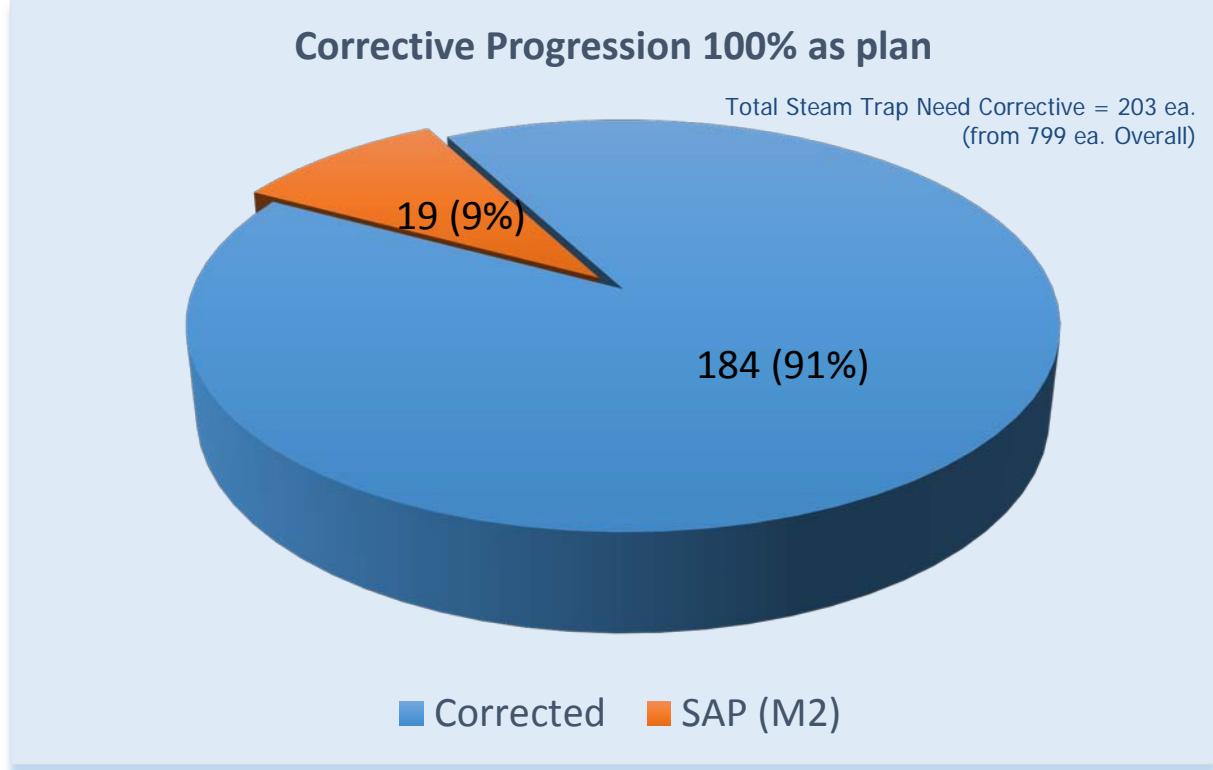
Plan and Actual Progression for Tank inspection



PTT Phenol Company Limited		TK-4112B
	Status	Remarks
1	Inspec Check of Tank external:	
1.1	Visual check of Tank external:	/
1.2	Bottle, Bottom annular (lip) and Roof Disortion.	/
1.3	Pain determined rusting present.	/
1.4	Insulation damage, not in place, poor sealing.	/
1.5	Stairway and handrail in firm condition.	/
2	Visual check of PV's and Open Vent:	
2.1	Free of blockage at outlet bird screens.	/
2.2	Oil spilled and contamination at valve outlet.	/
2.3	Valve stem & Guide tube is correct alignment and well functioning.	/
3	Emergency Vent:	
3.1	Emergency manifold is in good condition.	/
3.2	External physical condition is good i.e. free from rusting.	/
3.3	No product vapor passing through cover latches.	/
3.4	PCV is working as function	/
3.5	PIV is no plug. (Free vent)	/
4	Freudeneit:	
4.1	No sign of leak.	/
4.2	No sediment.	/
4.3	No work out under tank annular and shoulder.	/
4.4	Each ground wire straps connections are firmed.	/
5	Base Area:	
5.1	House keeping required ?!	/
5.2	Valves leaking or line misalignment.	/
5.3	Couter weight/spring supports functioning properly.	/
5.4	Strain traps functioning properly.	/
5.5	Fire fighting systems in serviceable condition.	/
5.6	Denit, diken clear from blockage.	/
5.7	Site monitoring pump is free from tank contents.	/
Check by Field Operator: Name: ณัฐ พัฒนา ธรรมชาติ Date: April 03,2021		



Steam Trap

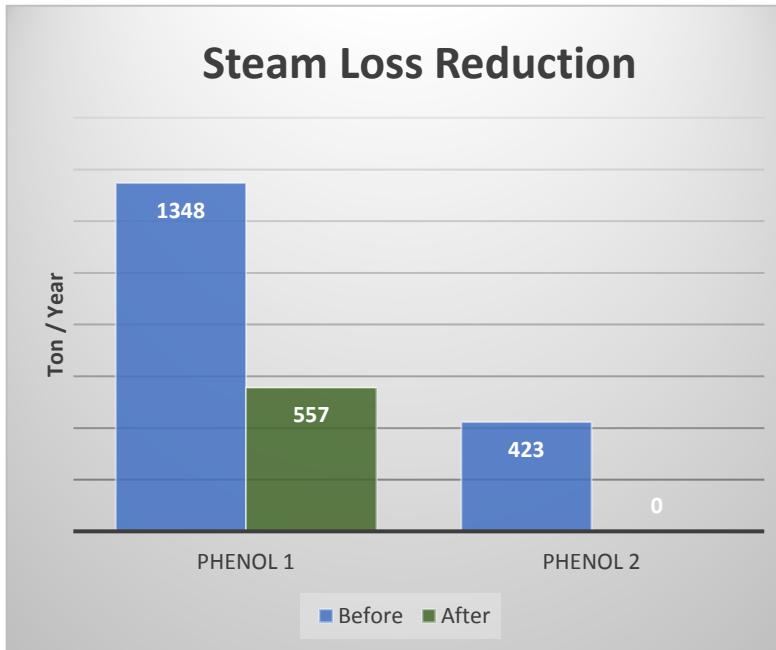


All E-Learning > GC E-Learning: BEC Corrective Steam Trap & Blending & Use oil cleaner

BEC Corrective Steam trap & Blending & Use oil cleaner

1 Instructor

Category : Phenol Business Unit (PTT)



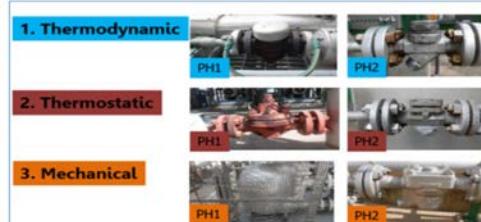
ชื่อเว็บไซต์ (ระบบและเทคโนโลยี)
จากกระบวนการไฟฟ้าโน้มถ่วง (ระบบไฟฟ้าที่ผลิตในเมือง)
XXX-XXXX-XXXX-XXXX

2. ขอบเขต
- ใช้กันงานวิเคราะห์ที่มี steam trap ชนิด Thermodynamic
 - สามารถนำไปประยุกต์กับ steam trap ชนิด Thermostatic
 - สามารถนำไปประยุกต์กับ steam trap ชนิด Mechanical

W-PH-PI-OP-XX-XXX
วิธีการปฏิบัติงานการตรวจสอบ Steam Trap

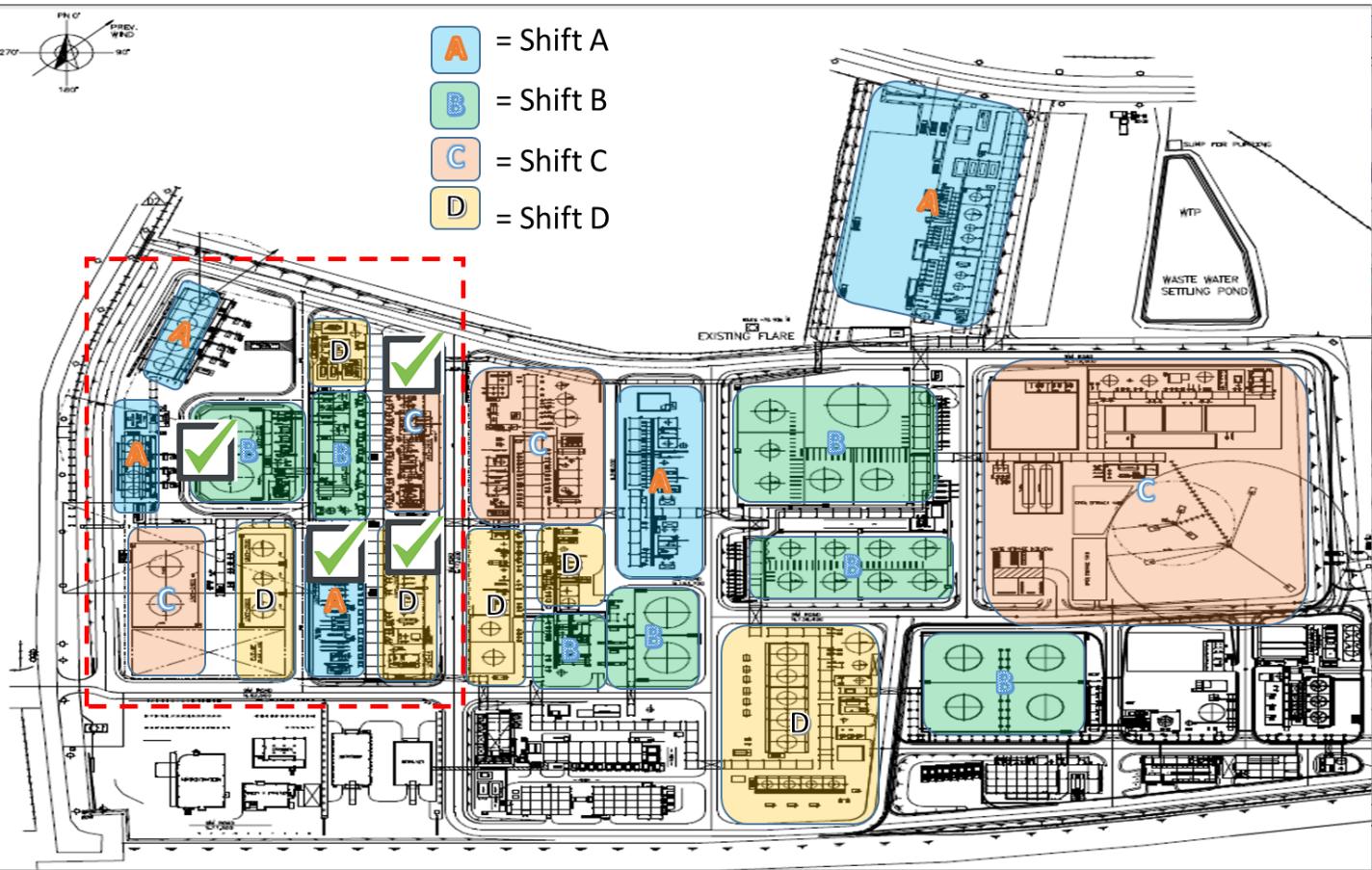
ผู้ที่รับผิดชอบ : _____
(Shift supervisor)

ผู้ดูแล : _____
(Division Manager)

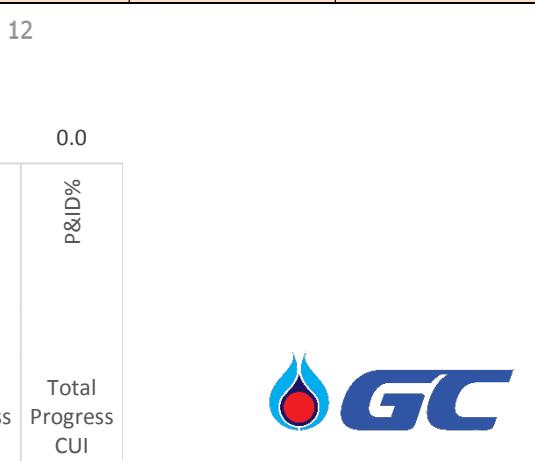


CUI - Insulation Check

Shift	Jan	Feb	Mar	Apr	May	Jun
A						
B						
C						
D						



Oct	Nov	Dec
120-25-21-0011	14780-8120-25-21-0015	14780-8120-25-21-0017
780-8120-25-21-0018		780-8120-25-21-0019
80-8120-25-21-001A		
780-8120-25-23-0014		
80-8120-25-23-0014A		
780-8120-25-23-0015		
780-8120-25-23-0016		
780-8120-25-23-0017		
780-8120-25-23-0018		
780-8120-25-23-0019		
780-8120-25-23-0020		
80-8120-25-23-0020A		
780-8120-25-23-0021		
780-8120-25-23-0022		
780-8120-25-23-0023		
80-8120-25-24-0028C		
780-8120-25-24-0029		
80-8120-25-24-0029A		
780-8120-25-24-0030		
780-8120-25-24-0031		
80-8120-25-24-0031A		
780-8120-25-24-0032		
780-8120-25-26-0002		
780-8120-25-26-0003		
780-8120-25-26-0004		
780-8120-25-26-0005		
780-8120-25-26-0006		
20-25-26-0001B	14780-8120-25-26-0001H	14780-8120-25-26-0007

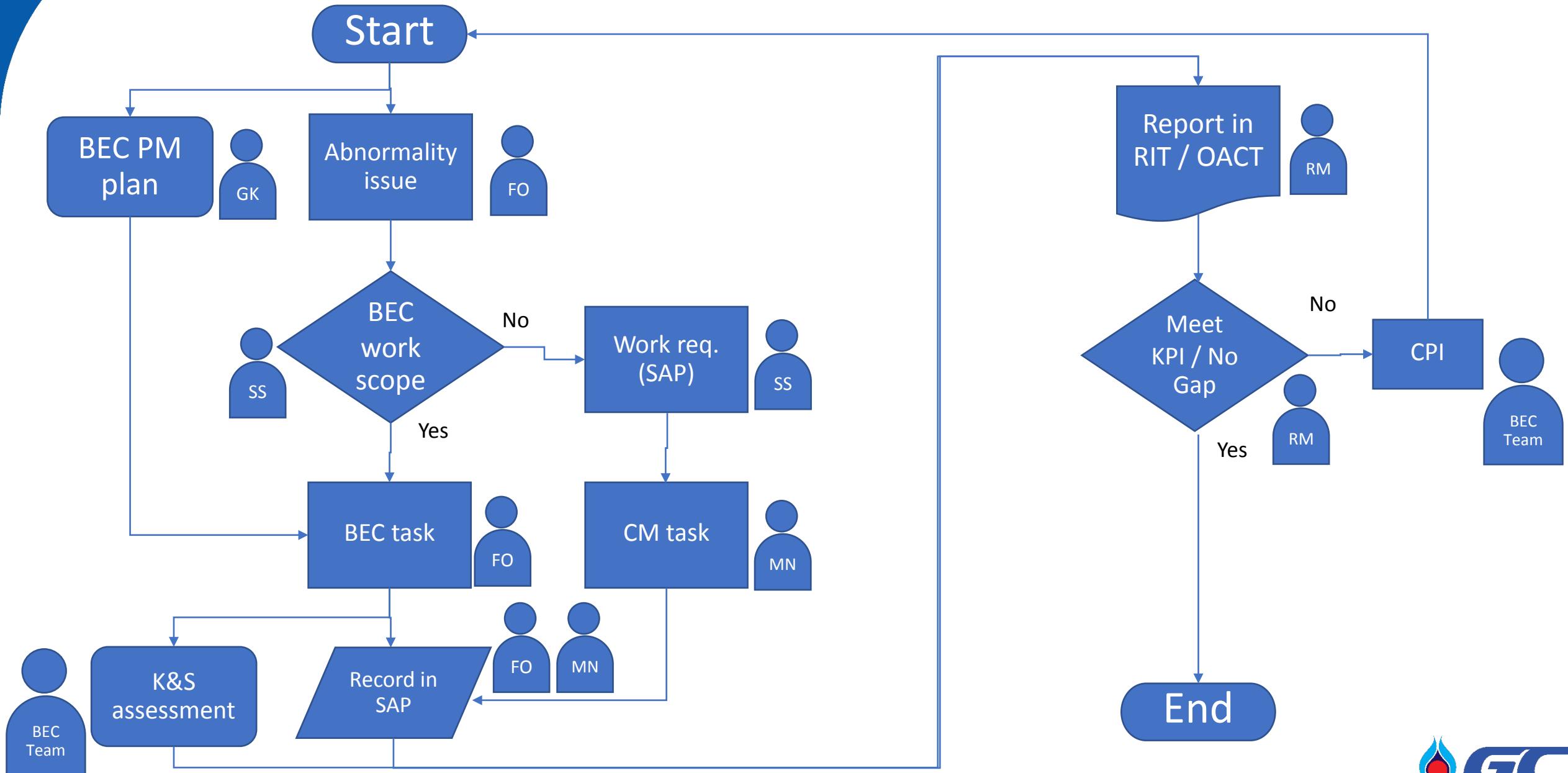


Total : CUI Equipment Inspection Apr2021-Jun2021

Total : CUI PID Inspection Jul2021-Dec2021



BEC Workflow



BEC KPI



- Clearly defined **BEC effectiveness definition and target (i.e. lagging KPI)** to comply with the **PTT Group Recommended Practice (OPS Element)**
 - 1) BEC Effectiveness is total number of breakdown caused by insufficient BEC activity [Target = 0 time]
- Added additional **2 leading KPI and target** for monitoring the progress of BEC execution
 - 1) BEC time spent [Target = depend on plants to study in phase 1]
 - 2) BEC implementation compliance as plan [Target $\geq 95\%$]

KPI	Target 2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of breakdown cause by insufficient BEC	0 time	0	0	0	0								
BEC time spent	> 15* hr / Month	33.2	36.0	60.7	56.2								
BEC implementation compliance as plan	$\geq 95\%$	100%	100%	100%	100%								

*Base line from average per month of 2020

Thank you

Basic Equipment Care (BEC)

The primary objectives of BEC are to improve plant reliability by staff looking after their equipment and determine and build up ownership of staff to take care of their equipment and early warn before more damage incident will occur.

Autonomous Maintenance (AM)

P-(T-OP-TM)-002_R1: Basic Equipment Care

