

## ENHANCED WORK SAFETY IN PLANT MAINTENANCE PROCESS IN DISTRICT HEATING PLANT LJUBLJANA



**Tomaž Lenart (TE-TOL)**  
**Miha Ulčar (Sapphir d.o.o.)**

**Madrid, 18.04.2012**

## **1. Termoelektrarna Toplarna Ljubljana**

2. SAP PM: Key processes

3. SAP WCM implementation project overview - Enhanced worker safety

4. SAP WCM process

5. SAP PM and WCM in TE-TOL: Way forward

# JHL SAP IMPLEMENTATION PROJECT

2007

**MOL: MUNICIPALITY OF LJUBLJANA**

**JAVNI HOLDING Ljubljana, d.o.o.**

JP Energetika  
Ljubljana  
d.o.o.

JP Vodovod –  
Kanalizacija  
d.o.o.

JP Ljubljanski  
potniški  
promet, d.o.o.

Snaga javno  
podjetje  
d.o.o.

Termoelektrarna  
Toplarna  
Ljubljana

2008

**JAVNI HOLDING  
Ljubljana, d.o.o.**

**UNIFORMATION OF BUSINESS  
AND IT PROCESSES OF PUBLIC  
COMPANIES**

**STRATEGIC HOLDING  
MODEL  
CONFORMATION**

01.01 2009

**I. Phase of reorganisation was  
accomplished**

**Transfer of legal department of a business  
and Departement for public tenders to JHL**

01.05-2010

**SAP**

**II. Phase of reorganisation was  
accomplished**

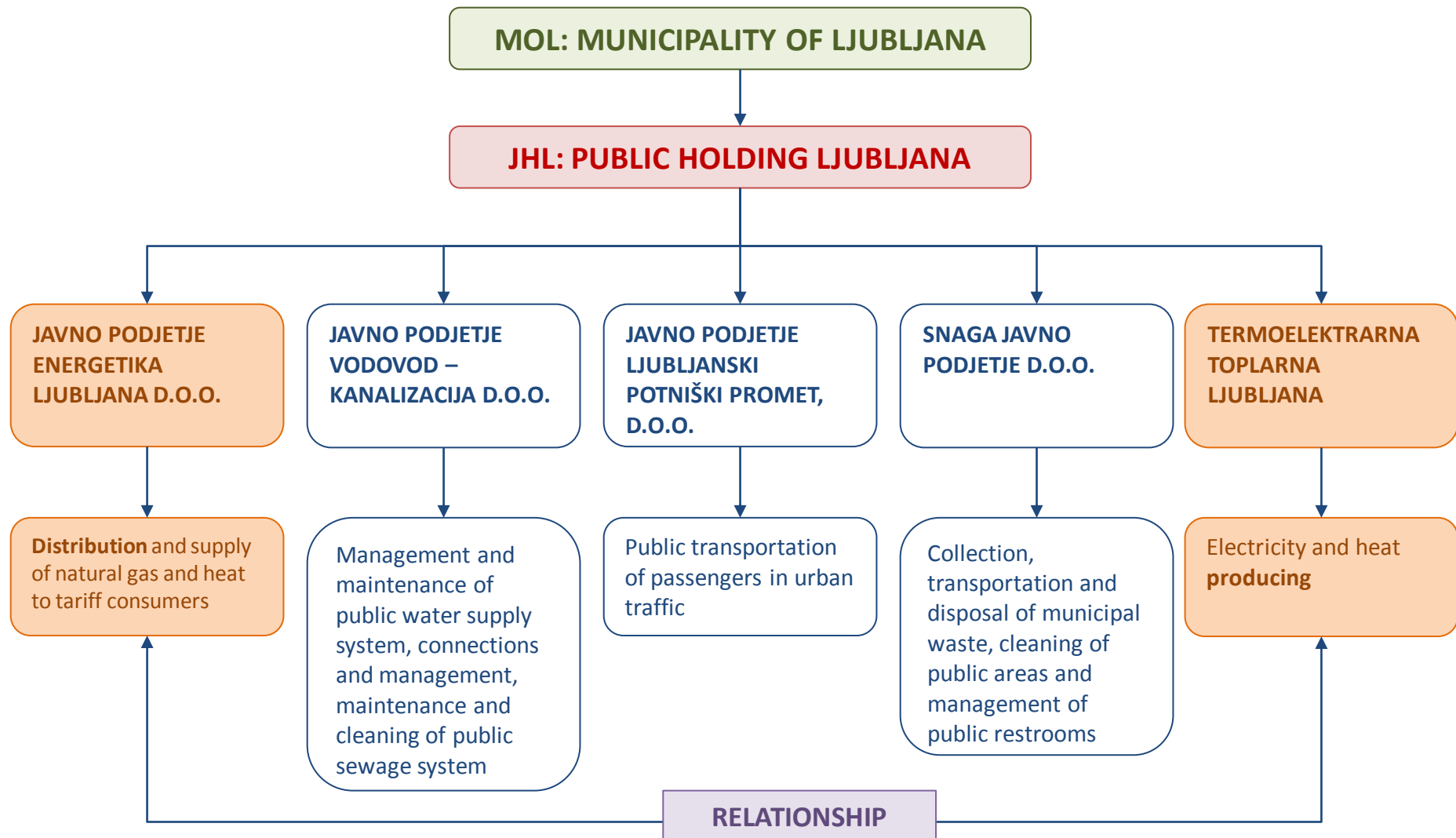
**Transfer of FI/CO, HR and IT departments to  
JHL**

01.01.2012

**Termoelektrarna – Toplarna Ljubljana**

**SAP ERP ISU WAS IMPLEMENTED BY SAPPHIR D.O.O.**

# PUBLIC HOLDING LJUBLJANA - TODAY



# TERMOELEKTRARNA – TOPLARNA LJUBLJANA (TE-TOL)

**TE-TOL** is the biggest, highly-efficient cogeneration facility in Slovenia, producing electricity and heat in cogeneration.

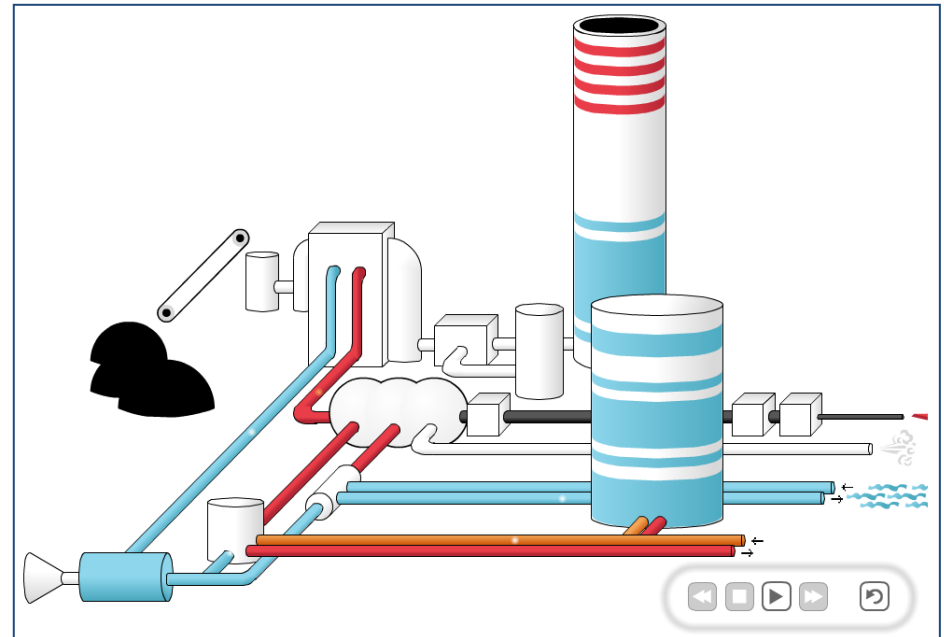
We are providing more than 90 percent of demand for heat in the district heating system of the city of Ljubljana, the capital of Slovenia, which represents about 50 percent of total heat demand in district heating systems of Slovenia.

## Total installed power:

Electrical power	124 MW
Heat + process steam (TE)	350 MW

## Possible annual generation:

Electricity (EE)	550 GWh
Heat + process steam (TE)	1.650 GWh



1. Termoelektrarna Toplarna Ljubljana
- 2. SAP PM: Key processes**
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5. SAP PM and WCM in TE-TOL: Way forward

# TE-TOL SAP PM/CS PROCESS - INTEGRATION

## SYSTEM INFO.:

- SAP ERP
- VER. 605
- IS-UTILITIES

## WCM

WCD

WCA

YES

## PM

NOTIFICATION

WOR ORDER

MATERIAL ?

NO

EXTERNAL  
SERVICE?

NO

SAFETY  
MEASURES?

NO

WORK  
FINISHED

WORK  
CONFORMATION

YES

RESERVATION

BOOKING

GOODS  
RECEIPT

YES

PURCHASE  
REQ.

PURCHASE  
ORDER

SERVICE  
RECEIPT

WORK  
COMPLETE

NO

SALES  
SERVICE?

YES

STATEMENT OF  
ACCOUNT

BILL

CONTROLLING

## WM

## MM

## SD

## FI

## CO

# TE-TOL: SAP PM TECHNICAL OBJECTS MANAGEMENT

## TECHNICAL DATA:

- Manufacturer,
- type, catalog number,
- serial number,
- weight, dimensions.....

## LOCATION DATA:

- Functional location
- structure
- BOMs

## SAFETY DATA:

- Safety measures,
- work permits

## ORGANISATIONAL DATA:

- Cost center,
- asset number,
- responsible person,
- planning plant, department ...

## SPECIFIC DATA:

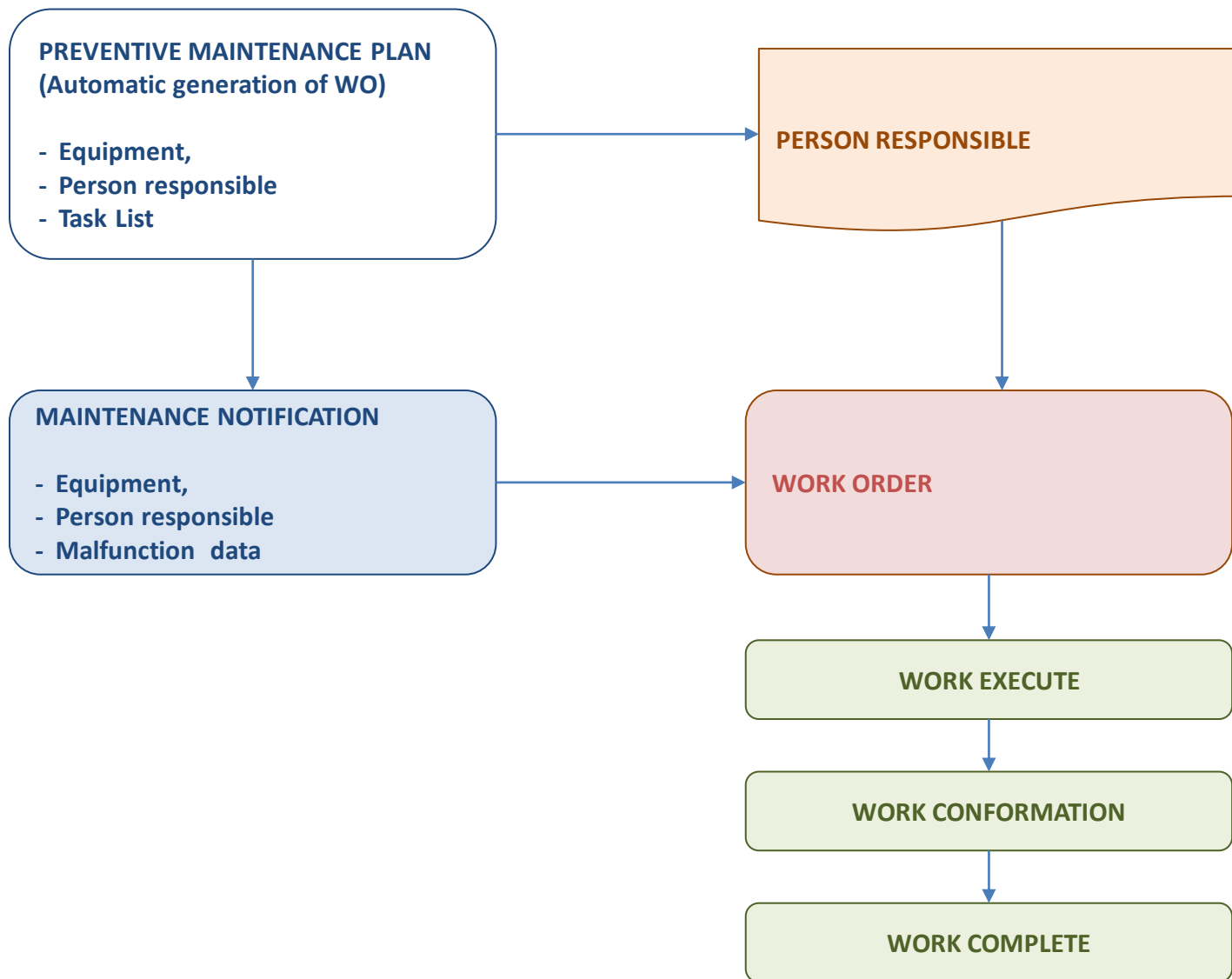
- Power
- suction/pressure high ,
- capacity
- ...

The screenshot displays the SAP PM Technical Objects Management interface. The main window shows a list of equipment (Seznam opreme) with columns for equipment number, description, and status. The list includes various components like turbines, pumps, and valves. The right side of the screen shows detailed views for a selected object, including a structure view (Prikaz opreme: Struktura) and a classification view (Klasifikacija). The classification view lists technical specifications such as pressure, temperature, and capacity.

Pos.	Oprema	PodOp/Oznaka	Vrsta opreme/Protežaj	Št.
1100266		<input type="checkbox"/> FILTER ZGORJALNEGA ZRUŽ 114	TURBOMACH	
1100292		<input type="checkbox"/> GENERATOR ASINHRONI 13 112	ALSTHOM	AP
1100544		<input type="checkbox"/> GLUŠNIK IZPUSTNEGA VEŃ 3000	GLAUNACH	Az
1100561		<input type="checkbox"/> SISTEM POŽARNE ZAŠČITE 3120	CERBERUS	
1100610		<input type="checkbox"/> ČRPALKA VIDAČNA TRILUB 3000	ALLWEILER	TF



# TE-TOL PM NOTIFICATION AND WORK ORDER MANAGEMENT



# TE-TOL PM NOTIFICATION

Kreiranje obvestila vzdrževanja: TOL Obvest. o okvari		SHORT TEXT AND STATUS
<p>Obvestilo: 0000000001 T2 Okvara črpalke v kotlu 1 s pristroji</p> <p>Status obvest.: MOFN</p> <p>Nalog:</p> <p>Osnovni podatki</p>		
<p>Referenčni objekt</p> <p>Tehnično mesto: TOL-01-001-01 Črpalke</p> <p>Oprema: 71000009 ČNE 1</p> <p>Sestav:</p>	WHERE?	LOCATION DATA
<p>Dejansko stanje</p> <p>Opis: Okvara črpalke v kotlu 1 s pristroji</p> <p>Predmet dolgi tekst</p> <p>Zaradi korozije je prišlo do okvare črpalke ČNE 1 v kotlu 1 s pristroji</p>	WHAT?	DESCRIPTION
<p>Pristojnosti</p> <p>Skup. planerjev: VZD / 7001 Vzdrževanje</p> <p>Glav.delov.mes.: SSV / 7001 TETOL Služba strojnega vzdrževanja</p> <p>Dobavitelj: 100071 ELEKTROINŠTITUT MILAN VIDMAR</p> <p>Odgovorni: 17003070 LENART Tomaž</p> <p>Obvestil: AKLINC Datum obvestila: 05.12.2011 08:35:12</p>	WHO?	PEOPLE/DEPARTMEN RESPONSIBLE
<p>Podatki okvare</p> <p>Začetnje: 04.12.2011 08:35:12 Izpad</p> <p>Konec motnje: 05.12.2011 08:35:12 Trajanje izpada: 24,00</p>	WHEN?	TERMINATION
<p>Postavka</p> <p>Tekst:</p> <p>Koda vzroka: TSSV ST01 Strojelom</p> <p>Tekst vzroka: Puščanje cevi nad črpalko</p> <p>Vnos: 1 Od: 1</p>	WHY?	MALFUNCTION DATA

# TE-TOL PM WORK ORDER PROCESS

## WO CREATION

**Kreiranje TETOL Tekoče vzdrževanje : Podatki lokacije**

Nalog: [Z701] [000000000001] Okvara črpalke v kotlu 1 s pristroji

Okvara črpalke v kotlu 1 s pristroji

## WO COST OVERVIEW

**Plan/dejansko primerjava**

Podatki lokacije: 201000017 VULČEVA MED ŠT. 14, IN 16 (DN 104227)

Vrsta naloga: Z201 VO Večja vzdrževalna dela infrastrukture

Obrat: Z201 VO-KA

Verz.plana: 0 Plan/dej - verzija

Kumulirani podatki  
Legatno vrednotenje  
Vakuta šifre podjetja/objekta

Vrs. str.	Vrsta stroškov (Tekst)	Σ	Plan. str. skupno
403001	PORAB. NADOM. DELI IN MAT. ZA VVD (S)	0,00	
412001	STR. VEČJIH VZDRŽEVALNIH DEL	2,00	
412003	STR. VEČJIH VZDRŽEVALNIH DEL - INFRASTR.	0,00	
<b>Bremenitev</b>		<b>2,00</b>	
403001	PORAB. NADOM. DELI IN MAT. ZA VVD (S)	0,00	
412003	STR. VEČJIH VZDRŽEVALNIH DEL - INFRASTR.	0,00	
<b>Poravnava</b>		<b>0,00</b>	
		<b>2,00</b>	

Prodaja in distribucija

Prod. organ.: 7000 TE-TOL

Distrib.Kanal: 01 Prodajni kanal 01

Panoga: 01 Splošno

Kontriranje

Šifra podjetja: 7000 TE-TOL d.o.o., Ljubljana

Osnov. sredstvo: /

Podr.posl.: 061 Mestna občina Ljubljana

Stroš. mesto: 70001101 Kotel 1 s pristroji

PPS element:

## WO CONFORMATION

### Potrditev za nalog vzdrževanja Vnos : Dejanski podatki

◀ ▶ ⏏ + naslednji Premiki blaga Obvestilo Seznam objektov Dokumenti merjenja

Nalog: 701000087 Okvara črpalke v kotlu 1 s pristroji

Postopek: 0020 Izdelavna ura zaposlenega

Status sistema: LANS

#### Podatki potrditve

Potrditev: 120203

Delovno mesto: SSV 7001 TETOL Služba strojnega v

Kadr.št.: 17002937 KOSEC Matjaž

Dejansko delo: 8 H Vrs. aktivn.

☐ Konč.potrditev ☐ Ni preost.Dela

☐ Izknjiž.rezerv.

Začetek dela: 05.12.2011 10:19:21 Dejansko traj.

Konec dela: 05.12.2011 10:19:21 Konec napoved

Vzrok odmika: 0001 Okvare stroja

Tekst potrditve: Delo dobro opravljeno

#### Zbir podatkov potrditve

Kumul. dej.delo: 0 H Dejan.traj

Predvideno delo: 2 H Planirano Trajan

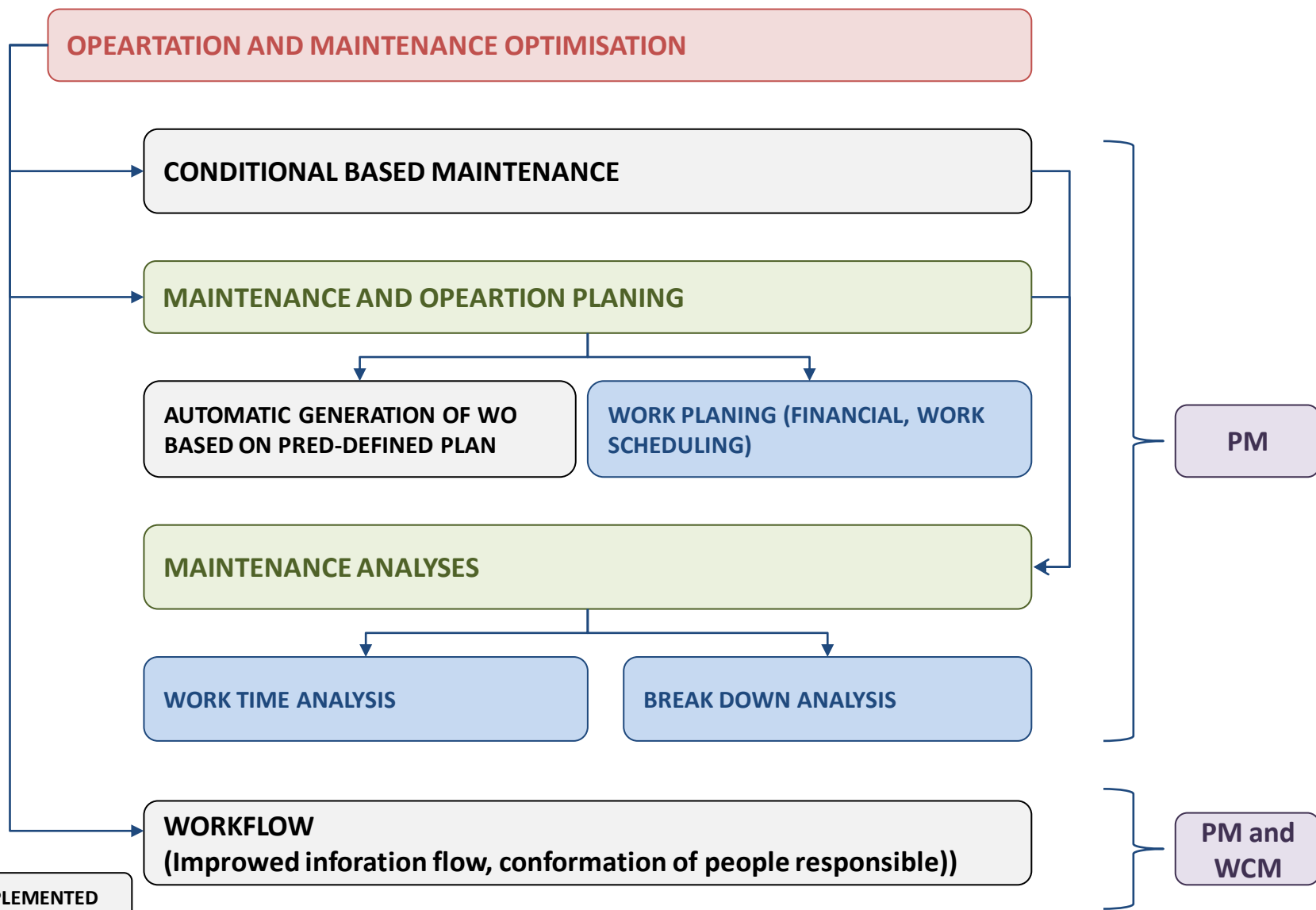
Dej.začetek: 00:00:00 Dejanski konec

## WO HISTORY

### Prikaz nalogov in postopkov: Seznam nalogi in postopki

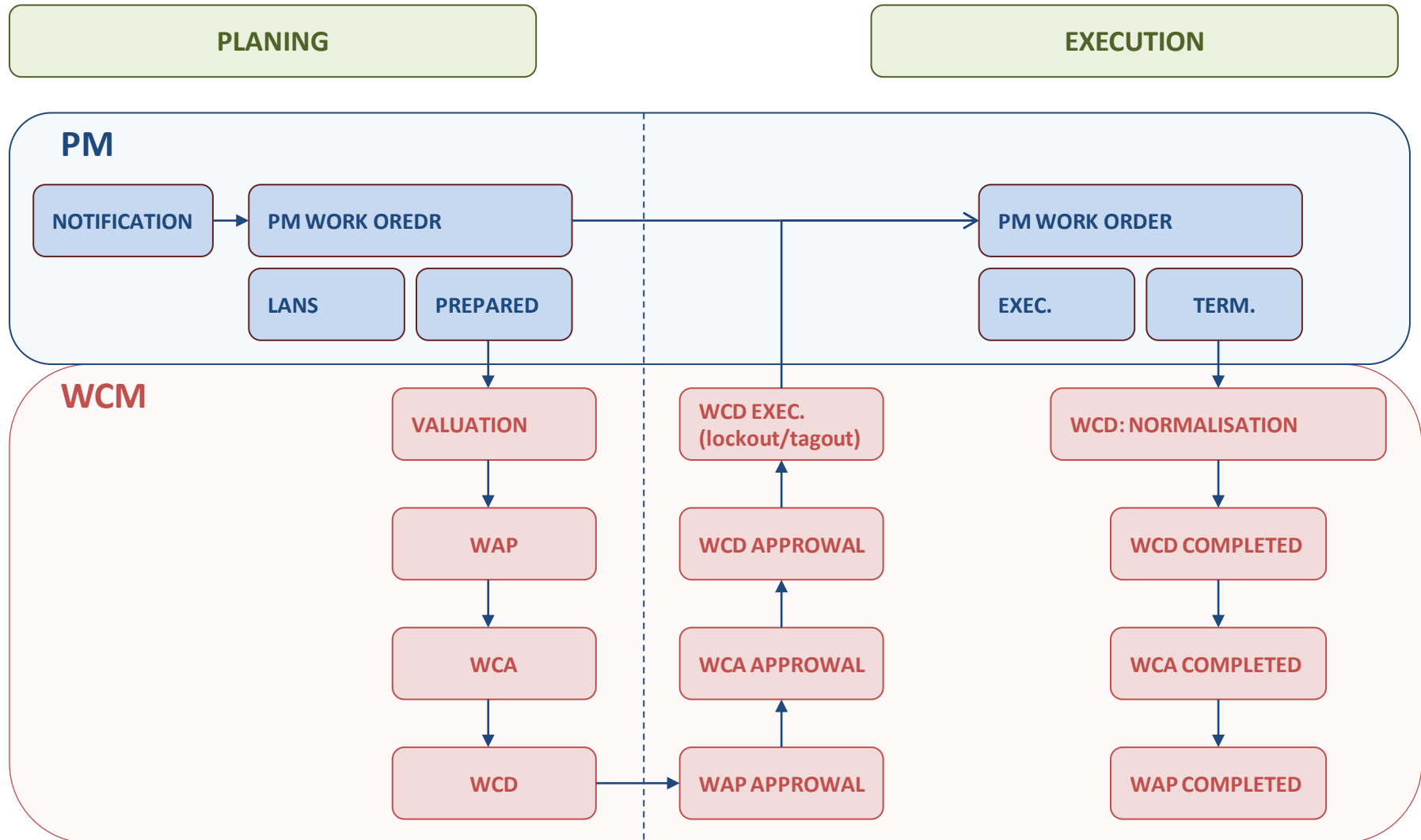
Nalog	Krati tekst	Vrsta	VAV	Pos	Indr	K35StTakt	Krati tekst postopkov	Dejan.delo	En.	SO	GDAlmes.
701000019	OKVARA DODELJENKA	Z701	702	0010	ZM01		OKVARA DODELJENKA		1	EN	ARM
701000019	OKVARA DODELJENKA	Z701	702	0020	ZM01	70000001	Izdelavna ura zaposlenega		1	H	ARM
701000019	OKVARA DODELJENKA	Z701	702	0030	ZM01	ZTOL500	SSV ZI PK: klučavničar		1	H	ARM
701000019	OKVARA DODELJENKA	Z701	702	0040	ZM02	ZTOL01	Naročilo zunanje startve TETOL				ARM
701000019	OKVARA DODELJENKA	Z701	702	0050	ZM01		postavitve odra		5	EN	ARM
701000019	OKVARA DODELJENKA	Z701	702	0060	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		7	H	ARM
701000019	OKVARA DODELJENKA	Z701	702	0070	ZM01	ZTOL064	SGV ZI Študent		13	H	ARM
701000020	postavitve odra okrog dodga	Z701	702	0010	ZM01		postavitve odra okrog dodga		1	EN	SGV
701000020	postavitve odra okrog dodga	Z701	702	0020	ZM01	70000001	Izdelavna ura zaposlenega		3	H	SGV
701000020	postavitve odra okrog dodga	Z701	702	0030	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		11	H	SGV
701000020	postavitve odra okrog dodga	Z701	702	0040	ZM02	ZTOL01	Naročilo kave za udeležence SAPa				SGV
701000021	popravilo črpalke 3/3	Z701	702	0010	ZM01	ZTOL064	SGV ZI Študent		5	H	VZD
701000021	popravilo črpalke 3/3	Z701	702	0020	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		5	H	VZD
701000021	popravilo črpalke 3/3	Z701	702	0030	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		3	H	VZD
701000021	popravilo črpalke 3/3	Z701	702	0040	ZM01	ZTOL063	Naročilo zunanje startve TETOL				VZD
701000022	postavitve odra na dodga	Z701	702	0010	ZM01		postavitve odra na dodga		2	EN	SGV
701000022	postavitve odra na dodga	Z701	702	0020	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		9	H	SGV
701000023	potrebni ikopati jarek med tr	Z701	702	0010	ZM01		potrebni ikopati jarek med tr				VZD
701000023	potrebni ikopati jarek med tr	Z701	702	0020	ZM01	ZTOL01	Naročilo zunanje startve TETOL				VZD
701000024	popravilo elektro	Z701	702	0010	ZM01		popravilo elektro				SSV
701000024	popravilo elektro	Z701	702	0020	ZM01		popravilo elektro				SSV
701000024	popravilo elektro	Z701	702	0030	ZM01		popravilo elektro				SSV
701000025	ČIŠČENJE ZALOGOVNIKOV BIOMASE	Z701	702	0010	ZM01		ČIŠČENJE ZALOGOVNIKOV BIOMASE				VZD
701000025	ČIŠČENJE ZALOGOVNIKOV BIOMASE	Z701	702	0020	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		8	H	VZD
701000026	Zamrzavanje manometra	Z701	702	0010	ZM01		Zamrzavanje manometra				VZD
701000027	Zamrzavanje telefona na k15 pri dodelnik	Z701	702	0010	ZM01		Zamrzavanje telefona				VZD
701000028	potrebni ikopati jarek med tr	Z701	702	0010	ZM01		potrebni ikopati jarek med tr				SGV
701000028	potrebni ikopati jarek med tr	Z701	702	0020	ZM01	ZTOL064	SGV ZI Študent		5	H	SGV
701000029	potrebni ikopati jarek med tr	Z701	702	0010	ZM01		potrebni ikopati jarek med tr				SGV
701000029	potrebni ikopati jarek med tr	Z701	702	0020	ZM01	ZTOL01	Naročilo zunanje startve TETOL				SGV
701000030	potrebni ikopati jarek med tr	Z701	702	0010	ZM01		potrebni ikopati jarek med tr				SGV
701000030	potrebni ikopati jarek med tr	Z701	702	0020	ZM01	ZTOL01	Naročilo zunanje startve TETOL				SGV
701000031	TESTNI NALOG	Z701	702	0010	ZM01		am				ARM
701000031	TESTNI NALOG	Z701	702	0020	ZM01		stojniki				ARM
701000031	TESTNI NALOG	Z701	702	0030	ZM01		gradbeniki				ARM
701000032	Vzdrževanje - potrošni material	Z701	702	0010	ZM01		Potrošni material				ARM
701000033	popravilo el. motorja EACS1	Z701	703	0010	ZM01		odprava okvare na el. motorju tr. traku				VZD
701000033	popravilo el. motorja EACS1	Z701	703	0020	ZM01		odprava okvare na podstavku				VZD
701000033	popravilo el. motorja EACS1	Z701	703	0030	ZM01	ZTOL063	SGV ZI PK: Pol kvalificiran		8	H	VZD
701000034	Vzdrževanje kotle 1	Z701	702	0010	ZM01		Vzdrževanje kotle 1				ARM
701000035	POPRAVILLO REGULACIJSKE LOPUTE RECI 1/3	Z701	703	0010	ZM01		POPRAVILLO REGULACIJSKE LOPUTE RECI 1/3				VZD
701000035	POPRAVILLO REGULACIJSKE LOPUTE RECI 1/3	Z701	703	0020	ZM01		POPRAVILLO REGULACIJSKE LOPUTE RECI 1/3				VZD

# TE-TOL: SAP PM IMPLEMENTATION – KEY BENEFITS



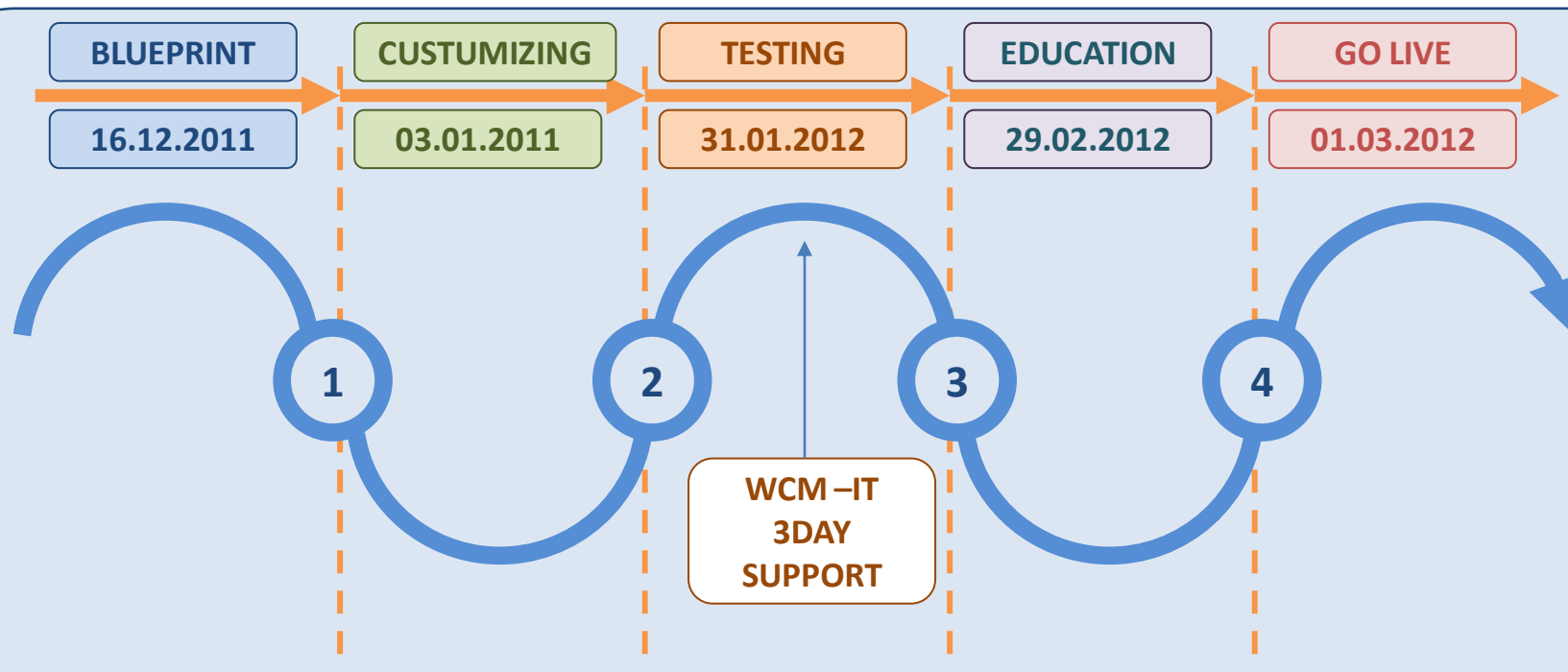
1. Termoelektrarna Toplarna Ljubljana
2. SAP PM: Key benefits
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4. SAP WCM process
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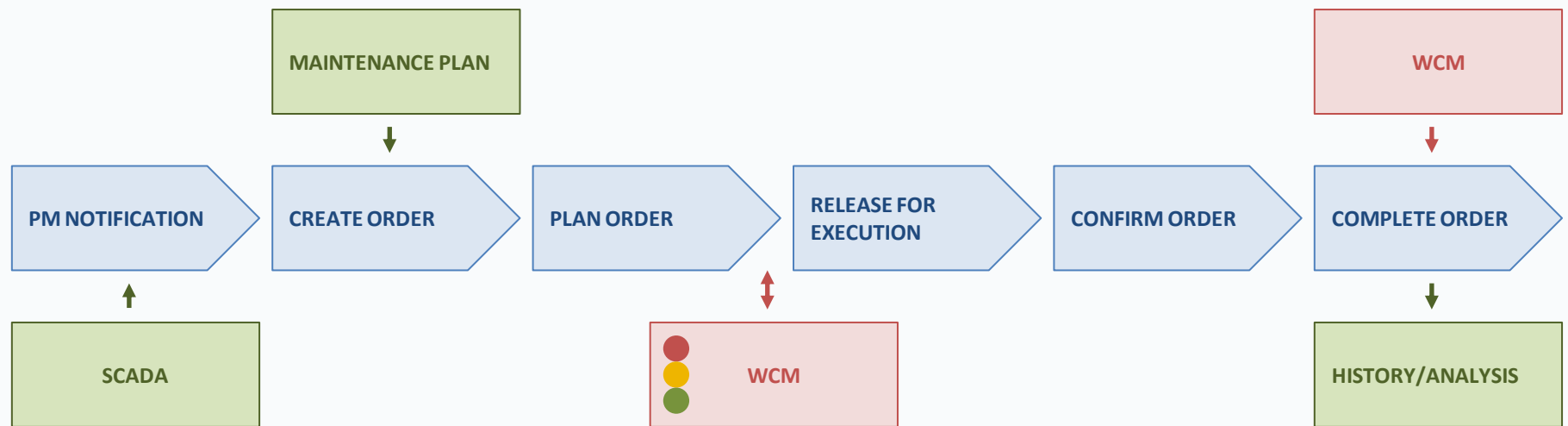
# WHAT IS SAP WCM?



**SAP WORK CLEARANCE MANAGEMENT HANDLES SAFETY-RELATED PROCESSES IN PLANT MAINTENANCE**

# JPE AND TE-TOL: ENHANCED WORKERS SAFETY – SAP WCM IMPLEMENTATION PROJECT





- In order to ensure that safety measures are performed for maintenance work tasks, you must activate Work Clearance Management for maintenance orders. These orders are indicated as WCM-relevant orders.
- The linking of orders to Work Clearance Management takes place at the header level of the order.
- You cannot perform the maintenance tasks for WCM-relevant orders, until you have issued the “Released for execution”.



# SAP WCM: STRUCTURE (Standard model was chosen for TE-TOL)

## ENHANCED MODEL

WORK ORDER: WO

WORK APPROVAL: WAP

WORK CLEARENCE  
APPLICATION: WCA

ADDITIONAL  
APPLICATIONS

WORK CLEARENCE DOKUMENT:  
WCD

TE-TOL

## STANDARD MODEL

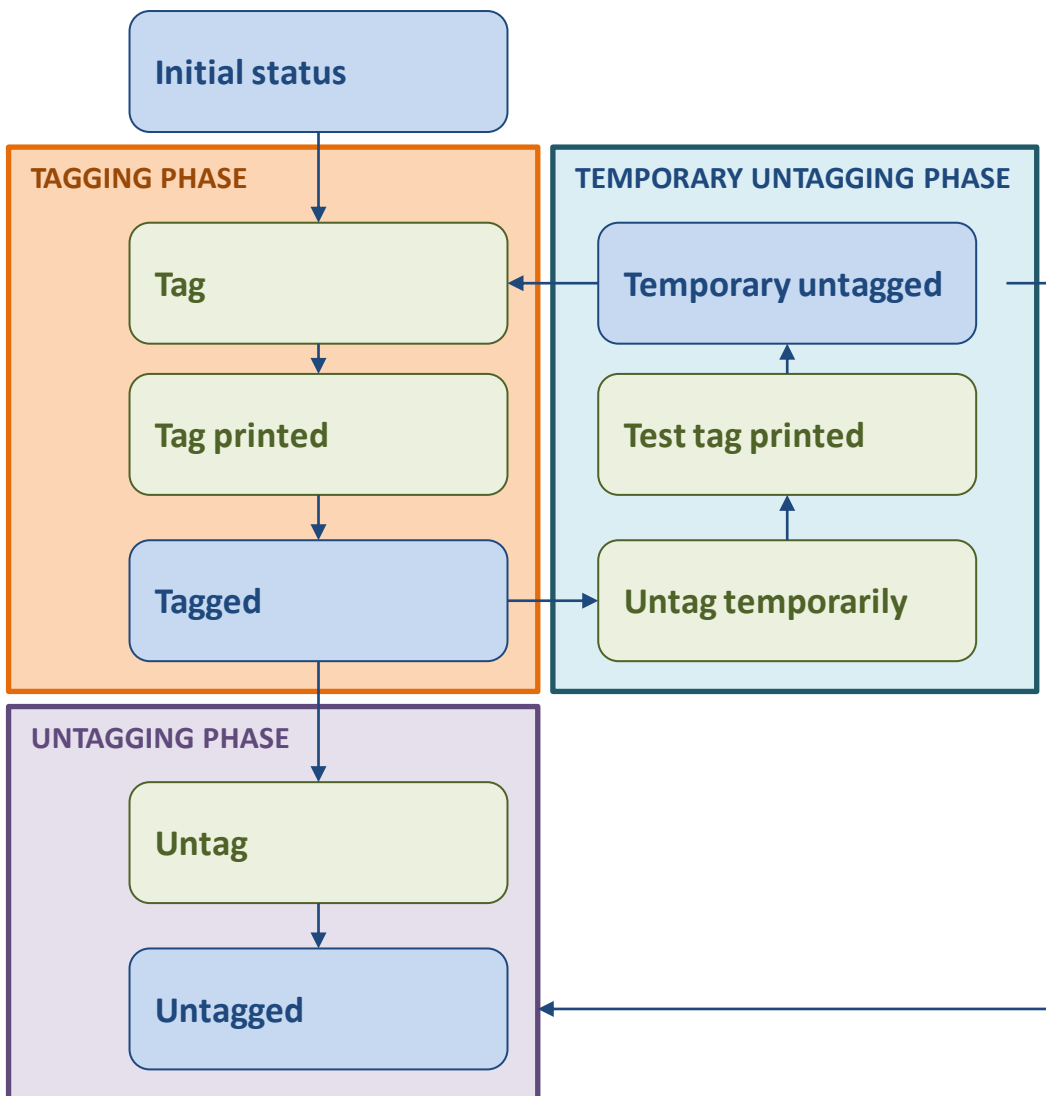
WORK ORDER: WO

WORK CLEARENCE  
APPLICATION: WCA

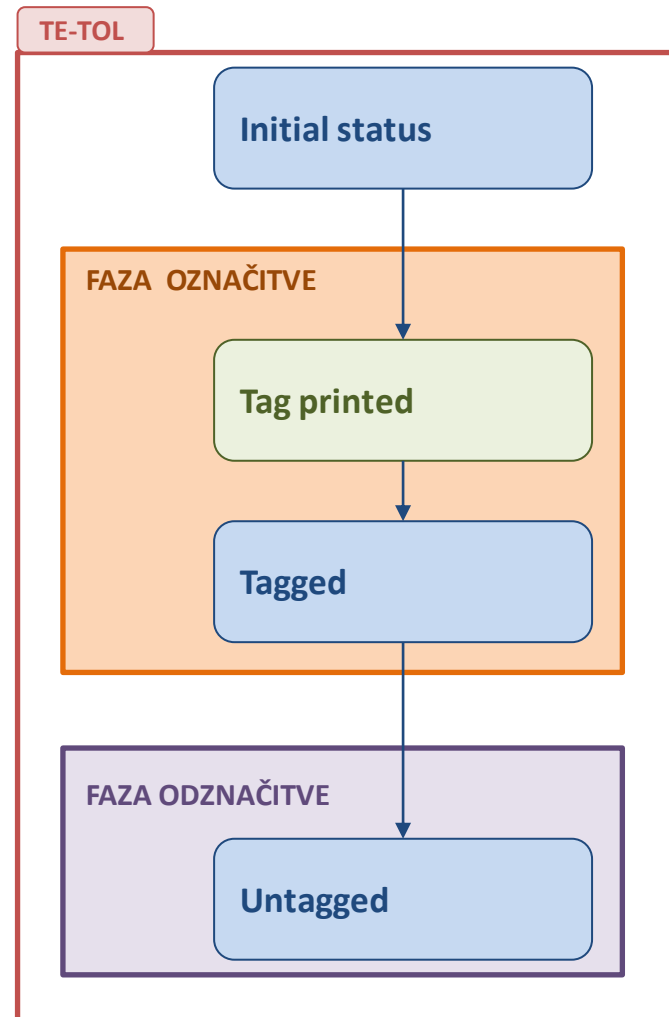
WORK CLEARENCE DOKUMENT:  
WCD

# OPERATIONAL CYCLE (Reduced operational cycle was chosen for TE-TOL)

## OPERATIONAL CYCLE

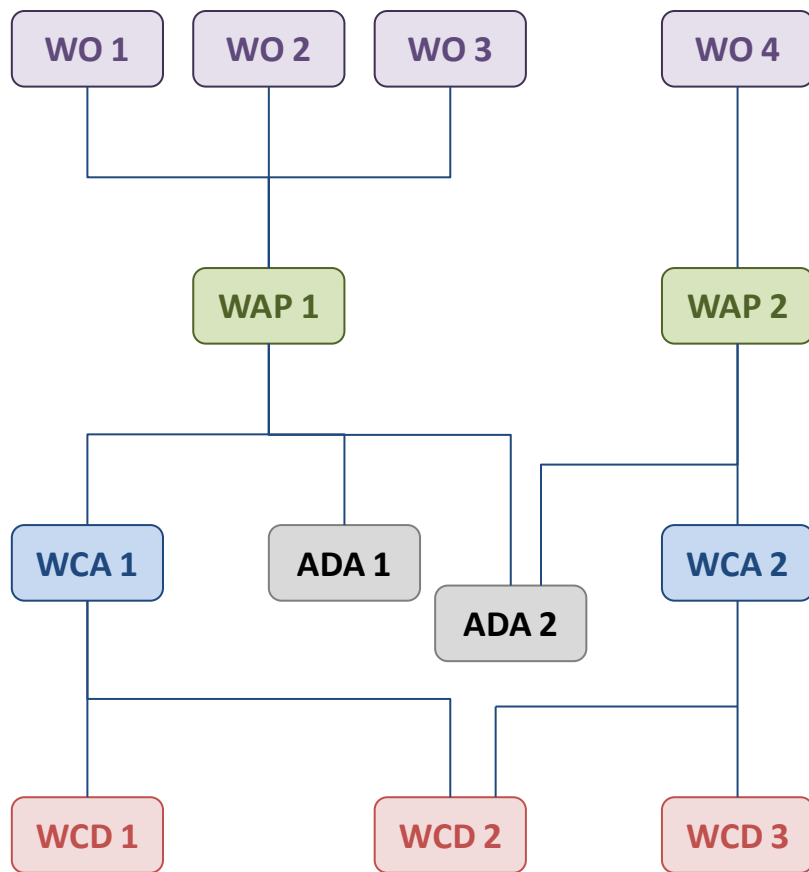


## REDUCED OPERATIONAL CYCLE

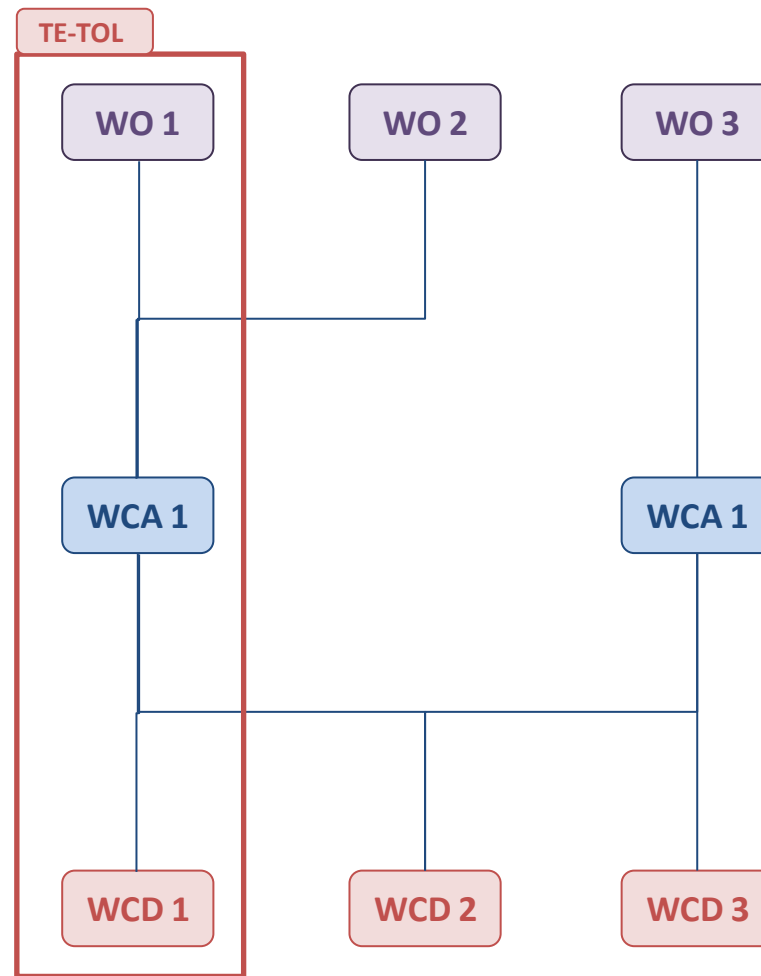


# WCM OBJECTS – ASSIGNMENT RULES (WO/WCA/WCD = 1/1/1 was chosen for TE-TOL)

## ENHANCED MODEL



## STANDARD MODEL



# WCM OBJECTS – WORK CLEARANCE APPLICATION (TE-TOL CUSTOMISATION)

**Prikaz Varnostni delovni nalog**

OC Nalog Dovoljenje za delo KAT.VARN.UK.

**Identifikacija**

Zahteva 710000011 ☐ gled grabelj EAC60 (na dnu) 01

**Nalog**

Nalog 701000367 Pregled in kontrola transporterja EAC60.  
Status TABG DRUC ABRV KKMP VOKL

**Referenčni objekt**

Tehnično mesto   
Oprema 71900637 GRABLJE V ZALOGOVNIKU EAC60

**STANDARDNI VARN. UKREPI** **OPOMBE**

**POTREBNE ZAUSTAVITVE IN MANIPULACIJE:**  
Zaustavitev sistema za polnjenje zalogovnikov biomase. Zaustavitev nakladalno razkladalnega transporterja EAC60.  
Odpreti vrata pred zalogovnikom EAC 60 in jih zavarovati pred zapiranjem z obešanko.  
Izklopiti in ločiti motorno zaščitno stikalo NNS5+BLS24 odcep 73Q1 elektromotornega pogona grabelj 1405EAC60-M020.  
Izklopiti in zakleniti (z obešanko) stikalo 74Q1 na koti +8m.  
Izklopiti in ločiti motorno zaščitno stikalo NNS5+BLS24 odcep 71Q1

**Partner**

Vloga	Partner	Ime	I. Naslov
Delovni nalog izd.	17003070	LENART Tomaž	LENART, , ,
Delo odobril	17001161	SAJOVEC Anton	SAJOVEC, , ,
Odg. za varn. ukr.	17003055	POVŠE Ciril	POVŠE, , ,
Odg. vodja vseh d.	17002937	KOSEC Matjaž	KOSEC, , ,

**DODATNI VARNOSTNI UKREPI** **STATUS SISTEMA** **PRISTOJNOSTI**

☐ Požarna varnost  
☒ Odklop  
☐ Kontrolni list odra

WCA NUMBER AND SHORT TEXT

WORK ORDER DATA

REFERENCE OBJECT DATA

DESCRIPTION OF REQUIRED SAFETY MEASURES

PERSON RESPONSIBLE

ADDITIONAL DATA

# WCM OBJECTS – WORK CLEARANCE DOCUMENT (TE-TOL CUSTOMISATION)

## WCA DATA + OPEARTIONAL SCREEN

**Prikaz Dovoljenja za delo: Ekran stikala**

DokumentOdklopa 720000724 ☐ gled traku EAC61 1 / 1

Status PRIP MNO INM ABGS

KONF	ZSL	ACS	IZLA	LANS	NOR	INM	NEAK	OS	Stan.	odk.	TO	ZaOdk	VrS	Fi	LO	SO	StanNormal	UT	ZapNor						
	0	0	0	0	0	5	0																		
Tehnični objekt								OS Stan. odk.								TO		ZaOdk VrS		Fi LO SO		StanNormal		UT ZapNor	
Kratki tekst								Komentar								DT PD		OznOdklopa		Ključ					
Status sistema								Status uporabnika																	
<input type="checkbox"/>	10	N	VRATA PRED ZALOGOVNIKOM EAC60					S	ODP	T02	0	K	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ST02	ZAP	T01	0	7000001218						
								ZUPAN Peter																	
<input type="checkbox"/>	20	N	MOTORNO ZAŠČITNO STIKALO GRABELJ EAC61					E	ODK	T01	0		<input type="checkbox"/>	<input checked="" type="checkbox"/>	ET01	PRI	T02	0	7000001219						
								1405EAC61-M020																	
								INM																	
<input type="checkbox"/>	30	N	MOTORNO ZAŠČITNO STIKALO VITLJA EAC61					E	ODK	T01	0		<input type="checkbox"/>	<input checked="" type="checkbox"/>	ET01	PRI	T02	0	7000001220						
								1405EAC61-M010																	
								INM																	
<input type="checkbox"/>	40	N	STIKALO 88Q0					E	IZV	T01	0		<input type="checkbox"/>	<input checked="" type="checkbox"/>	ET01	VST	T02	0	7000001221						
								GREGORIČ Bojan																	
								INM																	
<input type="checkbox"/>	50	N	STIKALO 90Q1					E	IZV	T01	0		<input type="checkbox"/>	<input checked="" type="checkbox"/>	ET01	VST	T02	0	7000001222						
								GREGORIČ Bojan																	
								INM																	

OPERATIONAL CONDITION  
FOR TAGGING

OPERATIONAL CONDITION  
FOR UNTAGGING

FUNCTIONAL LOCATION  
TEXT

OPERATIONAL GROUP

COMMENT

PERSON RESPONSIBLE

OPERATIONAL TYPE AND  
PRINT FORMAT

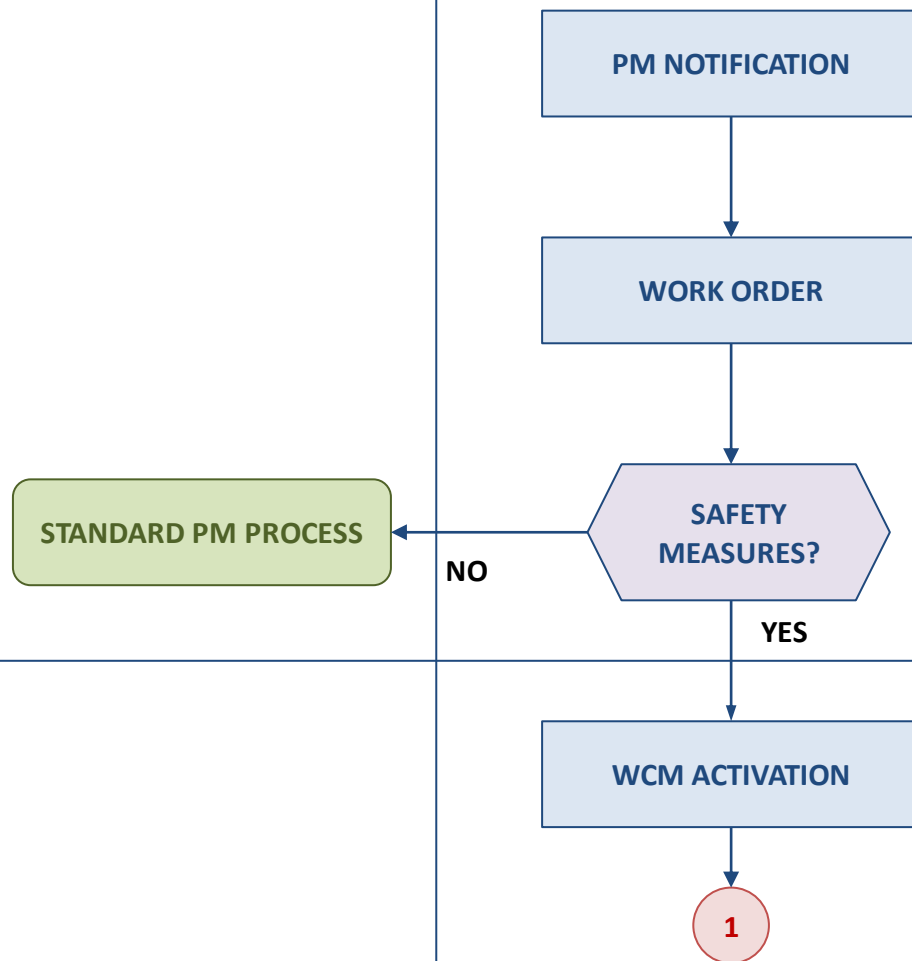
ITEM NUMBER

1. Termoelektrarna Toplarna Ljubljana
2. SAP PM: Key benefits
3. SAP WCM implementation project overview - Enhanced worker safety
- 4. SAP WCM process**
5. SAP PM and WCM in TE-TOL: Way forward

# SAP PM/WCM PROCESS IN TE-TOL

## PROCESS (STEPS)

## COMMENT



Through approvals assigned to the maintenance order.

# SAP PM/WCM PROCESS IN TE-TOL

## PROCESS (STEPS)

## COMMENT

1

CREATE WCA

### Determination of people responsible:

- WCA created by
- Work approved by
- Responsible person for safety measures at work site
- Responsible person for all work activities
- Group lider

### Determination of procedures:

1. Required shutdowns and manipulations,
2. Required safety measures,
3. Special remarks

WCA PRINT

WCA FORM

**WCA** is set to Prepared and printed

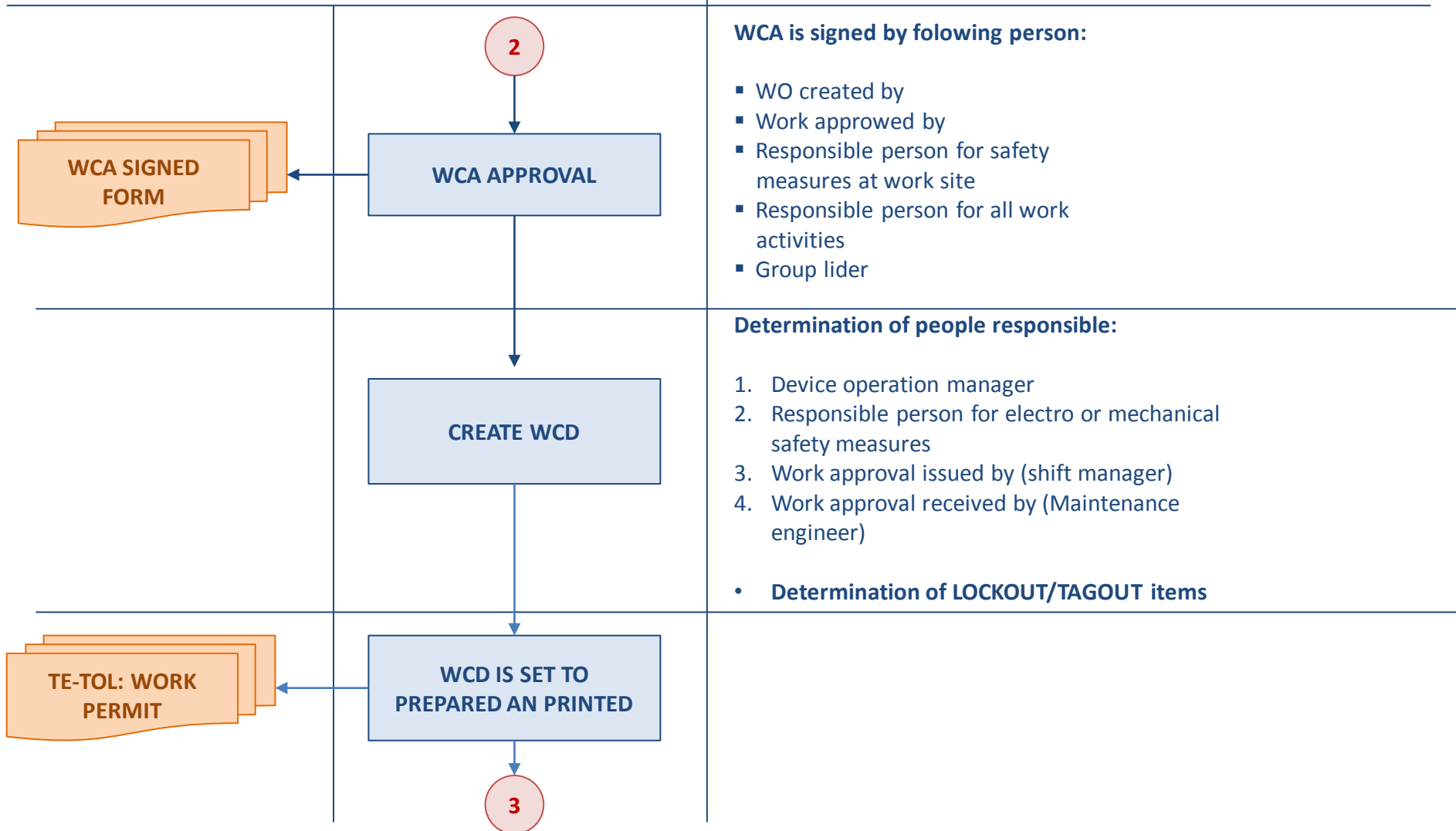
2



# SAP PM/WCM PROCESS IN TE-TOL

## PROCESS (STEPS)

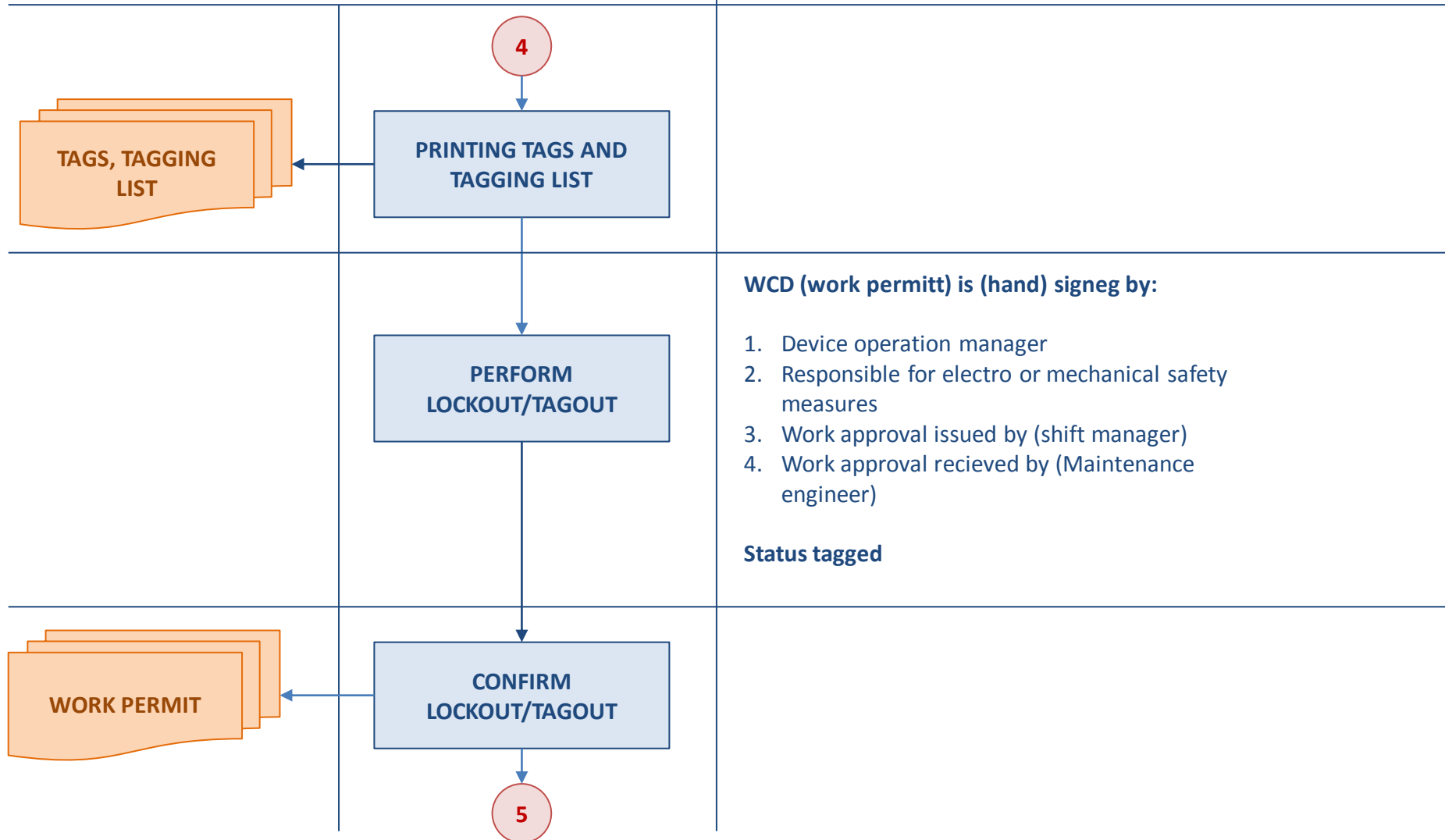
## COMMENT



# SAP PM/WCM PROCESS IN TE-TOL

## PROCESS (STEPS)

## COMMENT



# SAP PM/WCM PROCESS IN TE-TOL

## PROCESS (STEPS)

## COMMENT

5

**PERFORMING  
MAINTENANCE WORK  
(WO STATUS EXEC)**

Work order is released for execution.  
Maintenance work is performed.

**WORK COMPLETED  
NOTIFICATION**

**CREATE WORK  
COMPLETED  
NOTIFICATION**

Determination of person responsible:

1. Maintenance work manager
2. Maintenance department manager
3. Device hand over by
4. Device recieved by
5. Notification interposed by

When all signatures are  
collected – set WO to Work completed

**WCA COMPLETED**

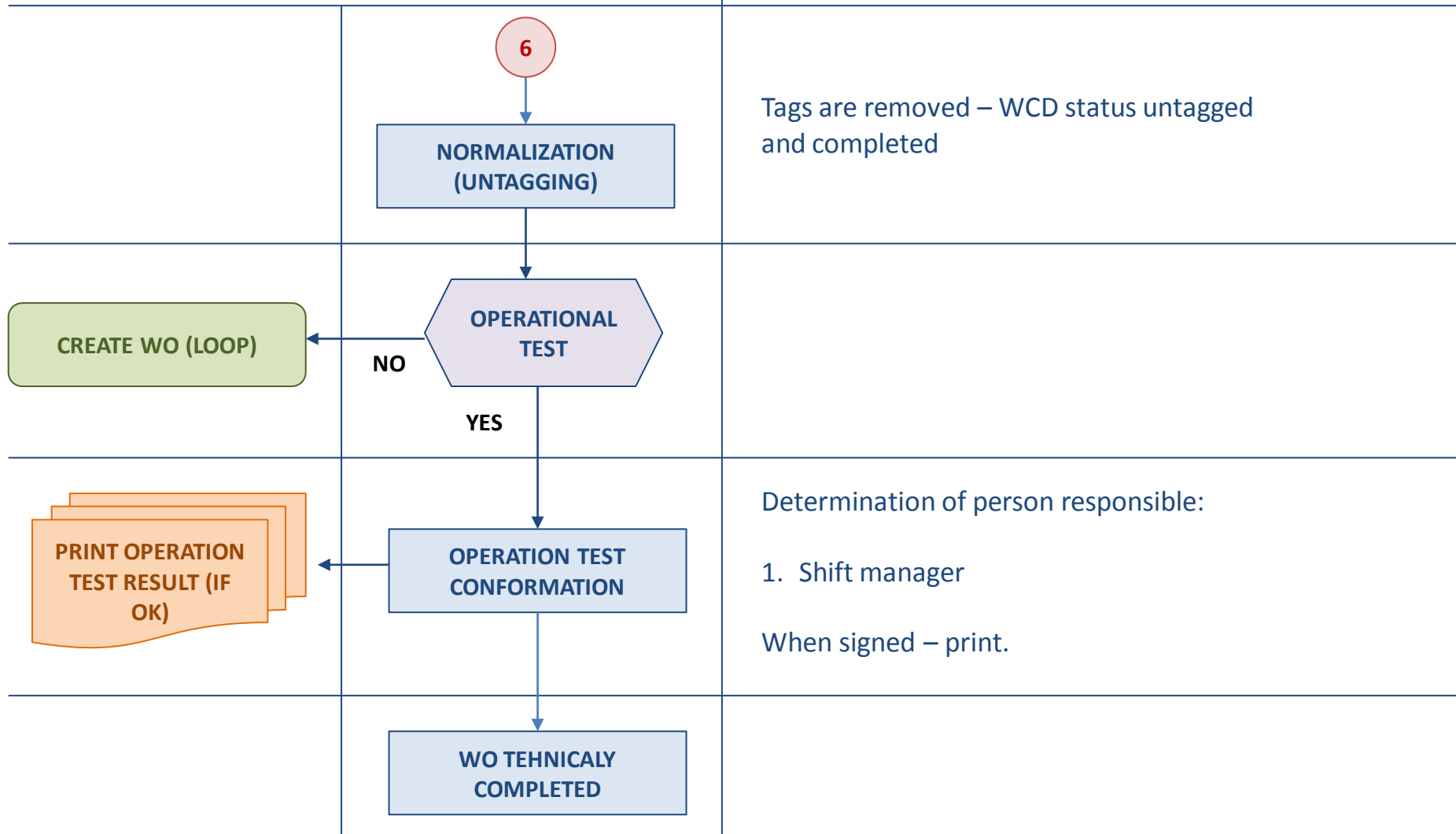
WCA is automatically completed

6

# SAP PM/WCM PROCESS IN TE-TOL

## PROCESS (STEPS)

## COMMENT



Tags are removed – WCD status untagged and completed

Determination of person responsible:

1. Shift manager

When signed – print.

# KEY BENEFITS OF IMPLEMENTING SAP WCM MODULE

**1. POSSIBILITY OF CREATING WCD LIBRARY** (System enables person responsible to create WCD template(s) for each functional location (equipment)).

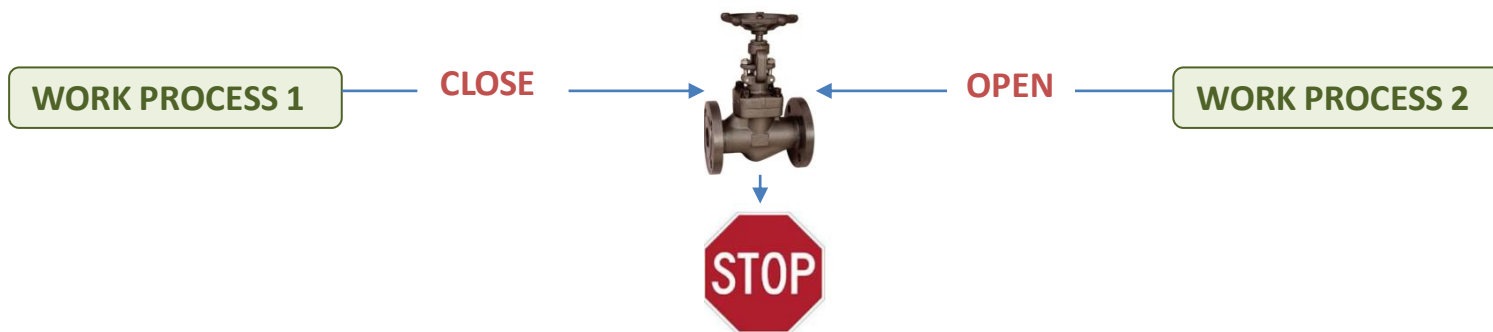


WCD template 1

WCD template 2

WCD template 3

**2. EFFECTIVE USE OF CONFLICT RULES – (Warning system)**



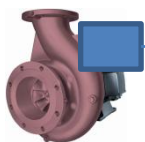
**3. SAP WCM IN FULLY INTEGRATED IN EXISTING PM PROCESSES**

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# SAP PM AND WCM IN TE-TOL: WAY FOWARD

PM

CONDITION BASED MAINTENANCE  
(SCADA/SAP INTEGRATION)



SCADA

SAP PM

WCM

ELECTRONIC CONFORMATIONS OF  
APPROVALS

WCM PROCESS UPGRADE TROUGH  
RELEVANT BADIS

WORKFLOW

CREATE  
NOTIFICATION/WO/WCA

ASSIGN PERSON  
RESPONSIBLE

INBOX

SAP ERP MOBILITY SUPPORT

## ADDITIONAL INFO



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