

Order Processing with WCM Operations

Release ERP 6.0

WCM GmbH

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wcm

Motivation



Maintenance works in complex installations often require high level security measurements.

However, in a task list there are tasks that might require other or no safety measurements.

Thanks to the assignment of the safety measurements in form of permits this process can be shown.

Process Description (1)

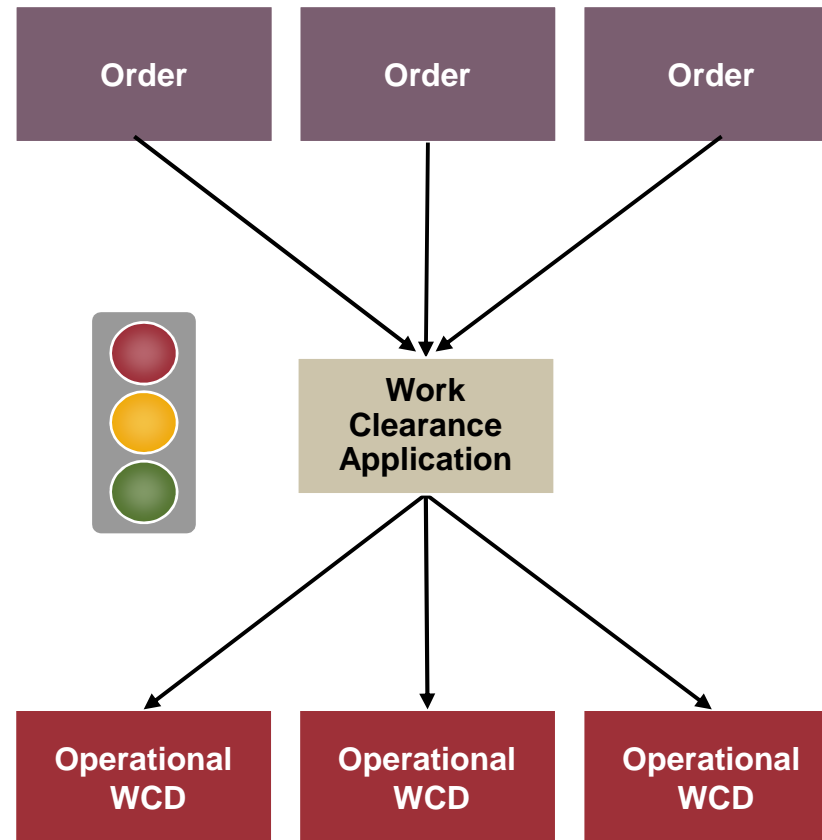
- There are maintenance measures at a pump station. A task list contains an operation for scaffolding. Measures for work safety are required. A lockout/tagout however is not necessary. All other operations require lockout/tagout.
- The person in charge for maintenance plans an order.
- On the basis of the respective technical object, the system realizes that additional safety measurements are necessary.
- Valuation is active.
- The maintenance planner decides that lockout/tagout is necessary.
- A task list will be assigned to the order. An operation contains a WCD template.
- The operations are combined in approval groups.
- The WCM objects are linked with the order.
- If an approval in the work clearance application is granted, the system checks which operation of the order can be carried out.

Process Description (2)

- With the confirmation that the lockout/tagout has been completed, all operations of this approval group can be issued “Released for execution”.
- When the work is finished, the status on the operation can be set „Work completed“.
- As soon as all work has been finished, the process of untagging can be started.

Model

We use the standard model for this process.



Roles

These user roles are involved in this process:

- Maintenance planner



- Safety planner



- Safety engineer



- Operation

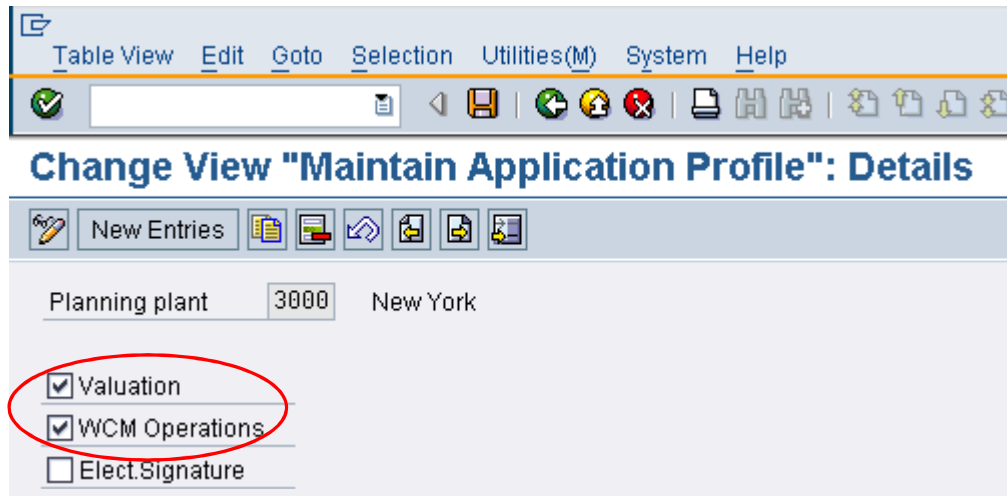


- Maintenance



Detailed Process

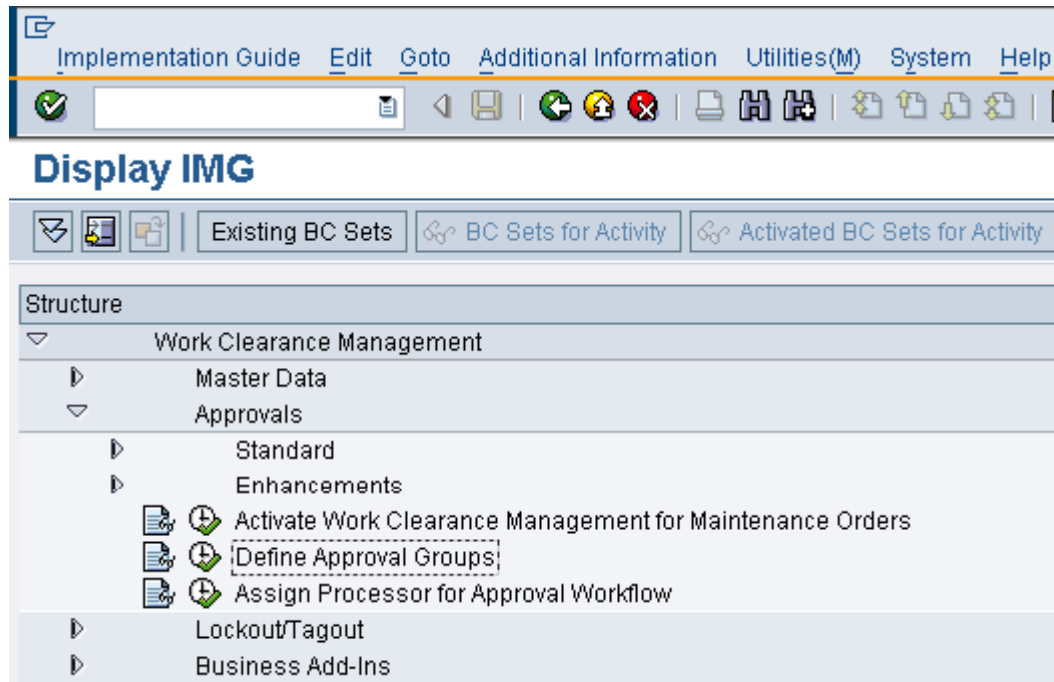
Activate WCM on Operational Level



In the customizing in the application profile for the planning plant 3000 the processes for lockout/tagout and the valuation are activated.

Detailed Process

Assign Approval Groups



In the customizing the approval groups are assigned for the planning plant 3000.

Detailed Process

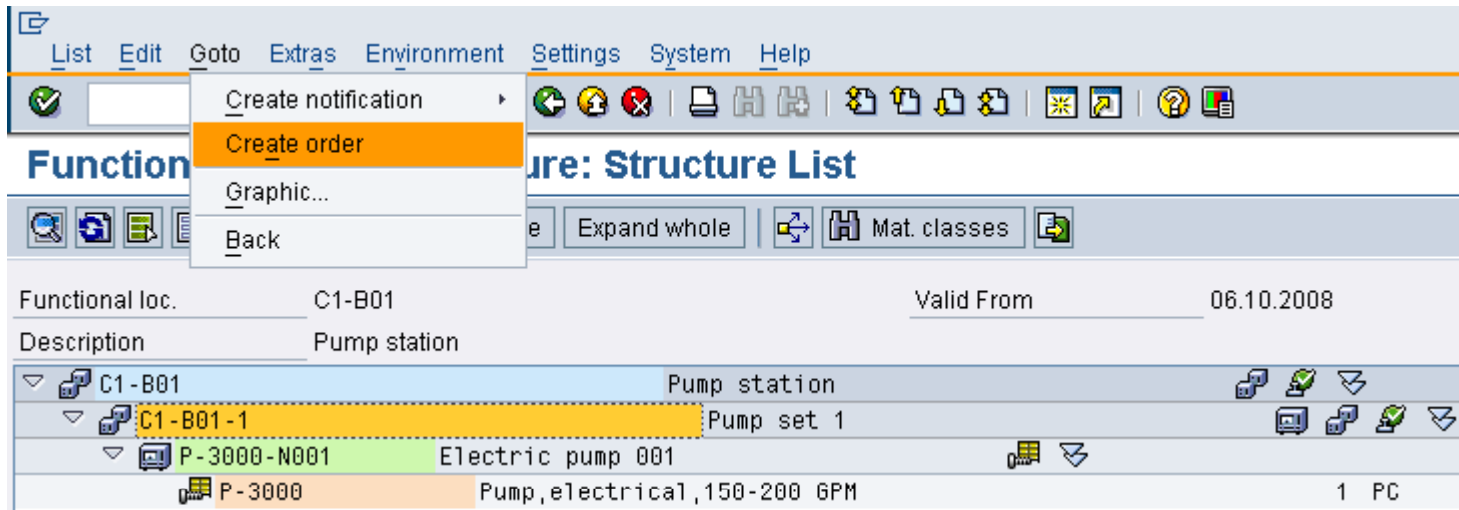
Assign Approval Groups

PIPI	Typ	Typ	Short Text	Permit	Text	Sequence
3000	WA	1	WC Application	A009	Hot Work	1
3000	WA	1	WC Application	A010	Work Safety	2
3000	WA	1	WC Application	ETG	Tagged	3

The permit A009 “Hot Work“, A010 “Work Safety“ and ETG “Tagged“ are assigned to the approval group in plant 3000.

Detailed Process

Create an Order from the Structure List



For the pump set 1 an order is created.

Detailed Process

Assign a Task List

The screenshot shows the SAP 'Create Maintenance Order' (PM01) interface. The menu bar includes 'Order', 'Edit', 'Goto', 'Extras', 'Environment', 'System', and 'Help'. The 'Task list selection' menu is open, showing options like 'Direct entry', 'To reference object', 'General task lists for assembly', 'General task lists for object structure', 'General task lists', and 'Display task lists'. The 'To reference object' option is highlighted. The main form contains fields for 'Order' (PM01), 'Sys.Status' (WCM), 'Person responsible' (PlannerGrp 100), 'Mn.wk.ctr' (MECHMN), and 'Person Resp'. The 'Additional Data' tab is selected, showing fields for 'Notifctn', 'Costs', 'PMActType' (103 Repair), 'SystCond.', and 'Address'.

A task list is assigned to the order. The task list was created for the pump set.

Detailed Process Operation Overview



Order Edit Goto Extras Environment System Help

Create Maintenance Order : Operation Overview

Valuation WCM Operations

Order PM01 %00000000001 WCM Pump Set 1 C1-B01-1

Sys.Status WCM CRTD MANC NTUP

HeaderData Operations Components Costs Partner Objects Additional Data Location

OpAc	SOp	Work ctr	Plant	Co...	StTextK	S...	Operation short text	LT	Work	Un	N...
0010		MECHMNT	3000	PM01			Scaffolding		3,0	HR	2
0020		MECHMNT	3000	WCM			Tagout process for Pump Station		1,0	HR	2
0030		MECHMNT	3000	PM01			Visual check Pump station		0,5	HR	1
0040		MECHMNT	3000	PM01			Check and replace spare parts		1,5	HR	1

The task list contains 4 operations. For the scaffolding no lockout/tagout is necessary.

Detailed Process Valuation – Lockout/Tagout Necessary



Valuation

Application	Valuation	Signature	Created on
WC Application	+	CHWOBBE	06.10.2008

Navigation: < > [] < >

Buttons: [Checkmark] [List] [Print] [No] [Info] [Close]

The safety planner decides that a lockout/tagout (Work Clearance Application) is necessary.

Detailed Process Handle WCM Operations



Order Edit Goto Extras Environment System Help

Create Maintenance Order : Operation Overview

WC Application Valuation **WCM Operations**

Order PM01 %00000000001 WCM Pump Set 1 C1-B01-1

Sys.Status WCM VAL CRTD MANC NTUP

HeaderData Operations Components Costs Partner Objects Additional Data Location

OpAc	SOp	Work ctr	Plant	Co...	StTextK	S...	Operation short text	LT	Work	Un	N...
0010		MECHMNT	3000	PM01			Scaffolding		3,0	HR	2
0020		MECHMNT	3000	WCM			Tagout process for Pump Station		1,0	HR	2
0030		MECHMNT	3000	PM01			Visual check Pump station		0,5	HR	1
0040		MECHMNT	3000	PM01			Check and replace spare parts		1,5	HR	1

The safety planner assigns the operations to the approval group. He pushes the button

WCM Operations .

Detailed Process WCM Operations



WCM-Relevant Operations

Operatns Group

WCM Object

OpAc	SOp	Operation short text	System Status	Approval ...	Created by	Created on
0010		Scaffolding	WCM CRTD			
0020		Tagout process for Pump	WCM CRTD			
0030		Visual check Pump station	WCM CRTD			
0040		Check and replace spare	WCM CRTD			

Navigation icons: back, forward, search, etc.

Bottom toolbar: Checkmark, Print, Copy, Paste (highlighted with a red circle), Undo, Redo, Close.

For the scaffolding only the “Work Safety” permit is necessary.

Detailed Process WCM Operations



WCM-Relevant Operations

Operatns Group

Approval Group 0010

Permit	Text	Valuation	Created by	Created on	Created at
A009	Hot Work	-	CHWOBBE	06.10.2008	16:34:23
A010	Work Safety	+	CHWOBBE	06.10.2008	16:34:09
ETG	Tagged	-	CHWOBBE	06.10.2008	16:34:23

Navigation icons: back, forward, search, etc.

Buttons: [Checkmark] [List] [Print] [Yes] [No] [Info] [Close]

The safety planner creates an approval group. He defines that the permit A010 “Work Safety” is required. For all other permits he defines that they are not required.

Detailed Process WCM Operations



WCM-Relevant Operations

Operatns Group

WCM Object

OpAc	SOp	Operation short text	System Status	Approval ...	Created by	Created on
0010		Scaffolding	WCM VAL CRTD	0010	CHWOBBE	06.10.2008
0020		Tagout process for Pump	WCM CRTD			
0030		Visual check Pump station	WCM CRTD			
0040		Check and replace spare	WCM CRTD			

All other operations require the same permits and are therefore chosen all at once and assigned to an approval group.

Detailed Process WCM Operations



WCM-Relevant Operations

Operatns Group

Approval Group 0020

Permit	Text	Valuation	Created by	Created on	Created at
A009	Hot Work	-	CHWOBBE	06.10.2008	16:36:54
A010	Work Safety	+	CHWOBBE	06.10.2008	16:36:52
ETG	Tagged	+	CHWOBBE	06.10.2008	16:36:52

Navigation icons: back, forward, search, etc.

Buttons: Yes, No, Info, Cancel

To these operations the permits “A010 - Work Safety” and “ETG - Tagged” are assigned.

Detailed Process

Generate WCM Objects Automatically



Assignments - Display WC applications









WC App. Short Text Long Text
Equipment ObjList Catalog
Approvals System status UseStatus


List contains no data

Selection

WCM Object	Valuation
<input checked="" type="checkbox"/> WC Application	+
<input checked="" type="checkbox"/> Operational WCD	

☒ ☐



On the basis of the valuation, the maintenance planner will get the proposal for a Work Clearance Application and an Operational WCD. The icon  starts the automatic creation of WCM objects.

Detailed Process Overview of the Multilevel List



Multi-Level List Editing - Change

3000

- 817502 WCM Pump Set 1 C1-B01-1 06.10.2008-27.10.2008 C1-B01-1 Valuation WCM Operations
WCM VAL REL NMAT PRC SETC
- 1000000000302 WCM Pump Set 1 C1-B01-1 06.10.2008-27.10.2008 C1-B01-1
CRTE ○○●
- 3000000000302 Tagout/Lockout Pump set C1-B01-1 06.10.2008-09.04.2009
CRTE ●○○

Color Legend

- Order
- WC applications
- Operational WCDs
- Valuation
- WCM Operations
- Catalogs

In the system the assignment of the Work Clearance Application and the Operational WCD is shown. The safety engineer checks the planned switchings and sets the status “prepared”.

Detailed Process Grant Approvals



WC Application Edit Goto Extras System Help

Change WC Application

Permit ☐ Order ☐ Operational WCDs ☐

Application 100000000302 WCM Pump Set 1 C1-B01-1

Status PREP

Approvals - WC Application

Permit	Cat	Pr	LT	PI	Approv. by	Ent. by	Created on	Ente
A009	W			✓	WOBBE	CHWOBBE	06.10.2008	16:4
A010	S							00:0
BT6	1							00:0
ET6	2							00:0

Issue Revoke

As a first approval A009 “Hot Work” is granted. This however is not relevant for the processes for lockout/tagout. As a second approval “A010 - Work Safety” is granted.

Detailed Process Grant Approvals



WC Application Edit Goto Extras System Help

Change WC Application

Permit ☐ Order ☐ Operational WCDs ☐

Application 100000000302 WCM Pump Set 1 C1-B01-1

Status PREP

Approvals - WC Application

Permit	Cat	Pr	LT	PI	Approv. by	Ent. by	Created on	Ente
A009	W			✓	WOBBE	CHWOBBE	06.10.2008	16:4
A010	S			✓	WOBBE	CHWOBBE	06.10.2008	16:4
BT6	1							00:0
ET6	2							00:0

Issue Revoke

The approval “A010 - Work Safety” is the prerequisite to start the operation „Scaffolding“ in the order.

Detailed Process Grant Working Permits



Order Edit Goto Extras Environment System Help

Change Order: Initial Screen

Header data Operations Components Costs Additional data Planning Control

WCM-Relevant Operations

Operatns Group

WCM Object 100000000302 WCM Pump Set 1 C1-B01-1

Approvals	OpAc	SOp	Operation short text	System Status	Approval	Created by
	0010		Scaffolding	WCM VAL REL	0010	CHWOBBE
	0020		Tagout process for Pump	WCM VAL REL	0020	CHWOBBE
	0030		Visual check Pump station	WCM VAL REL	0020	CHWOBBE
	0040		Check and replace spare	WCM VAL REL	0020	CHWOBBE

Released for execution

The traffic light of the first operation is now green. The operation can now be issued "Released for execution". The traffic light for all other operations is yellow. This means that not all other permits have been granted yet.

Detailed Process Lockout/Tagout



Operational WCD Edit Goto Extras Switch System Help

Change Operational WCD: Switching Screen

Tagged

WC Document 300000000302 Tagout/Lockout Pump set C1-B01-1

Status PREP PROC PTAG

CONF	ITG	BTG	PTAG	ETG	BTUG	PTST	ETUG	BUG	EUG	PROT
0	0	0	3	0	0	0	0	0	0	0

1	2	Counter	IC	Technical Object	Short Text	O	Tag. Cond.	TT	TS	Untag. Cond.	UT	US
		10	F	C1-B01-1A	Valve 1	M	CLOSED	A	10	OPEN	A	10
		20	F	C1-B01-1B	Valve 2	M	OPEN	A	30	OPEN	A	30
		30	E	P-3000-N001	Electric pump 001	E	OFF	A	20	ON	A	20

The single objects are tagged out by the operation. The tagging is confirmed in the system.

Detailed Process Approvals



WC Application Edit Goto Extras System Help

Change WC Application

Permit ☐ Order ☐ Operational WCDs ☐

Application 100000000302 WCM Pump Set 1 C1-B01-1

Status PREP

Approvals - WC Application

Permit	Short Text	Cat	Pr	LT	PI	Approv. by
A009	Hot Work	W			✓	WOBBE
A010	Work Safety	S			✓	WOBBE
BT6	Tag	1			✓	
ET6	Tagged	2			✓	

Revoke

With the confirmation of the switching in the Operational WCD, the approval “ETG - Tagged” is automatically been granted in the Work Clearance Document and in the Work Clearance Application. This is the prerequisite to start the work of all other operations.

Detailed Process WCM Operations



Order Edit Goto Extras Environment System Help

Change Order: Initial Screen

Header data Operations Components Costs Additional data Planning Control

WCM-Relvant Operations

Operatns Group

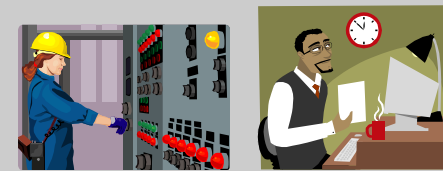
WCM Object: 100000000302 WCM Pump Set 1 C1-B01-1

Approvals	OpAc	SOp	Operation short text	System Status	Approval ...	Created by
	0010		Scaffolding	WCM EXEC REL	0010	CHWOBBE
	0020		Tagout process for Pump	WCM EXEC REL	0020	CHWOBBE
	0030		Visual check Pump station	WCM EXEC REL	0020	CHWOBBE
	0040		Check and replace spare	WCM EXEC REL	0020	CHWOBBE

Work completed

The traffic lights of all operations are now green. Safety is given and the operations are „Released for execution.“ The person in charge for maintenance carries out all maintenance tasks. As soon as the work has been finished, the operations are marked as completed (Status WOCO – Work completed).

Detailed Process Overview of the Multilevel List



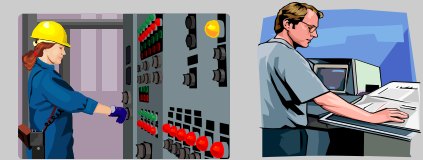
Multi-Level List Editing - Change

3000

- 817502 WCM Pump Set 1 C1-B01-1 06.10.2008-27.10.2008 C1-B01-1 Valuation WCM Operations
WCM WOCO REL NMAT PROC SETC
- 100000000302 WCM Pump Set 1 C1-B01-1 06.10.2008-27.10.2008 C1-B01-1
PREP CLSD ○○■
- 300000000302 Tagout/Lockout Pump set C1-B01-1 06.10.2008-09.04.2009 C1-B01-1
PREP PROC UNT ETG ○○■

If all operations are finished, the Work Clearance Application gets the status „Closed“. The operators of the plant can now start the untagging process.

Detailed Process Overview of the Multilevel List



Multi-Level List Editing - Change

3000

- 817502 WCM Pump Set 1 C1-B01-1 06.10.2008-27.10.2008 C1-B01-1 Valuation WCM Operations
WCM WOCO REL NMAT PRC SETC
- 100000000302 WCM Pump Set 1 C1-B01-1 06.10.2008-27.10.2008 C1-B01-1
PREP CLSD ○○■
- 300000000302 Tagout/Lockout Pump set C1-B01-1 06.10.2008-09.04.2009 C1-B01-1
PREP UNT EUG CLSD ○○■

The untagging has been confirmed and the safety planner closes the Operational WCD. The order is finished technically and commercially.

Questions and Answers



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