

Case Study Enterprise Asset Management (EAM)

This case study explains an integrated enterprise asset management process in detail and thus fosters a thorough understanding of each process step and underlying SAP functionality.

Product

SAP ERP
G.B.I.
Release 6.07

Level

Beginner

Focus

Enterprise Asset Management

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Version

2.40

Last Update

April 2015

MOTIVATION

Based on continuous automatization of production processes, availability and quality of manufacturing facilities and also plant maintenance become more important. Plant maintenance comprises the three following activities: inspection, maintenance and repair.

The focus is not only on availability of manufacturing facilities but rather further aspects like system safety, product quality, procedure optimization and environment protection play a decisive role.

SAP offers a flexible facility management and maintenance system to strengthen these factors and increase the success of a company.

PREREQUISITIES

Before you use this case study, you should be familiar with navigation in the SAP system.

In order to successfully work through this case study, it is not necessary to have finished the EAM exercises. However, it is recommended.

NOTES

This case study uses the Global Bike Inc. (G.B.I.) data set, which has exclusively been created for SAP UA global curricula.

Process Overview

Learning Objective Understand and perform an integrated maintenance process. **Time** 60 min

Scenario It is summer and line production get into top gear for the upcoming event „Race Across America“. A sudden and unpredictable malfunction at a circulation fan in air conditioning system break the Global Bike Inc. company sweat. It is not just that two symptoms of sick building syndrome are met, but also the production is not running at 100%. In order to process a complete maintenance process you will take on different roles within the GBI company to solve the problem.

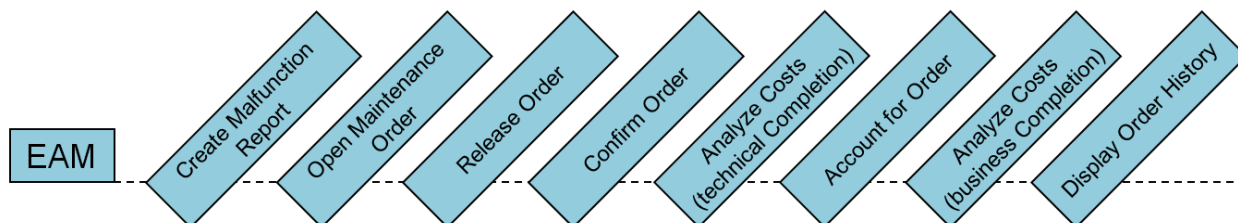
Employees involved

Jun Lee (Production Planner)
 Jermain Kumins (Production Manager)
 Ozzy Sandall (Shop Floor Worker)
 Pamela Ross (Shop Floor Worker)

A fan in the production facility is defective. As a Shop Floor Worker it is your task to create the malfunction report. Before you create the order, you have to locate the exact defective part and deposit the technical details for the responsible technician. After that you have to plan the operations till the final repair of the devices. The defective parts shall be exchanged und followed by a function test. After the successful installing of the spare parts (filter) you can finish the order technically and commercial. Finally you can check if the maintenance order inclusive all tasks was carried out correctly.

Process description

The following graphical illustration depicts the whole process (8 tasks).



Step 1: Create Malfunction Report

Task Create a malfunction report.

Time 10 Min.

Description Use the SAP Easy Access Menu to create a malfunction report and a solution.

Name (position)

Mobile inventory (e.g. machines, circulation fan, PCs, vehicles) is defined as equipment in the SAP system. In general, equipment is allocated to a technical place that has got immobile character (e.g. streets, power plant, pipe systems).

Equipment

A malfunction report normally is created by the corresponding requesting person (e.g. production employee). A malfunction report is used for messages about malfunctions and problems.

Malfunction Report

Please use the following menu path to create a malfunction report:

Menu Path


Logistics ▶ Plant Maintenance ▶ Maintenance Processing ▶ Notification ▶ Create (Special) ▶ Malfunction Report

Now you should see the following screen.

The screenshot displays the SAP 'Create PM Notification: Malfunction Report' interface. At the top, there are navigation icons and a 'Partner' field. Below this, there are input fields for 'Notification' (containing '00000000001 M2'), 'Notific. Status' (containing 'OSNO'), and 'Order'. A tabbed menu is visible with tabs for 'Notification', 'Reference object', 'Malfunction, breakdown', 'Location data', 'Items', 'Tasks', and 'Activities'. The 'Reference object' tab is active, showing fields for 'Functional loc.', 'Equipment', and 'Assembly'. Below this is the 'Subject' section with fields for 'Coding', 'Description', and 'Subject Long Text'. The 'Description' field is currently empty.

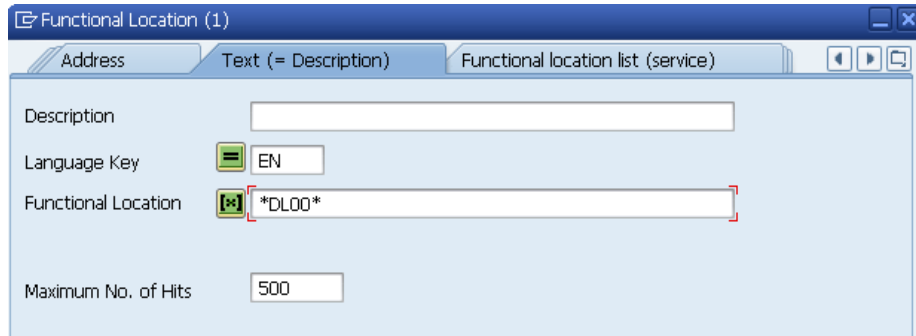
In the description field enter **Circulation fan defective** besides Notification. Fill in the field Functional loc. in the Reference object area. Therefore use the input help or press F4.

Circulation fan defective

Choose the tab *Text (= Description)* with help of the  button and enter ***DL00*** as Functional Location Check if **EN** is chosen as Language Key.

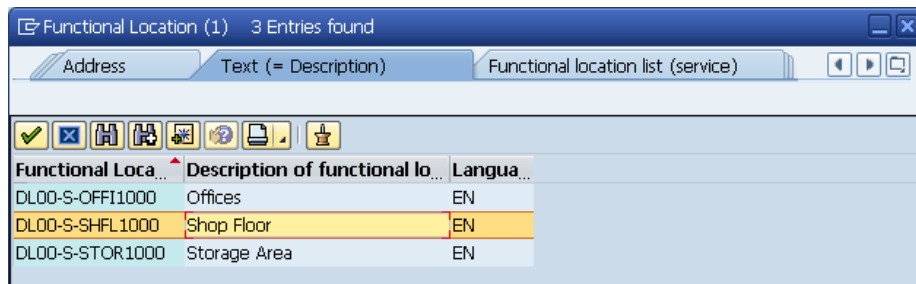
DL00

EN





Press Enter. A list is produced, which has the abbreviation DL00 as structure indicator (similar to ID). Double click at **Shop Floor** to choose this as Functional Location.

Shop Floor



Functional Loca...	Description of functional lo...	Langua...
DL00-S-OFF1000	Offices	EN
DL00-S-SHFL1000	Shop Floor	EN
DL00-S-STOR1000	Storage Area	EN

To choose the equipment, use F4 again. Click the button  to switch to the tab *Equipment by equipment list* (a new window opens) and enter **10000###** (exchange ### for your number e.g. 012) in the first field besides equipment. The rest of the fields can be left blank. Now press . Afterwards (if the object was not defined exactly) double click on the equipment (**Circulation Fan**) and press Enter to confirm your entries up to then.

10000###

Circulation Fan

Furthermore enter the following in the Notification tab. In the Subject Area enter for Subject Long Text **Circulation fan does not work correctly** with the request **Exchange Filter**.

Create PM Notification: Malfunction Report

Notification %00000000001 M2 circulation fan detective

Notific. Status OSNO

Order

Notification Reference object Malfunction, breakdown Location data Items Tasks Activities

Reference object

Functional loc. DL00-S-SHFL1000 Shop Floor

Equipment 10000000 Circulation Fan

Assembly

Subject

Coding

Description circulation fan detective

Subject Long Text

07/31/2013 12:47:56 GBI-000 (GBI-000)

Circulation fan does not work correctly

Exchange Filter

In the Responsibilities Area enter **P00/DL00** as Planner Group, **MANT1000/DL00** as Main WorkCtr. and **GBI-###** as reported by.

P00/DL00
MANT1000/DL00
GBI-###

Afterwards enter in the Item Area **VENT/1003** (Circulation Fan Objects / Filter) as Object part and add **VENT/1002** (Filter Wear) as Damage. Use F4 to choose **Normal Wear and Tear** (PM-2000/1004) as Cause Code. Enter **High dust accumulation** as Cause text:

VENT / 1003
VENT / 1002
PM-2000 / 1004
High dust accumulation

Compare your entries with the following screenshot.

Responsibilities

Planner group P00 / DL00 Dallas Group

Main WorkCtr MANT1000 / DL00 Maintenance

Department resp.

Person respons.

Reported by GBI-000 Notif.date 07/31/2013 12:31:40

Malfunction data

Malfunct. start 07/31/2013 12:31:40 Breakdown

Malfunct.end 00:00:00 Breakdown dur. H

Item

Object part VENT 1003 Filter

Damage VENT 1002 Filter Wear

Text

Cause code PM-2000 1004 Normal Wear and Tear

Cause text High dust accumulation

Entry 1 frm 0

In the *Activities* tab use F4 to choose **PM01** as Code group and set the Activity code to **Replace (Spare)**. Enter the Activity text **Replace Filter**.


PM01
Replace (Spare)
Replace filter

Create PM Notification: Malfunction Report

Notification: %000000000001 M2 circulation fan detective
Notific. Status: OSNO
Order:

Notification | Reference object | Malfunction, breakdown

No.	Ac...	Activity code text	Activity text	A
	2	Replace (Spare)	Replace Filter	

Click , but do not leave the window.



Step 2: Open Maintenance Order from Malfunction Report

Task Open a Maintenance order from your malfunction report.

Time 10 Min.


Descriptio Use the SAP Easy Access Menu to create an order directly from the malfunction report.


Name (Position) Jun Lee (Production Planner)

If you stayed in the last window as it was required, you will be able to go on with the next step now. Otherwise use the following menu path to create a maintenance order from a malfunction report:

Menu path

Logistics ► Plant Maintenance ► Maintenance Processing ► Notification ► Change

To open a notification from the malfunction report click  besides the field Order.

A new window appears where you enter **PM01** (Maintenance order) as Order Type, **DL00** as Planning plant, **BI00** as Business Area and **MANT1000/DL00** as Main work center. Afterwards click on .

PM01
DL00
BI00
MANT1000 / DL00

Change to the tab *Operations* and exchange the original description Circulation Fan defective for **Exchange filter immediately**. For Work enter **2**, for unit (Un) **H**, Number **1**, Dur. **2** and a further entry for unit (Un) **H**. Choose **Calculate duration** from the Dropdown Menu and enter **MLABOR** as ActTyp.

Exchange filter immediately
2 hrs
1 hrs
2 hrs
Calculate duration
MLABOR

Create Maintenance order : Operation Overview

Order: PM01 / 000000000001 | circulation fan defective

Sys.Status: CRTD MANC

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

Op...	Plant	Co...	STTextK	S...	Operation short text	LT	Actual work	Work	Un	N...	Dur.	Un	Cckey	ActTyp	Recipie
0010	DL00	PM01			Exchange filter immediately		0.000		2H	1	2H	1	Calculate ...	MLABOR	
0020	DL00	PM01					0.000								
0030	DL00	PM01					0.000								

Note Work effort relates to the work that must be done. The number must be related to the employees. The duration defines the time when the object can not be used for work. So, if the work effort is 8hrs and 2 people are working on it, work will be done in 4hrs. Another example is the varnishing of an object. Here the effort is lower than the duration since the object needs to dry some time and no work is done at the object within the drying process.

Open another Operation by clicking in a new line. Enter **0020** for OpAc, **Functional test** as Operation short text and plan duration for the work for **15 min**. Enter a Number of **1** and a Duration of **15 min**. Choose **Calculate duration** as CcKey and **MLABOR** as ActTyp.

0020
15 min
1
15 min
Calculate duration
MLABOR

Create Maintenance order : Operation Overview


Order: PM01 %00000000001 circulation fan detective

Sys.Status: CRTD MANC

HeaderData Operations Components Costs Partner Objects Additional Data

Op...	LT	Actual work	Work	Un	N...	Dur.	Un	CcKey	ActTyp	Reci
0010		0.000		2H	1	2H	1	Calculate ...	MLABOR	
0020		0.000		15MIN	1	15min	1	Calculate ...	MLABOR	

Press Enter or click  to confirm your entries.

Now mark your Operations and choose **Internal**. You will get to operation **0010** automatically. Use the F4 help to choose the corresponding spare part in the field Component. Therefore select tab *Material Number/Material Description* using the button  and enter the material **FLTR1###** (exchange ### by your number).

FLTR1###

Material Number (1)

Material Number/Material Description Material by old material number

Material description:

Language Key:

Material:



Maximum No. of Hits:

Filter
1
L
MI00


As a description enter **Filter** and choose **1** for amount Reqmt Qty and change the position type IC (item category) to **L** (Stock item). As storage location (SLoc) choose Miscellaneous (**MI00**) using the F4 help. Thereby the plant in Dallas appears automatically. Pay attention to the fact that the amounts are of positive value.


The second operation needs no other components and therefore no further entries are necessary.

Components		Relationships						
Itm	Component	LT	Reqmt Qty	U.	IC	S.	SLoc	Plnt
0010	FLTR1000			1	L		MI00	DL00
0020								
0030								
0040								

Choose  and afterwards click  to save the order. Write down the order number.

Order number:

 Order 4000001 saved with notification 10000000

Click . Your answer to the question appearing now must be no. (Since you have just saved your entries, no data can get lost).

Step 3: Release Order and Display Documents

Task Release the Order and Display Order Documents.

Time 10 Min.

Description Use the SAP Easy Access Menu to release the order and to print the documents for the maintenance person.

Name (Position) Jun Lee (Production Planner)

Note Different documents can be displayed.

Use the following menu path to release the order and to display documents:

Menu path

Logistics ► **Plant Maintenance** ► **Maintenance Processing** ► **Order**
► **Change**


If the SAP system did not propose an order, enter the order number yourself. You have written down the number previously.

If you do not know your number anymore, you can use the F4 help to search for it. Choose the tabs *PM orders using order list* and as responsible enter **GBI-###** in the area *General Data/Administrative Data* (exchange ### for your number).

GBI-###

The screenshot shows the 'Change Order: Initial Screen' in SAP. The title bar reads 'Change Order: Initial Screen'. Below the title bar are several tabs: 'Header data', 'Operations', 'Components', 'Costs', 'Additional data', 'Planning', and 'Control'. The 'Order' field is highlighted with a red box and contains the value '4000001'. To the right of the field is a small icon of a document with a magnifying glass.

Press Enter or choose  to get to the next page.



Choose  to release the order.

Note The order is released **after** saving it.


Due to the fact that the order is released now, you can print and display the order documents now.

Therefore choose:


Order ► Print ► Order


First, demarcate all documents using  and display different documents afterwards by marking the document and clicking on .


Note On the control card, you can see your user, the order and the operations with the complete data.

Choose  to get back to the previous view.

There are 2 possibilities to finally release the order:

Press  Print/Fax to print the desired documents. As soon as you pressed the button, the order will be released. Furthermore a dialog window opens in which you can print the desired documents.

Alternatively, you can release the order by clicking .

Now click  to get back to the SAP Easy Access Menu.



Step 4: Confirm Order

Task Confirm the order.

Time 10 Min.

Description Use the SAP Easy Access menu to confirm the order.

Name (Position) Ozzy Sandall (Shop Floor Worker)


The overall completion confirmation is used to foster further data besides working time. For instance used materials, information about errors, executed work and so on.

Use the following menu path to confirm the order:

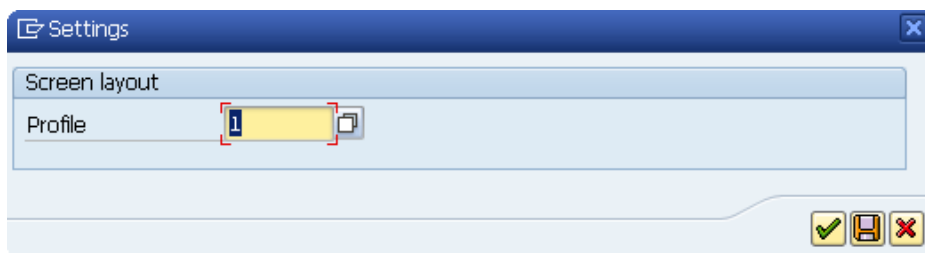
Menu Path

**Logistics ▶ Plant Maintenance ▶ Maintenance Processing ▶
Completion Confirmation ▶ Entry ▶ Overall Completion
Confirmation**

The display should now show the previously prepared order. If this is not the case, you will have to search for the order using F4.

Choose Extras ▶ Settings and enter **1** (Maintenance with order number) in the field to save the profile using .

1



Now enter **0010** as operation under the order and press Enter to confirm your entry.

0010

Time confirmation, Goods Movements and Causes are entered automatically. In the field Act. Work enter **2** hrs and mark **F** (Final Confirmation). And **N** (No Remain work)

2
Mark F
Mark N

Overall Completion Confirmation

Measurement/Counter Readings

Order 4000001 circulation fan detective Tech.completion
 Oper./Act. 0010 Exchange filter immediately

Time confirmation

Confirmation	Op...	Su...	O. Act. Work	U...	F	C	N	V
17	0010		2	H	✓			✓

Act.Data

Goods movements for operation 0010

Goods Movements Overview

Material	Description	Quar
FLTR1000	Circulation Fan Filter	

Entry 1 Frm 1

Choose and afterwards to save. Repeat the steps for operation **0020**. Therefore enter **15 min** as Act. Work and mark **F** and **N**.

Repeat for 0020
15 min

Note Both operations (and therefore the order) were confirmed. This means that you have finished your work. You have met the targeted time and have taken a filter from the storage location.

Click to get back to the SAP Easy Access Menu.



Step 5: Analyze Final Costs and Technical Completion

Task Analyze the final costs.

Time 5 Min.

Description Use the SAP Easy Access Menu to execute a cost analysis and to finish the order technically.

Name (Position) Jun Lee (Production Planner)

Use the following menu path to execute a cost analysis and to finish the order technically:

Menu Path

Logistics ► **Plant Maintenance** ► **Maintenance Processing** ► **Order** ► **Change**

The number of your previously created order will be proposed by the system. If the system should not propose the number, search the order number using the F4 help.

Order Number

Now choose **Costs**.

You will get an overview of actual planned costs and effective costs.

The screenshot displays the SAP S/4HANA 'Change Maintenance order 4000001: Cost Overview' dialog. The order is for 'circulation fan detective' with system status 'REL CNF PRT GMP'S MANC PRC'. The 'Costs' tab is active, showing estimated costs of 0.00 USD. Below the tabs, there are buttons for 'Rep. Plan/Act.' and 'Rep. Budget/Commit.'. A table at the bottom provides a cost overview:

Group/Ds...	Est. costs	Plan costs	Act. costs	C.
Costs	0.00	200.00	225.31 U...	
•	0.00	200.00	225.31 U...	

To finish the order technically, choose .

In the dialog window enter the **current date** and **current time** as MalEnd and confirm with .

current date and
current time

Complete

Reference date 07/31/2013
Reference time 13:46:32
 Complete notifictrns

Notification

Malfnctn data Damage Notif. dates

Malfnctn start 07/31/2013 13:06:26 Breakdown
Malfnctn end 07/31/2013 13:47:50 Breakdown dur. H

Usage list

Note The system status of the order will be changed and the order is saved automatically.

Click  to get back to the SAP Easy Access Menu.



Step 6: Account for Order

Task Account for the created Order.

Time 5 Min.

Description Use the SAP Easy Access Menu to account the accrued costs with the settlement receiver.

Name (Position) Jun Lee (Production Planner)

Use the following menu path to account for the order:

Menu Path

Logistics ▶ **Plant Maintenance** ▶ **Maintenance Processing** ▶ **Completion** ▶ **Individual Processing** ▶ **Settle**

Choose **Extras** ▶ **Set Controlling Area** and enter **NA00** as Controlling Area.

NA00



If your order number does not appear, either enter it yourself or search for it using F4. Additionally, make the following entries:


Enter the **current month** as Settlement period and the **current year** as Fiscal Year. Make sure that the Processing type is set to **automatic**.

current month
current year
automatic

Demarcate **Test Run** and click .

demarcate Test Run

Actual Settlement: Order

 Settlement Rule

Order: 4000001



Parameters


Settlement period	07	Posting period	
Fiscal Year	2013	Asset Value Date	
Processing type	1 Automatic		

Processing Options

Test Run

Check trans. data

Actual Settlement: Order Basic list		
 		
Selection		
Selection Parameters	Value	Name
Order	4000001	circulation fan detective
Period	007	
Posting period	007	
Fiscal Year	2013	
Processing type	1	Automatic
Posting Date	07/31/2013	
Controlling Area	NA00	GBI North America
Currency	USD	United States Dollar
Value date	07/31/2013	
Processing Options		
Selection Parameters	Value	
Execution type	Settlement executed	
Processing mode	Update run	
Processing completed with no errors		
Processing category	Σ	Number
Settlement executed		1
No change		
Not relevant		
Inappropriate status		
Error		
		1

Click  to get to the detailed list of settlement.

Click  to get to the SAP Easy Access Menu.



Step 7: Analyze Costs and Finish Order

Tasks Analyze costs and finish order.

Time 5 Min.

Description Use the SAP Easy Access Menu to execute the cost analysis and to finish the order.


Name (Position) Jun Lee (Production Planner)

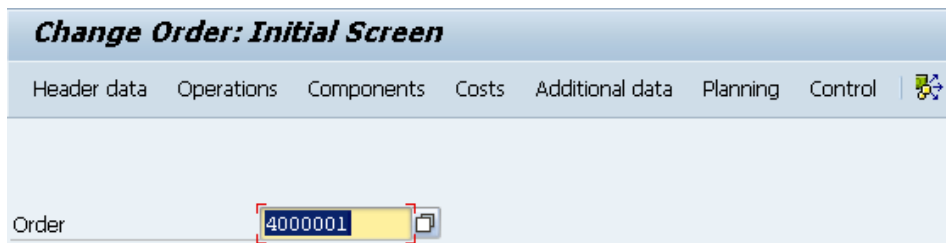
Use the following menu path to analyze costs another time and finish the order:

Menu path

Logistics ▶ **Plant Maintenance** ▶ **Maintenance Processing** ▶ **Order** ▶ **Change**

The number of your order should be proposed. If this is not the case, search for your order number using F4.

Afterwards choose .



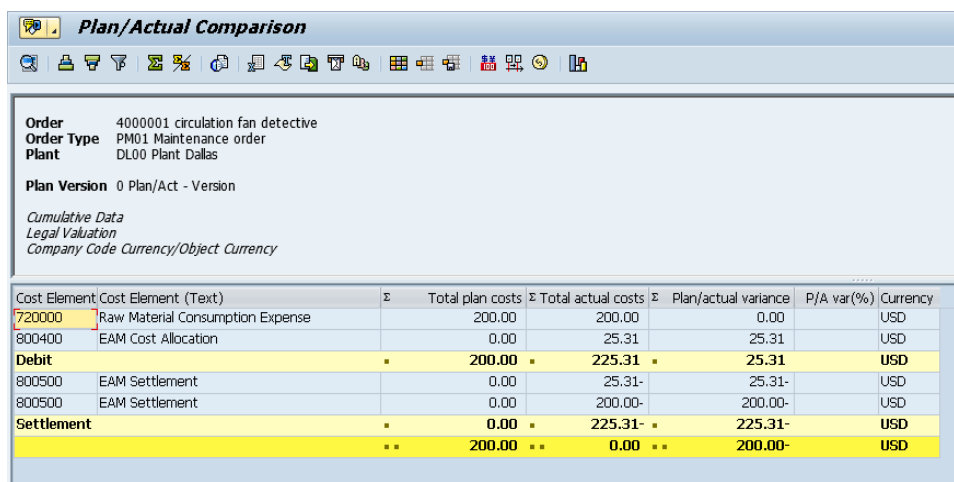
Change Order: Initial Screen

Header data | Operations | Components | Costs | Additional data | Planning | Control

Order: 4000001

Note You will get a message that the document is finished and therefore no changes will be possible. This is done due to the technical closure.

To display the relief of the order using the settlement choose *Additions Extras* ▶ **Cost reports** ▶ **Planned/actual comparison**.




Plan/Actual Comparison

Order: 4000001 circulation fan detective
 Order Type: PM01 Maintenance order
 Plant: DL00 Plant Dallas
 Plan Version: 0 Plan/Act - Version

Cumulative Data
 Legal Valuation
 Company Code Currency/Object Currency


Cost Element	Cost Element (Text)	Total plan costs	Total actual costs	Plan/actual variance	P/A var(%)	Currency
720000	Raw Material Consumption Expense	200.00	200.00	0.00		USD
800400	EAM Cost Allocation	0.00	25.31	25.31		USD
	Debit	200.00	225.31	25.31		USD
800500	EAM Settlement	0.00	25.31-	25.31-		USD
800500	EAM Settlement	0.00	200.00-	200.00-		USD
	Settlement	0.00	225.31-	225.31-		USD
		200.00	0.00	200.00-		USD



Choose  to get back to the previous window.

Now click Complete (business) to update the system status of the order and save it.

Note After the order has been finished commercially, no further costs can be added.

Click  to get back to the SAP Easy Access Menu.



Step 8: Display Order History

Task Display the order history for your equipment.

Time 5 Min.

Description Use the SAP Easy Access Menu to see a detailed history about the equipment.

Name (Position) Jun Lee (Production Planner)


Use the following menu path to display the order history:

Menu path

Logistics ► **Plant Maintenance** ► **Maintenance Processing** ►
History ► **Order List** ► **Display**

In the following window mark **Completed** and for equipment enter **10000###** (exchange ### for your number) and choose the period from **01/01 current year** up to **today**.

mark completed
10000###
01/01/2012
Today's date

Press F8 or click  alternatively.

Your order should be displayed automatically. However, if there is more than one order for your equipment please select the order you just finished and choose **Order**.

Display Maintenance order 4000001: Central Header

Order: PM01 4000001 circulation fan detective

Sys.Status: CLSD CNF PRT GMP'S MANC PRC SETC

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

Person responsible

PlannerGrp: P00 / DL00 Dallas Group

Mn.wk.ctr: MANT1000 / DL00 Maintenance

Person resp... 0

Notifctn: 10000000

Costs: 0.00 USD

PMActType: 001 Inspection

SystCond.

Address

Dates

Bsc start: 07/31/2013 Priority:

Basic fin.: 07/31/2013 Revision:

Reference object

Func. Loc.: DL00-S-SHFL1000 Shop Floor

Equipment: 10000000 Circulation Fan

Assembly:

Malfctn data | Damage | Notif. dates

Malf.start: 07/31/2013 13:06:26 Breakdown

MalfEnd: 07/31/2013 13:47:50 Breakdown dur.: 0.00 H


First operation

Operation: Exchange filter immediately Cckey: 1 Calculate duration

WkCtr/Plnt: MANT1000 / DL00 Ctrl key: PM01 Acty Type: MLABOR PRT

Work durtn: 2 H Number: 1 Oprtn dur.: 2 H Comp.

Person. no: 0

Click  to get back to the SAP Easy Access Menu.



 EAM Challenge

Learning Objective Understand and perform an integrated EAM process.

Time 30 min

Motivation After you have successfully worked through the *Enterprise Asset Management* case study, you should be able to solve the following task on your own.

Scenario There are problems with the circulation fans in your company. One of them has malfunctioned in the Shop Floor. In this case, one of the impellers has been worn out due to long continuous operation. If you decide to repair it, the maintenance process would take 1.50 hours and the function test 15 minutes. For the repair you use two Lock Washers, one Socket Head Bolt and one Hex Nut.

Task Information Since this task is based on the *Enterprise Asset Management* case study you can use it as guidance. However, it is recommended that you solve it without any help in order to test your acquired knowledge.

