Production Planning and Execution (PP) Case Study

This case study explains an integrated production planning and execution process in detail and thus fosters a thorough understanding of each process step and underlying SAP functionality.

Product

SAP ERP 6.08
Global Bike

Level

Undergraduate
Graduate
Beginner

Focus

Production Planning and Execution

Authors

Bret Wagner
Stefan Weidner

Version

3.1

Last Update

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MOTIVATION

The data entry requirements in the production planning exercises (PP 1 through PP 6) were minimized because much of the data already existed in the SAP system. This stored data, known as master data, simplifies the processing of business transactions. Examples for this were material master data, bills of materials, and routings.

In this case study, we will create consumption values for a finished product to plan and process a complete manufacturing cycle.

PREREQUISITES

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 PP exercises (PP 1 through PP 6). However, it is recommended.

NOTES

This case study uses the Global Bike data set, which has exclusively been created for SAP UA global curricula.

SAP University Alliances

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Process Overview

Learning Objective Understand and perform a manufacturing process cycle. **Time** 140 min

Scenario In order to process a complete manufacturing process you will take on different roles within the Global Bike company, e.g. production supervisor, shop floor worker and plant manager. Overall, you will be working in the Materials Management (MM) and the Production Planning and Execution (PP) departments.

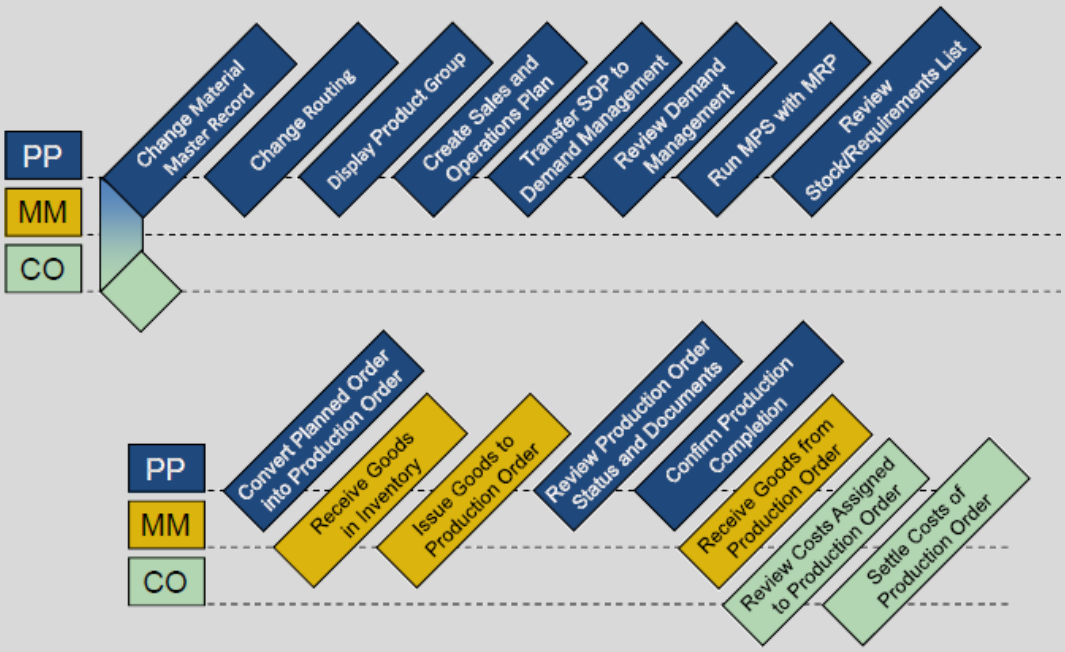
Employees involved

Jun Lee (Production Supervisor)
Hiro Abe (Plant Manager Dallas)
Lars Iseler (Production Order Worker)
Susanne Castro (Receiving Clerk)
Sanjay Datar (Warehouse Employee)
Michael Brauer (Shop Floor Worker 4)
Jamie Shamblin (Cost Accountant)

Before you can start forecasting demand for your touring bike product group changes in the material master record of the bikes need to be maintained.

Afterwards you will create a 12-month sales and operations plan (SOP) for your product group, receive the production relevant goods from the storage location and issue goods to the production order.

In the last steps the completeness of the production is confirmed, produced goods are received in the storage location and costs assigned to the production order are reviewed.



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PP Challenge 40

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Step 1: Change Material Master Record

Task Prepare a material master record for Demand Planning. **Time** 20 min

Short Description In order to plan Global Bike's deluxe touring bikes (black, silver and red) prepare their material master records by changing the MRP 3 and Forecast view.

Name (Position) Jun Lee (Production Supervisor)

To change a material's view, follow the menu path:

Menu path

Logistics ► Production ► Master Data ► Material Master ► Material ► Change ► Immediately

In the Material field, find and select your red Deluxe Touring bike first.

If you do not remember its material number, position your cursor in the Material field and click on the search icon or press **F4**. Make sure you are on the Material by Material Type tab. Select Material Type **Finished Product** (FERT) and enter ***###** in the Material field. Remember to replace ### by your three-digit number given by your instructor, e.g. *005 if your number is 005. Then, press Enter and select the red Deluxe Touring bike with a double click.

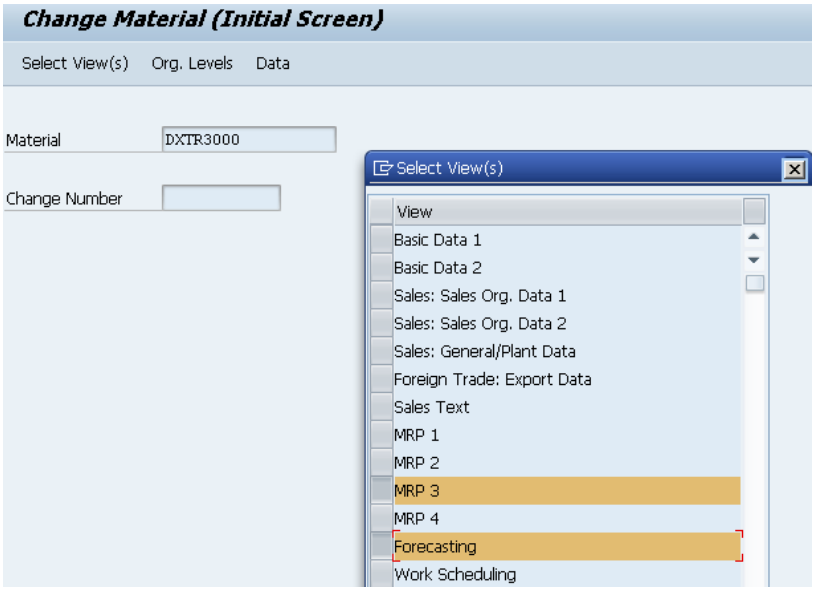
F4
Finished Product
*###

When your material number (**DXTR3###**) is entered in the Material field, click on or press Enter.

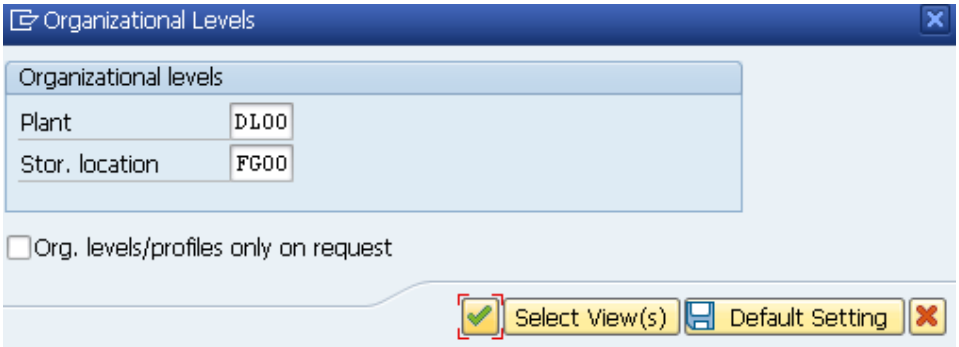
DXTR3###

On the following screen, select **MRP 3** and **Forecasting.**

MRP 3, Forecast



Then, press Enter or click on . The following screen will appear.

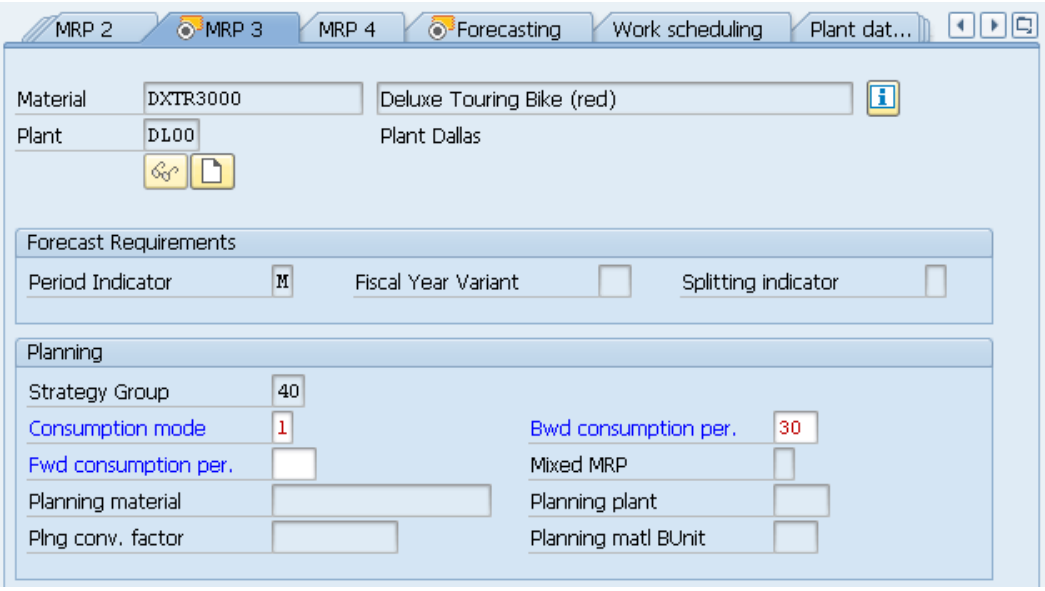


Find and select the Global Bike manufacturing facility in Dallas (**DL00**). Then, enter its Finished Goods Stor. Location (**FG00**). Press Enter or click on ✓.

DL00
FG00

In the *MRP 3* view, enter Strategy group **40** (Planning with final assembly), Consumption mode **1** (Backward consumption only) and Bwd.consumption per. **30**.

40
1
30

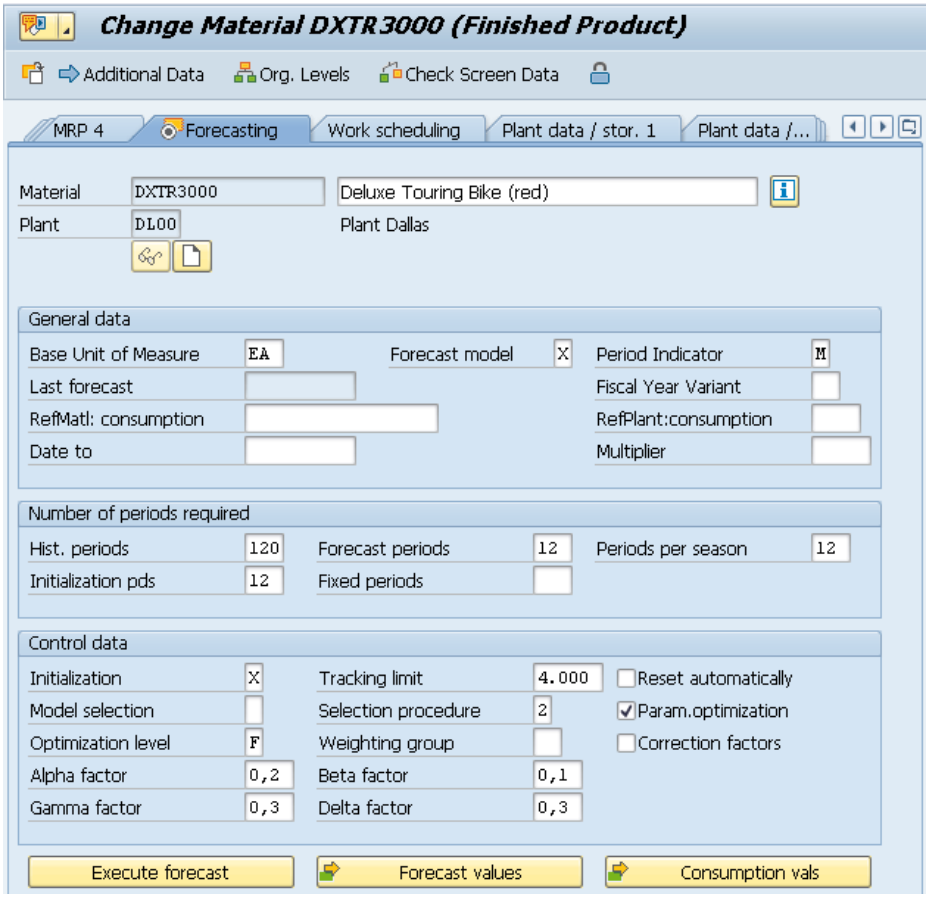


Click on ✓ to continue to the forecasting tab. Then, press Enter to acknowledge the warning message to check the consumption periods.

On the *Forecasting* tab, select Initialization pds **12**, uncheck **Reset automatically**, check **Param.optimization**, select Optimization level **F** (Fine), Alpha factor **0.20**, Beta factor **0.10**, Gamma factor **0.30**, and Delta factor **0.30**.

Compare your entries with the screen capture shown below.

12
~~Reset automatically~~
Param.optimization
F
0.20 0.10
0.30 0.30



Historic consumption values already have been entered into the Global Bike system. You can view them on the Forecasting tab, select Consumption vals. If you do not see the Total consumption column, press on Total consumption. Within the table you will see the Total Consumption for the periods 04.2010 to 03.2014. These values form the base for later forecasts within this case study.

Please note that within a productive system these values would have been updated based on the goods moved out of storage.

Click on Main Data to return to the overview.

Click on to save your entries for the red bike.

Repeat the same procedure for the silver and the black deluxe touring bike material master. Start with the silver bike (**DXTR2###**), then modify the black bike (**DXTR1###**).

DXTR2###
DXTR1###

Click on the exit icon to return to the SAP Easy Access screen.

Step 2: Change Routing

Task Change a routing for a finished good. **Time** 15 min

Short Description Change the routing for your red Deluxe Touring bike.

Name (Position) Jun Lee (Production Supervisor)

After the operational steps are laid out, the components must be allocated to the individual operations. This is a progressive process where each operation builds off the materials that entered production in the previous operations.

Component allocation

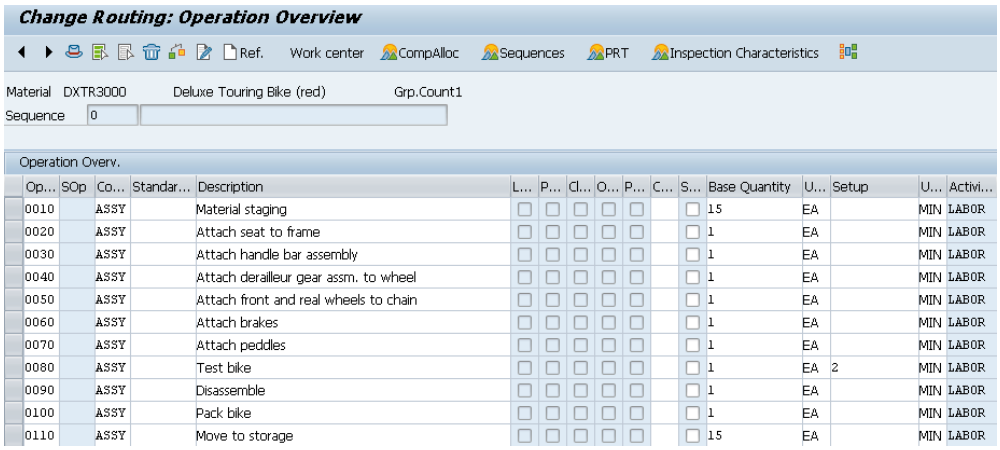
To change a routing, follow the menu path:

Menu path

Logistics ► Production ► Master Data ► Routings ► Routings ► Standard Routings ► Change

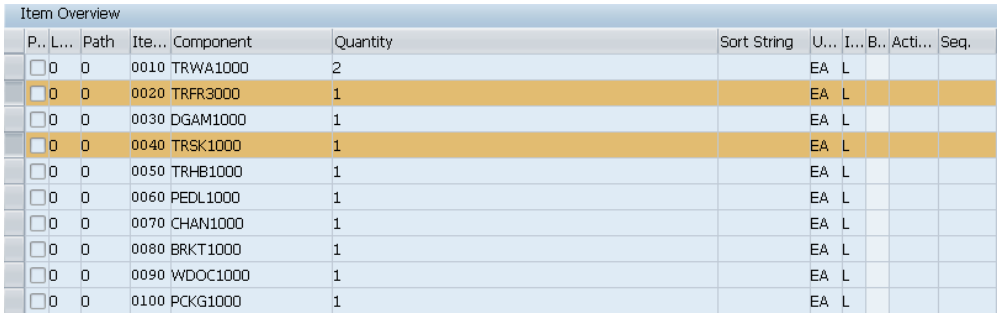
Enter the material number for your red Deluxe Touring bike (**DXTR3###**). In the Plant field, enter Global Bike's Dallas plant number (**DL00**). Please ensure that the Group field is empty. Then, press Enter or click on ✓.

DXTR3###
DL00



Op...	SOp	Co...	Standar...	Description	L...	P...	Cl...	O...	P...	C...	S...	Base Quantity	U...	Setup	U...	Activi...
0010		ASSY		Material staging								15	EA		MIN	LABOR
0020		ASSY		Attach seat to frame								1	EA		MIN	LABOR
0030		ASSY		Attach handle bar assembly								1	EA		MIN	LABOR
0040		ASSY		Attach derailleur gear assm. to wheel								1	EA		MIN	LABOR
0050		ASSY		Attach front and real wheels to chain								1	EA		MIN	LABOR
0060		ASSY		Attach brakes								1	EA		MIN	LABOR
0070		ASSY		Attach peddles								1	EA		MIN	LABOR
0080		ASSY		Test bike								1	EA	2	MIN	LABOR
0090		ASSY		Disassemble								1	EA		MIN	LABOR
0100		ASSY		Pack bike								1	EA		MIN	LABOR
0110		ASSY		Move to storage								15	EA		MIN	LABOR

Choose CompAlloc and select the following two materials.



P..	L...	Path	Ite...	Component	Quantity	Sort String	U...	I...	B..	Acti...	Seq.
0	0		0010	TRWA1000	2		EA	L			
0	0		0020	TRFR3000	1		EA	L			
0	0		0030	DGAM1000	1		EA	L			
0	0		0040	TRSK1000	1		EA	L			
0	0		0050	TRHB1000	1		EA	L			
0	0		0060	PEDL1000	1		EA	L			
0	0		0070	CHAN1000	1		EA	L			
0	0		0080	BRKT1000	1		EA	L			
0	0		0090	WDOC1000	1		EA	L			
0	0		0100	PCKG1000	1		EA	L			

Once you have selected the red touring frame (**TRFR3###**) and the touring seat kit (**TRSK1###**), choose New Assignment.

TRFR3###
TRSK1###

In the following screen, in the Activity field enter operation **0020** and press Enter. Back on the Material Component Overview screen, you see that now both components have been assigned to operation 0020.

0020

Item Overview

P..	L...	Path	Ite...	Component	Quantity	Sort String	U...	I...	B..	Acti...
☐	0	0	0010	TRWA1000	2		EA	L		
☐	0	0	0020	TRFR3000	1		EA	L	☐	0020
☐	0	0	0030	DGAM1000	1		EA	L		
☐	0	0	0040	TRSK1000	1		EA	L	☐	0020
☐	0	0	0050	TRHB1000	1		EA	L		
☐	0	0	0060	PEDL1000	1		EA	L		
☐	0	0	0070	CHAN1000	1		EA	L		
☐	0	0	0080	BRKT1000	1		EA	L		
☐	0	0	0090	WDOC1000	1		EA	L		
☐	0	0	0100	PCKG1000	1		EA	L		

Repeat the same process for the other components and assign them to operations as shown below.

Component	**Operation**
TRHB1### (touring handle bar)	0030
TRWA1### (touring aluminum wheel assembly)	0040
DGAM1### (derailleur gear assembly)	0040
CHAN1### (chain)	0050
BRKT1### (brake kit)	0060
PEDL1### (pedal assembly)	0070
WDOC1### (warranty document)	0100
PCKG1### (packaging)	0100

TRHB1###

TRWA1###

DGAM1###

CHAN1###

BRKT1###

PEDL1###

WDOC1###

PCKG1###

Item Overview

P..	L...	Path	Ite...	Component	Quantity	Sort String	U...	I...	B..	Ope...	Seq.	C	Material Description
☐	0	0	0010	TRWA1000	2		EA	L	☐	0040	0		Touring Aluminum Wheel Assembly
☐	0	0	0020	TRFR3000	1		EA	L	☐	0020	0		Touring Frame-Red
☐	0	0	0030	DGAM1000	1		EA	L	☐	0040	0		Derailleur Gear Assembly
☐	0	0	0040	TRSK1000	1		EA	L	☐	0020	0		Touring Seat Kit
☐	0	0	0050	TRHB1000	1		EA	L	☐	0030	0		Touring Handle Bar
☐	0	0	0060	PEDL1000	1		EA	L	☐	0070	0		Pedal Assembly
☐	0	0	0070	CHAN1000	1		EA	L	☐	0050	0		Chain
☐	0	0	0080	BRKT1000	1		EA	L	☐	0060	0		Brake Kit
☐	0	0	0090	WDOC1000	1		EA	L	☐	0100	0		Warranty Document
☐	0	0	0100	PCKG1000	1		EA	L	☐	0100	0		Packaging

Click on and save your entries with .

Click on the exit icon to go back to the SAP Easy Access Menu.

Step 3: Display Product Group

Task Display a product group. **Time** 5 min

Short Description Display the product group (product family) for all your Deluxe Touring bikes.

Name (Position) Jun Lee (Production Supervisor)

Product group

A product group (product family) supports high-level planning. This way, it is not necessary to delve into the minutia of creating planning forecasts for every material in the company.

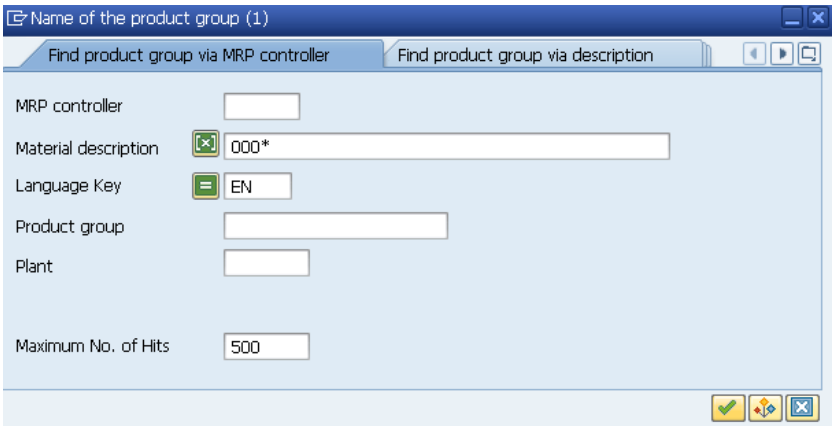
Menu path

To display the deluxe touring bike product group, follow the menu path:

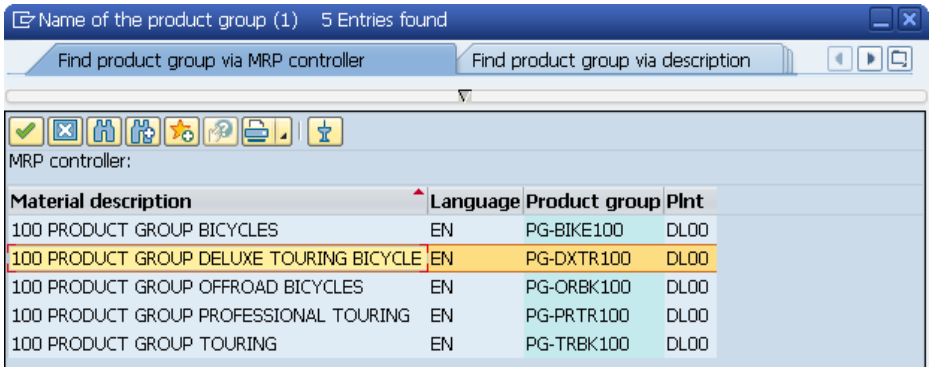
Logistics ► Production ► SOP ► Product Group ► Display

###*

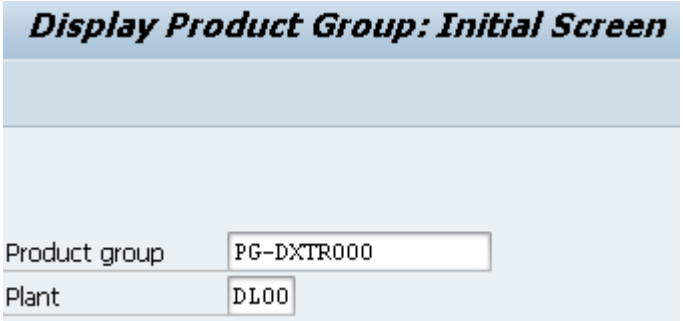
In the *Display Product Group: Initial Screen*, in the Product group field find and select your group for deluxe touring bikes. In order to do so, press the search icon (or pressed F4), enter **###*** in the Material description field. Remember to replace ### with your three-digit number, e.g. enter 009* if your number is 009.



Then, press Enter or click on to display the search results. You should see five product groups already defined for your set of material master data (compare with the screen shown below).

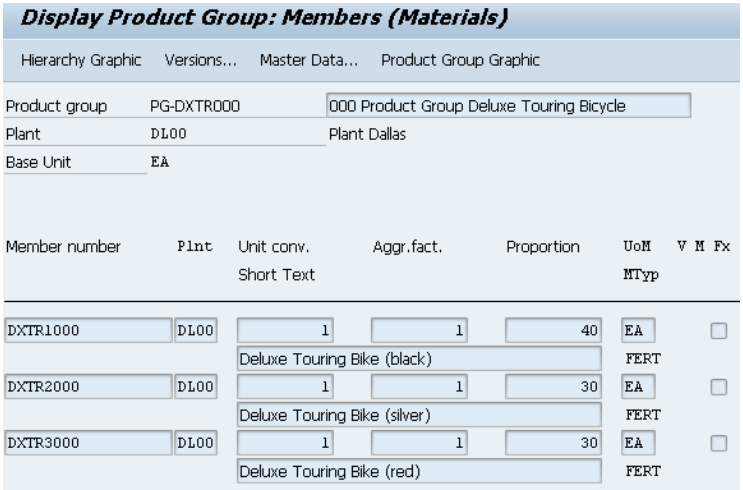


Double-click on the line for deluxe touring bicycles to select the group.



Now that the correct product group (**PG-DXTR###**) is filled in, make sure that Plant **DL00** is entered. Then, press Enter to display the product group details.

PG-DXTR###
DL00



On this screen you can see that this product group defines proportions for three different bikes: the black, silver and red deluxe touring bike. For the black bike a share of 40% will be considered and 30% for the silver and the red bikes each.

Click on the exit icon to return to the SAP Easy Access screen.

Step 4: Create Sales and Operations Plan

Task Create a sales and operations plan for a product group. **Time** 20 min

Short Description Create a 12-month sales and operations plan (SOP) for your product group.

Name (Position) Jun Lee (Production Supervisor)

A sales and operations plan (SOP) is a planning tool used to consolidate data for forecasting future sales and production levels as well as the methods needed to meet those requirements. In this task, our SOP will be based on historical consumption values taken from a fixed period. This is in contrast to forecasting within a real life system which would base the prediction on previous periods and their respective consumption.

Sales and operations plan

To create an SOP, follow the menu path:

Logistics ► Production ► SOP ► Planning ► For Product Group ► Change

Menu path

Make sure that Product group **PG-DXTR###** and Plant **DL00** are entered. Then, select Active version. Record the version number: _____

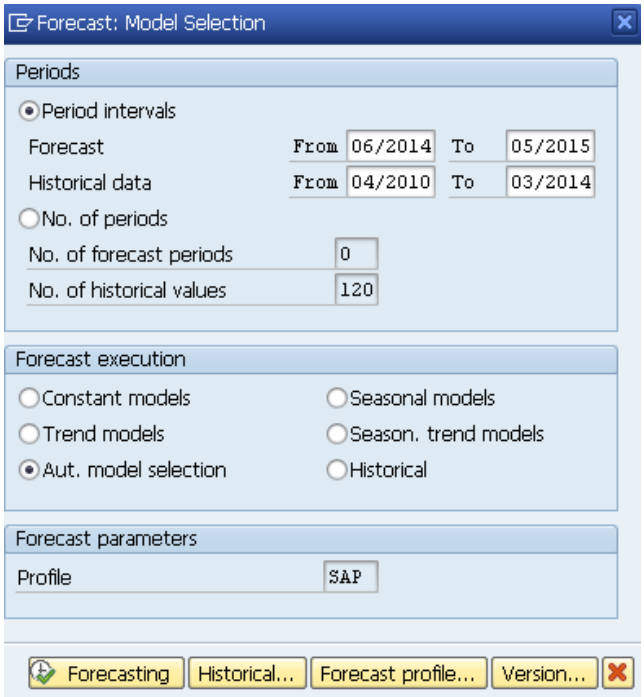
PG-DXTR###
DL00

In the system menu, select:

Edit ► Create sales plan ► Forecast…

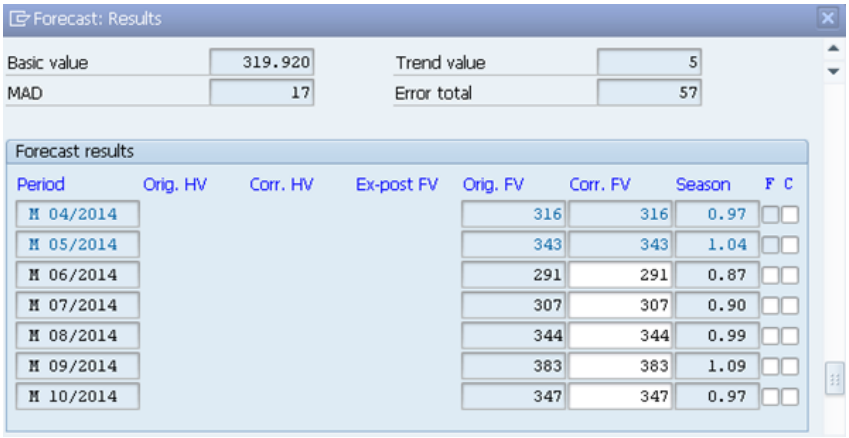
Select **Period intervals**, Forecast from **current period/current year** to **previous period/next year**, Historic Data from **04/2010** to **03/2014**, Forecast execution **Aut. model selection**. Compare your screen with the one below before clicking on Forecasting.

Period intervals
current period/current year
previous period/next year
04/2010
03/2014
Aut. model selection



If needed, click on and continue through warning messages.

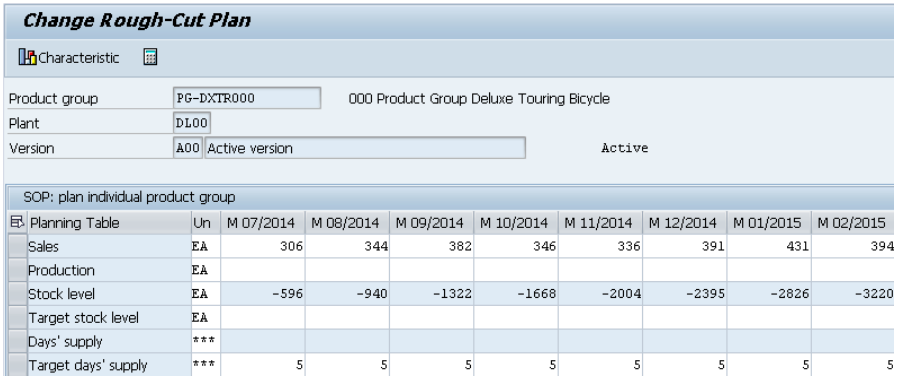
The system selected Trend and season. Click on Forecasting.



You can see that the system tested and found Seasonal and Trend tendencies in the past consumption data and has applied a Seasonal Trend Model.

Click on (Copy and Save). The sales forecast is copied into your Sales and Operations Plan.

As Target day's supply enter **5** for each forecasted period (a total of 12 months). 5



Change Rough-Cut Plan

Characteristic

Product group PG-DXTR000 000 Product Group Deluxe Touring Bicycle
Plant DL00
Version A00 Active version Active

SOP: plan individual product group

Planning Table	Un	M 07/2014	M 08/2014	M 09/2014	M 10/2014	M 11/2014	M 12/2014	M 01/2015	M 02/2015
Sales	EA	306	344	382	346	336	391	431	394
Production	EA								
Stock level	EA	-596	-940	-1322	-1668	-2004	-2395	-2826	-3220
Target stock level	EA								
Days' supply	***								
Target days' supply	***	5	5	5	5	5	5	5	5

In a production plan, you plan the quantities you need to produce in order to meet your sales plan. The system then calculates stock levels and days' supply for each period on the basis of the sales and production quantities and any target data. There are several different planning strategies available, which differ in the production values and the stock level changes.

As the SOP is a high level planning, discrete production values are not necessary. The SAP system calculates discrete numbers once the SOP is transferred to the Demand Management.

In the system menu, select:

Edit ► Create productn plan ► Synchronous to sales

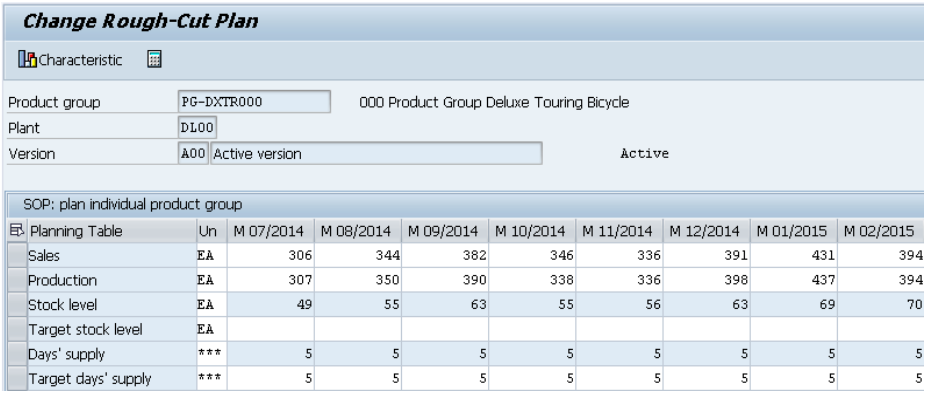
Note the change in the Production and in the Stock level lines. The production plan is created to match the sales forecast.

In the system menu, select

Edit ► Create productn plan ► Target day's supply

Note the impact on the production plan and stock levels. Production levels are generated to match the sales plus produce enough to put into stock to meet the target days of supply specifications.

Review the Planning Table (your numbers may be different).



Change Rough-Cut Plan

Characteristic

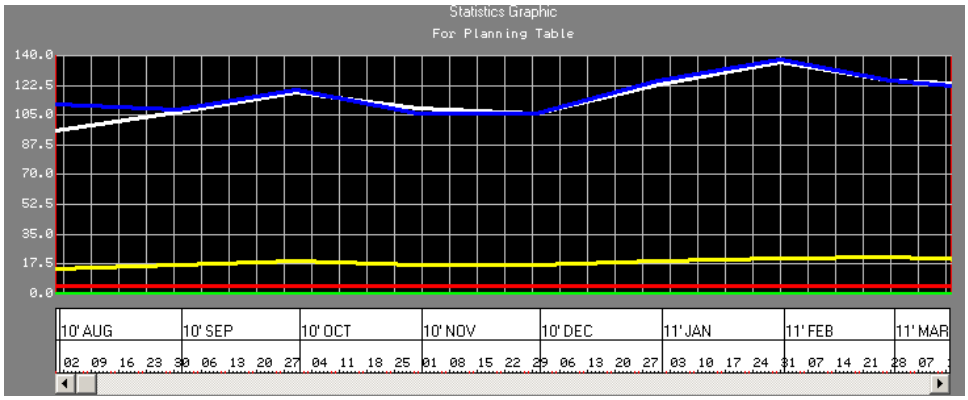
Product group PG-DXTR000 000 Product Group Deluxe Touring Bicycle
Plant DL00
Version A00 Active version Active

SOP: plan individual product group

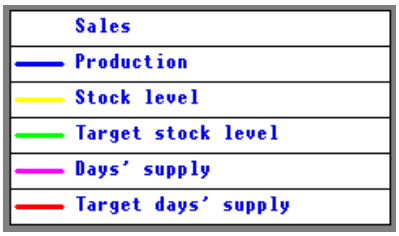
Planning Table	Un	M 07/2014	M 08/2014	M 09/2014	M 10/2014	M 11/2014	M 12/2014	M 01/2015	M 02/2015
Sales	EA	306	344	382	346	336	391	431	394
Production	EA	307	350	390	338	336	398	437	394
Stock level	EA	49	55	63	55	56	63	69	70
Target stock level	EA								
Days' supply	***	5	5	5	5	5	5	5	5
Target days' supply	***	5	5	5	5	5	5	5	5

Click on Characteristic to review a graphic representation of your planning table.

Note Although the screen displays integer production values, the SAP system calculates with decimal accuracy. You can display the decimal places by highlighting a row and pressing F8 and enter the amount of decimal places required. Then (re)create the production plan.



You may click on Legend to display a legend for this graphic.



Click on to go back and save with .

Click on the exit icon to return to the SAP Easy Access screen.

Step 5: Transfer SOP to Demand Management

Task Transfer SOP to Demand Management. **Time** 10 min

Short Description Transfer the Sales and Operations Plan to Demand Management.

Name (Position) Jun Lee (Production Supervisor)

Demand Management is the tool used to disaggregate planning data from high-level plans down to the detailed planning level. For this task, planning for the Deluxe Touring Product Group will be broken down into the individual components that belong to this group.

Demand Management

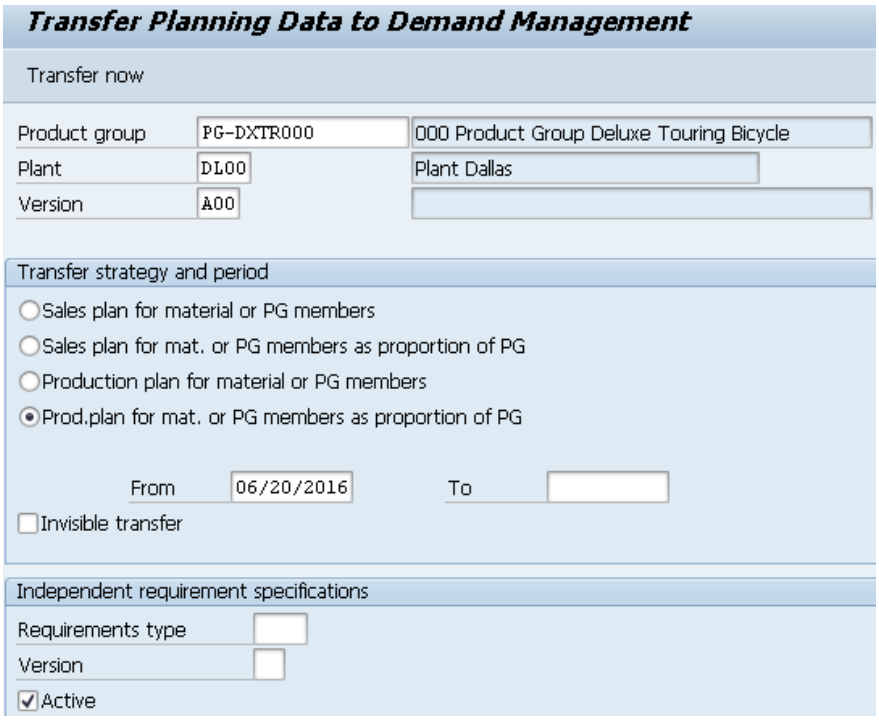
To transfer the SOP to Demand Management, follow the menu path:

Logistics ► Production ► SOP ► Disaggregation ► Transfer PG to Demand Management

Menu path

Enter Product group **PG-DXTR###**, Plant **DL00**, and the version saved in the previous task (**A00**).

PG-DXTR###
DL00
A00



Select **Prod.plan for mat. or PG members as proportion of PG** and **Active**. Then, deselect the **Invisible Transfer** indicator to present the disaggregation results on another screen allowing the planner to modify the results before saving them manually to Demand Management.

Prod.plan for mat. or PG members as prop. of PG
Active
~~Invisible Transfer~~

Select Transfer now and examine the Planned Independent Requirements generated for **DXTR1###**.

DXTR1###

Table | Items | Sched. Lines

Material	Plnt	V	A	BU	M 06/2014	M 07/2014	M 08/2014	M 09/2014	M 10/2014	M 11/2014	M 12/2014	M 01/2015
DXTR1000	DL00	AG	☑	EA	135	123	140	156	135	134	159	175

Then, click on to save.

Examine the Planned Independent Requirements generated for **DXTR2###** and save them with . DXTR2###

Table | Items | Sched. Lines

Material	Plnt	V	A	BU	M 06/2014	M 07/2014	M 08/2014	M 09/2014	M 10/2014	M 11/2014	M 12/2014	M 01/2015
DXTR2000	DL00	AG	☑	EA	101	92	105	117	101	101	119	131

Finally, examine the requirements for **DXTR3###** and save them with . DXTR3###

Table | Items | Sched. Lines

Material	Plnt	V	A	BU	M 06/2014	M 07/2014	M 08/2014	M 09/2014	M 10/2014	M 11/2014	M 12/2014
DXTR3000	DL00	AG	☑	EA	101	92	105	117	101	101	119

Note DXTR1### makes up 40%, DXTR2### makes up 30% and DXTR3### another 30% of the production plan created in your Sales and Operations Plan.

Click on the exit icon to return to the SAP Easy Access screen.

Step 6: Review Demand Management

Task Review the requirements for a product group. **Time** 10 min

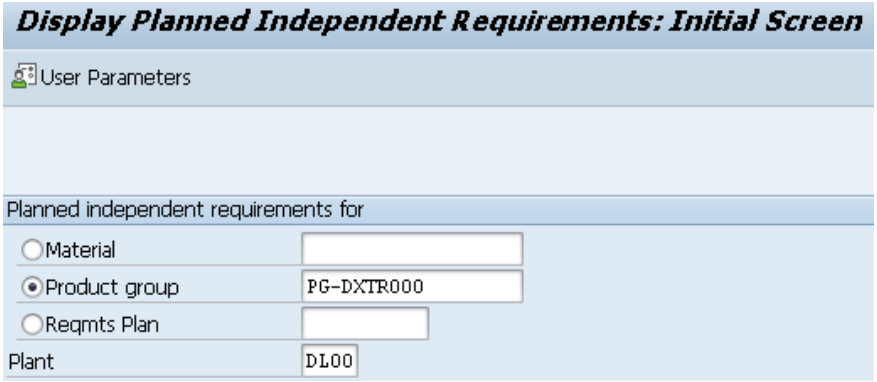
Short Description Review the requirements for the product group to ensure that there are production requirements for the individual production items.

Name (Position) Hiro Abe (Plant Manager Dallas)

To review planned requirements, follow the menu path:

Menu path

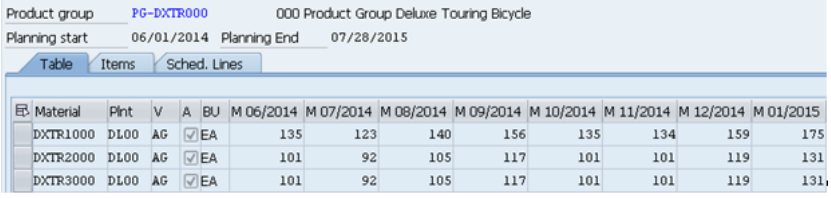
Logistics ► Production ► Production Planning ► Demand Management ► Planned Independent Requirements ► Display



Select the **Product group** indicator, enter Product group **PG-DXTR###**, Plant **DL00**, and select (Enter).

Product group
PG-DXTR###
DL00

On the Table tab, review the Planned Independent Requirements for the Deluxe Touring bike product group by material.



Material	Plnt	V	A	BU	M 06/2014	M 07/2014	M 08/2014	M 09/2014	M 10/2014	M 11/2014	M 12/2014	M 01/2015
DXTR1000	DL00	AG	☑	EA	135	123	140	156	135	134	159	175
DXTR2000	DL00	AG	☑	EA	101	92	105	117	101	101	119	131
DXTR3000	DL00	AG	☑	EA	101	92	105	117	101	101	119	131

On the Sched. lines tab, review the requirement dates, planned quantities, values, and total planned quantities.

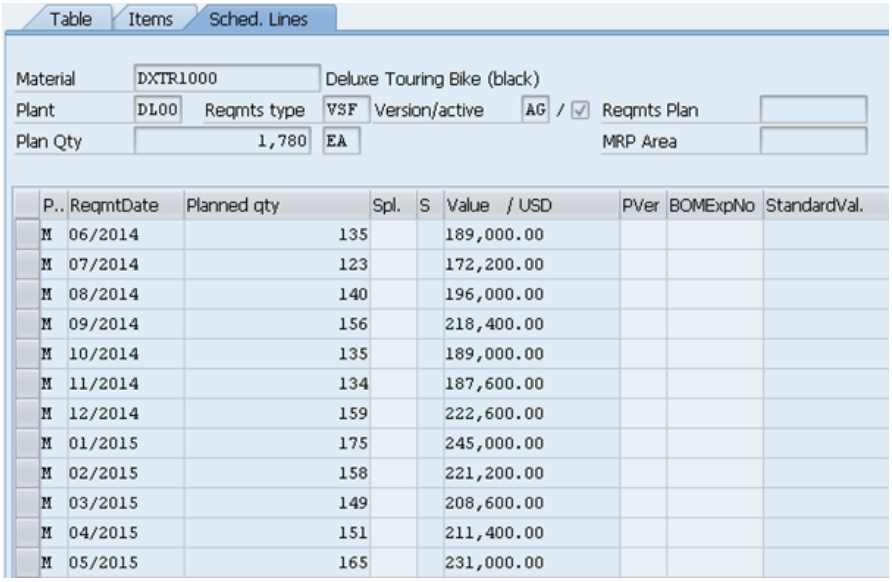


Table | Items | Sched. Lines

Material DXTR1000 Deluxe Touring Bike (black)
Plant DL00 Reqmts type VSF Version/active AG / ☑ Reqmts Plan
Plan Qty 1,780 EA MRP Area

P..	ReqmtDate	Planned qty	Spl.	S	Value / USD	PVer	BOMExpNo	StandardVal.
M	06/2014	135			189,000.00			
M	07/2014	123			172,200.00			
M	08/2014	140			196,000.00			
M	09/2014	156			218,400.00			
M	10/2014	135			189,000.00			
M	11/2014	134			187,600.00			
M	12/2014	159			222,600.00			
M	01/2015	175			245,000.00			
M	02/2015	158			221,200.00			
M	03/2015	149			208,600.00			
M	04/2015	151			211,400.00			
M	05/2015	165			231,000.00			

Select (Next item) to move to the next material.

Click on the exit icon to return to the SAP Easy Access screen.

Step 7: Run MPS with MRP

Task Run Master Production Scheduling (MPS). **Time** 10 min

Short Description Run Master Production Scheduling (MPS) to generate a series of planned orders that satisfy the requirements from SOP and demand management. Concurrently with MPS, the MRP materials will be processed leading to the generation of planned orders for dependent requirements that have been created by the BOM explosion process.

Name (Position) Jun Lee (Production Supervisor)

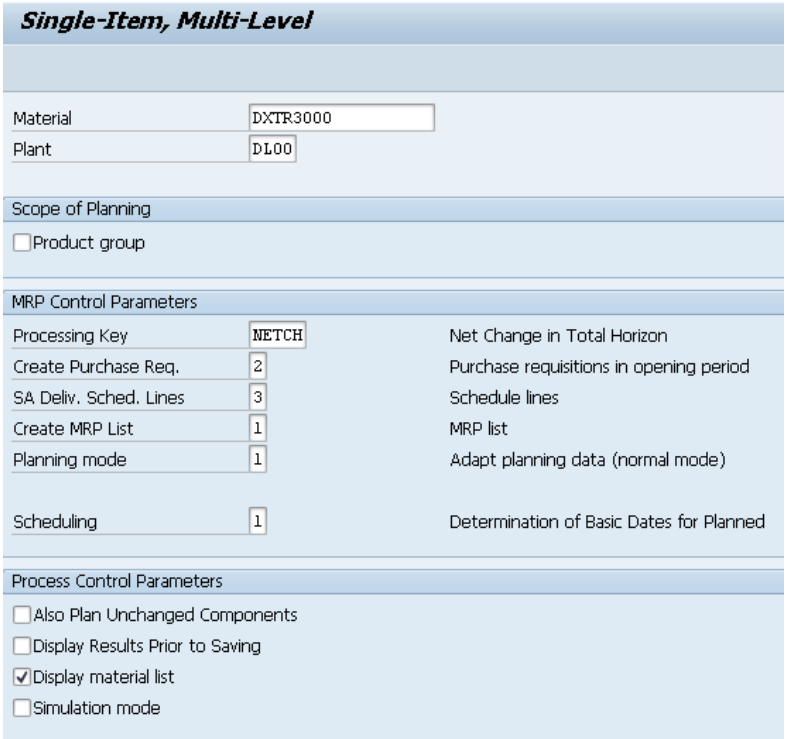
To run Master Production Scheduling, follow the menu path:

Logistics ► Production ► Production Planning ► MPS ► MPS ► Single-Item, Multi-Level

Menu path

Enter your material **DXTR3###**, Plant **DL00**, Processing key **NETCH**, select **2** (Purchase requisition in opening period), **3** (Schedule lines), **1** (MRP list), **1** (Adapt planning data (normal mode)), and **1** (Determination of Basic Dates for Planned). Then, select **Display material list**.

DXTR3###, DL00
NETCH 2
3 1
1 1
Display material list



Select (Enter). A warning message will appear asking you to check input parameters. Press Enter to confirm and bypass the warning message.

To start the planning run, click on (Continue) and review the planning details from the List Display.

Statistics	
Materials planned	17
Materials with New Exceptions	17
Materials with Termination MRP List	

Parameters	
Plnt	DL00
Processing Key	NETCH
Create Purchase Requisition	2
SA Schedule Line	3
Create MRP List	1
Planning Mode	1
Scheduling	1

Database Statistics	
Planned orders created	192
Purchase requisitions created	12
Dependent requirements created	192

Runtime Statistics	
Start of Planning Run	11:25:53
End of Planning Run	11:25:56
Runtime	00:00:03
CPU Time Read-In	00:00:01
CPU Time: BOM Explosion	00:00:01
CPU Time: Update	00:00:01

Click on the exit icon to return to the SAP Easy Access screen.

Step 8: Review Stock/Requirements List

Task Review the Stock/Requirements List. **Time** 10 min

Short Description Review the Stock/Requirements List for your deluxe touring bike.

Name (Position) Lars Iseler (Production Order Worker)

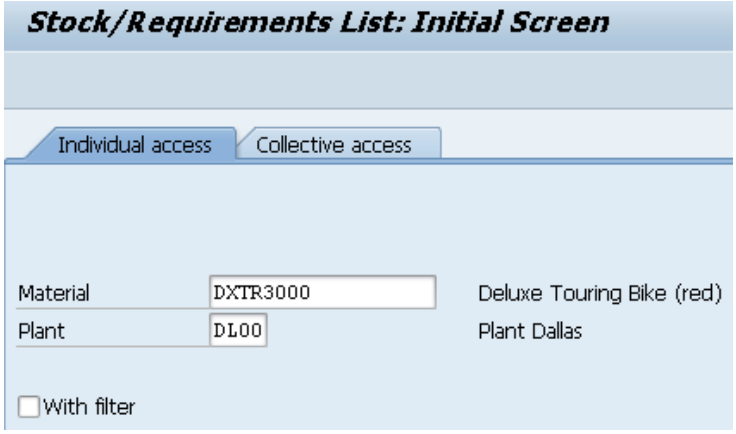
Stock/Requirements List

The Stock/Requirements List is a dynamic list which dynamically changes whenever a transaction occurs using the given material. Display and review the Stock/Requirements List for all materials of the red deluxe touring bike on hand and the demand that exists against these products. The report shows that there is no stock and therefore nothing is available for use at this time.

Menu path

To review the Stock/Requirements List, follow the menu path:

Logistics ► Production ► Production Planning ► MPS ► Evaluations ► Stock/Reqmts List



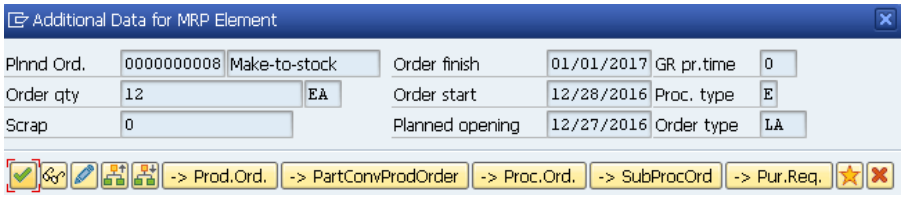
DXTR3###
DL00

On the Individual access tab, enter Material **DXTR3###** and Plant **DL00** and click on (Enter).

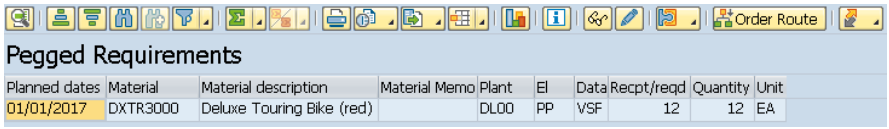
Choose (Switch to Period Totals). This will allow you to see the planned independent requirements, planned receipts, and ATP quantities based on time; days, weeks, or months.

Select to go back to the individual lines.

To view the details of the first planned order (PldOrd), select (Element Details).



Select (Pegged Requirements).



You can see that this planned order is to fulfill our Safety Stock and the first planned independent requirement that was created when we disaggregated our SOP.

Select (Graphic) to see a graphical view of this information.

Click on the exit icon twice to return to the SAP Easy Access screen.

Step 9: Convert Planned Order into Production Order

Task Convert a planned order into a production order. **Time** 10 min

Short Description Convert a planned order generated in the MPS/MRP run to a production order. The stock requirements list displays the suggested planned orders from the MPS run.

Name (Position) Lars Iseler (Production Order Worker)

To convert planned orders into production orders, follow the menu path:

Menu path

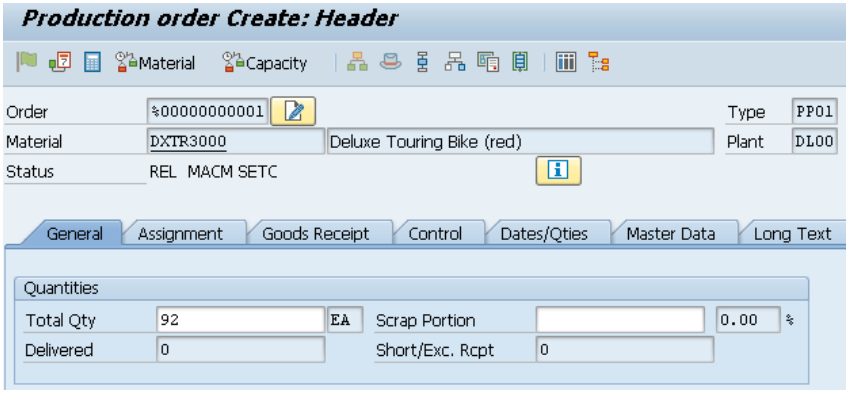
Logistics ► Production ► MRP ► Evaluations ► Stock/Requirements List

Enter Material **DXTR3###**, Plant **DL00**, and click on (Enter). Then, double-click on the second planned order.

DXTR3###
DL00

06/23/2014	Stock				0
06/01/2014	IndReq	VSF		101-	101-
06/30/2014	----->	End of Planning Tim…			
06/30/2014	PldOrd	0000000001/STCK		101	0
07/01/2014	PldOrd	0000000002/STCK		92	92

In the Additional Data screen, click on -> Prod.Ord. (Convert planned order to production order).



Note At this point, please note down the total quantity in your production order. You will need it later when confirming your order.

Total quantity

_____

Determine the status of your order by clicking on .

Note When you converted the planned order to a production order scheduling takes place, an availability check was automatically carried out and a reservation was placed on the materials specified within the bill of materials. The order was also automatically released when the production order was created.

Click on to go back to the header screen and save your production order with .

Production order number

Note When you save the production order the system will automatically calculate the planned costs for the production order and the production order is given a number.

Order number 1000020 saved

Make sure you record your production order number.

Select (Refresh) to refresh the Stock/Requirements List. In the MRP Element column the planned order **PldOrd** that you selected should now have changed into a production order **PrdOrd**.

A..	Date	MRP ...	MRP element data	Rescheduli...	E..	Receipt/Reqmt	Available Qty
	06/23/2014	Stock					0
	06/01/2014	IndReq	VSF			101-	101-
	06/30/2014	----->	End of Planning Tim...				
	06/30/2014	PldOrd	0000000001/STCK			101	0
	07/01/2014	PrdOrd	000001000020/PP01/Re			92	92
	07/01/2014	IndReq	VSF			92-	0

Click on the exit icon to return to the SAP Easy Access screen.

Step 10: Receive Goods in Inventory

Task Receive goods in the Dallas plant. **Time** 10 min

Short Description Receive enough goods in the Dallas storage locations to start the production process.

Name (Position) Susanne Castro (Receiving Clerk)

Goods receipt

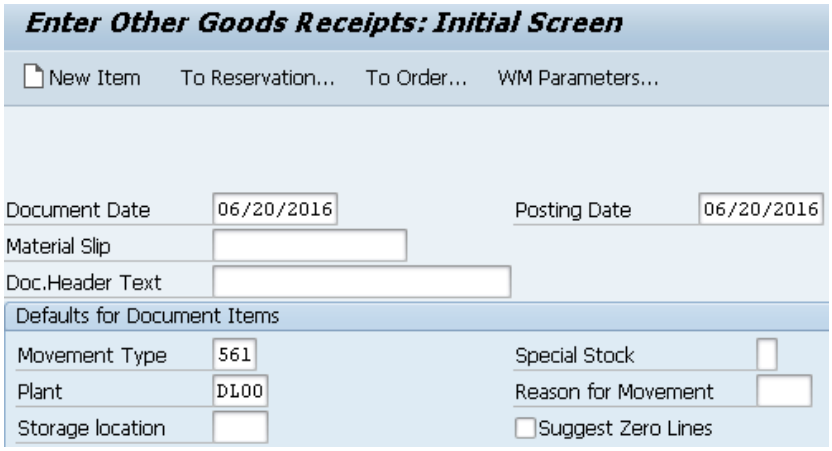
Usually, at this point the purchasing department in Dallas would take over and procure enough raw materials from vendors to fill the inventory so that the production process can be initiated. In this case study, we are bypassing this procurement process (this process is explained in the MM unit in detail). Because the inventory for all DXTR3### components is empty, we will assume that we find 500 pieces each in the storage location.

Menu path

To receive goods in the inventory, follow the menu path:

Logistics ► Materials Management ► Inventory Management ► Goods Movements ► Goods Receipt ► Other

Make sure you click on **Other** and not on **Other (MIGO)**. This should produce the following screen.



today
561
DL00

Enter **today** as Document and Posting Date, Movement Type **561** (Receipt per initial entry of stock balances into unr.-use), Plant **DL00**, and leave Storage Location blank. Then, press Enter or click on ✓.

In *the Enter Other Goods Receipts: New Item* screen, enter the following data. Each one of these ten materials are components that you later on need in your production order. Note that all materials are stored in the raw materials storage location in Dallas except the touring wheel assembly (first component in the list) which is a semi-finished good.

Material	Quantity	SLoc
TRWA1### (Touring Aluminum Wheel Assembly)	500	SF00
TRFR3### (Touring Frame-Red)	500	RM00
DGAM1### (Derailleur Gear Assembly)	500	RM00
TRSK1### (Touring Seat Kit)	500	RM00
TRHB1### (Touring Handle Bar)	500	RM00
PEDL1### (Pedal Assembly)	500	RM00
CHAN1### (Chain)	500	RM00
BRKT1### (Brake Kit)	500	RM00
WDOC1### (Warranty Document)	500	RM00
PCKG1### (Packaging)	500	RM00

TRWA1###
TRFR3###
DGAM1###
TRSK1###
TRHB1###
PEDL1###
CHAN1###
BRKT1###
WDOC1###
PCKG1###

Before pressing Enter compare your screen with the screenshot shown below. Remember that your material numbers are different.

If there are not enough rows for all materials, click on (New Items).

Items

Item	Material	Quantity	UnE	SLoc	Batch	Re	Plnt
1	TRWA1000	500		SF00			DL00
2	TRFR3000	500		RM00			DL00
3	DGAM1000	500		RM00			DL00
4	TRSK1000	500		RM00			DL00
5	TRHB1000	500		RM00			DL00
6	PEDL1000	500		RM00			DL00
7	CHAN1000	500		RM00			DL00
8	BRKT1000	500		RM00			DL00
9	WDOC1000	500		RM00			DL00
10	PCKG1000	500		RM00			DL00

Save your goods receipt with and record the material document number. Then, click on the exit icon to return to the SAP Easy Access screen.

Material document number

Step 11: Issue Goods to Production Order

Task Issue goods to a production order. **Time** 10 min

Short Description Now that all necessary components are on stock issue them to your production order in precise quantity.

Name (Position) Sanjay Datar (Warehouse Employee)

The goods issue process is fully defined in the production order, BOM, and routing. The quantities and the materials are reserved for this specific production order, will be withdrawn with reference to the order number, and will be used to assign actual costs to the production order for managerial accounting purposes.

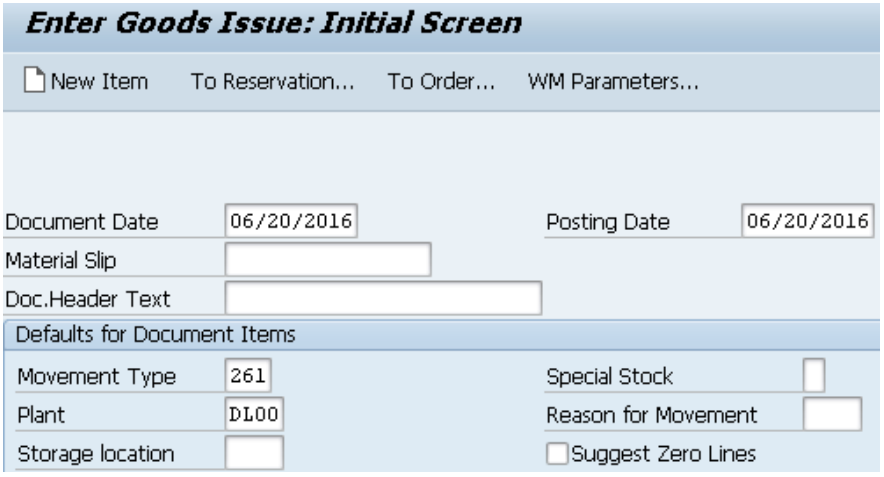
Goods issue

To issue goods to a production order, follow the menu path:

Logistics ► Production ► Shop Floor Control ► Goods Movements ► Goods Issue

This should produce the following screen.

Menu path



Enter **today** as Document Date and Posting Date, Movement Type **261** (Consumption for order from warehouse), Plant **DL00**, and leave Storage Location blank. Then, click on the To Order... button.

today
today
261
DL00

Enter your **production order number** from two tasks back.

Production order number

If you have not written down your production order number you can find it in the system. In order to do so, in the Order field press **F4** or click on the search icon. In the Order Number (1) screen, use the icon on the far right to display a list of all tabs. Please select the *Production orders using the info system* tab. On this tab, enter your material **DXTR3###** in the Material field and click on. Double-click on the result row to adopt your production order number into the initial screen.

F4

DXTR3###

Once you have found and entered your production order number, click on to continue.

An itemized list will appear. It lists all the materials and their respective quantities that need to be issued to your order. You need to tell the system what Storage Location the materials should be withdrawn from. For the wheel assembly (TRWA1###), enter **SF00** (Semi-finished goods) and for all other materials **RM00** (Raw materials) in the SLoc fields. Before pressing Enter compare your screen with the one shown below.

SF00
RM00

Items

F	Item	Material	Quantity	UnE	SLoc	Batch	Re	Plnt	Itm	FIs
☑	1	TRWA1000	184	EA				DL00	1	☐
☑	2	TRFR3000	92	EA				DL00	2	☐
☑	3	DGAM1000	92	EA				DL00	3	☐
☑	4	TRSK1000	92	EA				DL00	4	☐
☑	5	TRHB1000	92	EA				DL00	5	☐
☑	6	PEDL1000	92	EA				DL00	6	☐
☑	7	CHAN1000	92	EA				DL00	7	☐
☑	8	BRKT1000	92	EA				DL00	8	☐
☑	9	WDOC1000	92	EA				DL00	9	☐
☑	10	PCKG1000	92	EA				DL00	10	☐

Click on the Adopt + Details button. A series of screens will appars asking you to copy in the requirements for each of the dependent requirements. Click on to accept the details for each material.

Finally, on the *Enter Goods Issue: Overview* screen you will see all of the goods issue quantities for each of the materials.

Enter Goods Issue: Overview

To Reservation... To Order...

Posting Date 06/20/2016

Items

Item	Quantity	EUn / BUn	Material / Material description	Plnt	SLoc	Batch / Reserv.no.	Re / Itm	MvT	S	S / FIs
1	184	EA	TRWA1000	DL00	SF00			261		-
			Touring Aluminum Wheel Assembly			22	1			
2	92	EA	TRFR3000	DL00	RM00			261		-
			Touring Frame-Red			22	2			
3	92	EA	DGAM1000	DL00	RM00			261		-
			Derailleur Gear Assembly			22	3			
4	92	EA	TRSK1000	DL00	RM00			261		-
			Touring Seat Kit			22	4			
5	92	EA	TRHB1000	DL00	RM00			261		-
			Touring Handle Bar			22	5			
6	92	EA	PEDL1000	DL00	RM00			261		-
			Pedal Assembly			22	6			
7	92	EA	CHAN1000	DL00	RM00			261		-
			Chain			22	7			

Click on (Post) and record the material document number.

Click on the exit icon to return to the SAP Easy Access screen.

Material document number

_____

Step 12: Review Production Order Status

Task Review the production order status. **Time** 10 min

Short Description Review the current production order with respect to the status of the order.

Name (Position) Michael Brauer (Shop Floor Worker 4)

To display the production order, follow the menu path:

Logistics ► Production ► Shop Floor Control ► Order ► Display

Menu path

Enter the number of your **production order**.

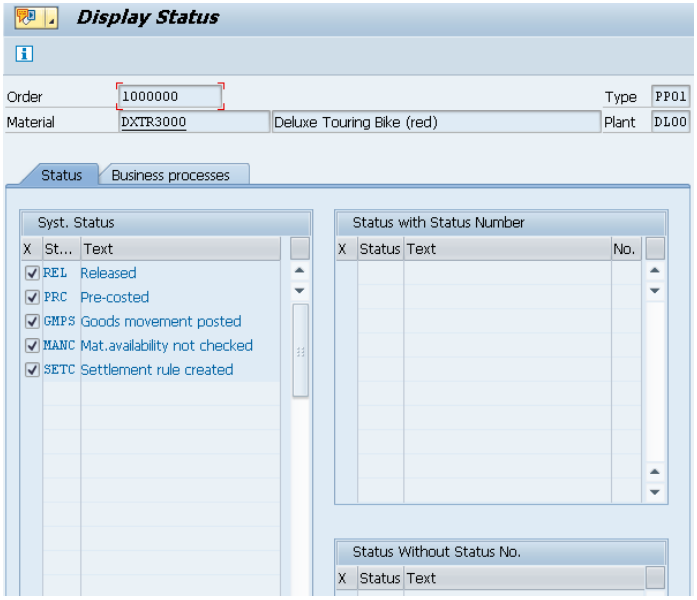
Production order number

If you have not written down your production order number you can find it in the system. In order to do so, in the Order field press **F4** or click on the search icon . In the Order Number (1) screen, use the icon on the far right to display a list of all tabs. Please select the Production orders using the info system tab. On this tab, enter your material **DXTR3###** in the Material field and click on . Double-click on the result row to adopt your production order number into the initial screen.

F4

DXTR3###

When your production order number is entered, click on . Note that the order status has changed and review it by clicking on again.



You did a goods issue to the production order in the last task. Now, you want to review the cost assigned to the order, the material document, and the corresponding accounting document.

In order to do so, click on to go back to the header screen and then in the system menu select:

Goto ► Costs ► Analysis

Cost Element	Cost Element (Text)	Origin	Σ Total target costs	Σ Total actual costs	Σ Target/actual var.	T/I var(%)	Currency
720300	Semi-Finished Consumption Expense	DL00/TRWA1000	0.00	20,240.00	20,240.00		USD
			0.00	**20,240.00**	**20,240.00**		**USD**
720000	Raw Material Consumption Expense	DL00/DGAM1000	0.00	6,900.00	6,900.00		USD
720000	Raw Material Consumption Expense	DL00/TRFR3000	0.00	18,400.00	18,400.00		USD
720000	Raw Material Consumption Expense	DL00/TRSK1000	0.00	4,600.00	4,600.00		USD
720000	Raw Material Consumption Expense	DL00/TRHB1000	0.00	2,300.00	2,300.00		USD
720000	Raw Material Consumption Expense	DL00/PEDL1000	0.00	4,140.00	4,140.00		USD
720000	Raw Material Consumption Expense	DL00/CHAN1000	0.00	920.00	920.00		USD
720000	Raw Material Consumption Expense	DL00/BRKT1000	0.00	6,440.00	6,440.00		USD
720000	Raw Material Consumption Expense	DL00/WDOC1000	0.00	92.00	92.00		USD
720000	Raw Material Consumption Expense	DL00/PCKG1000	0.00	322.00	322.00		USD
Raw Materials			**0.00**	**44,114.00**	**44,114.00**		**USD**
			0.00	**64,354.00**	**64,354.00**		**USD**

Here you can see the costs that were assigned to the production order from our goods issue.

Click on the exit icon to go back to the SAP Easy Access menu.

Step 13: Confirm Production Completion

Task Confirm production order completion. **Time** 10 min

Short Description Confirm completion for your production order.

Name (Position) Michael Brauer (Shop Floor Worker 4)

When the assembly has been completed for the current production order, we need to confirm that certain procedures and activities have been completed and record the quantity of the end product that has been manufactured.

Production completion

To confirm production completion, follow the menu path:

Menu path

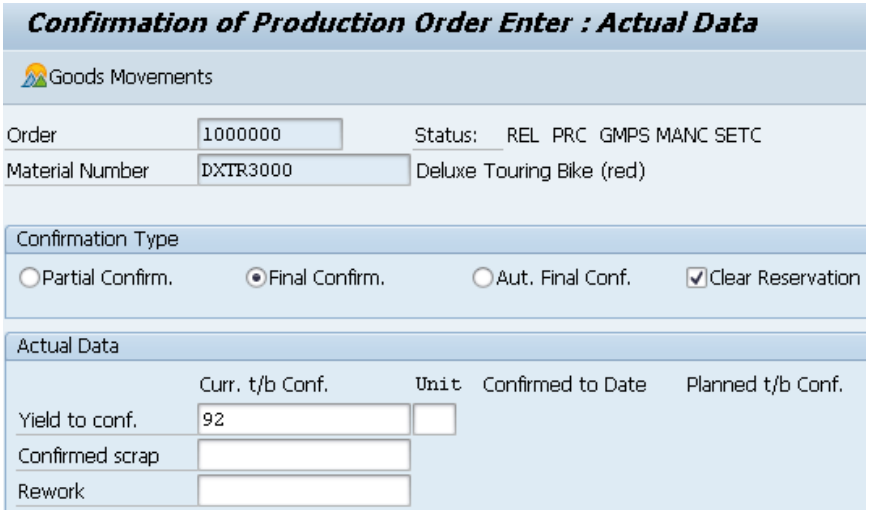
Logistics ► Production ► Shop Floor Control ► Confirmation ► Enter ► For Order

Enter your **production order** number and click on.

Production order number

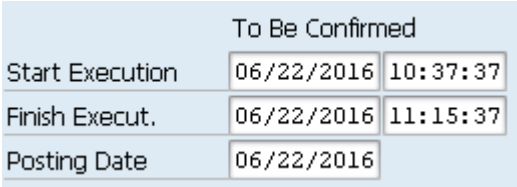
Select **Final Confirm.** and **Clear Reservation**. In the Yield to conf. field, enter the **amount** of bikes you were supposed to produce for this order. Remember that your amount might be different from the screen below.

Final Confirm.
Clear Reservation
Amount



Then, change the Execution start to **1 hour earlier** than the default time.

1 hour earlier



Click on and save your entries with.

Note When the confirmation is saved, labor costs for the order are calculated automatically. The quantity yield also establishes the parameters for the goods receipt into Inventory.

Click on the exit icon to return to the SAP Easy Access screen.

Step 14: Receive Goods from Production Order

Task Post a goods receipt from production order. **Time** 15 min

Short Description Post a goods receipt from your production order.

Name (Position) Susanne Castro (Receiving Clerk)

Goods receipt

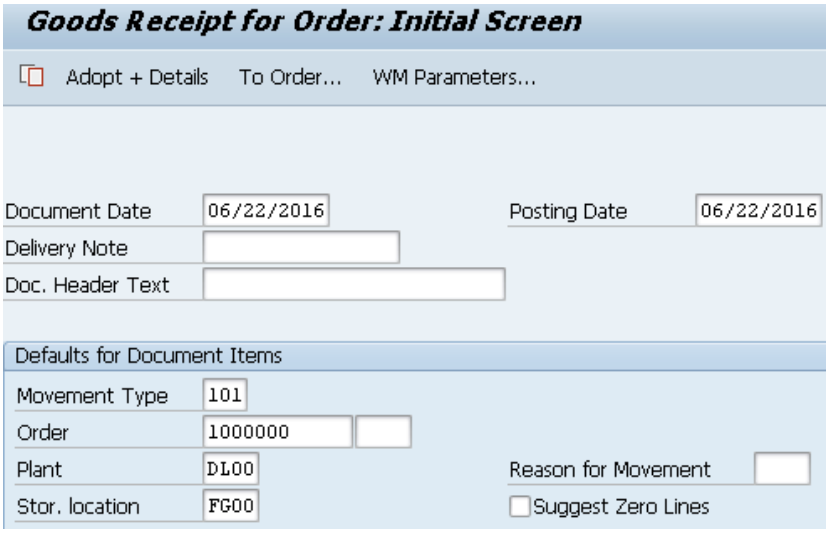
Receive the completed products into finished goods inventory. Check the quantity purposed against the quantity specified in the production order and the quantity specified during confirmation. If there are any discrepancies, the system will decide if an error or warning message should be generated depending upon the deviation identified.

Menu path

To post a goods receipt, follow the menu path:

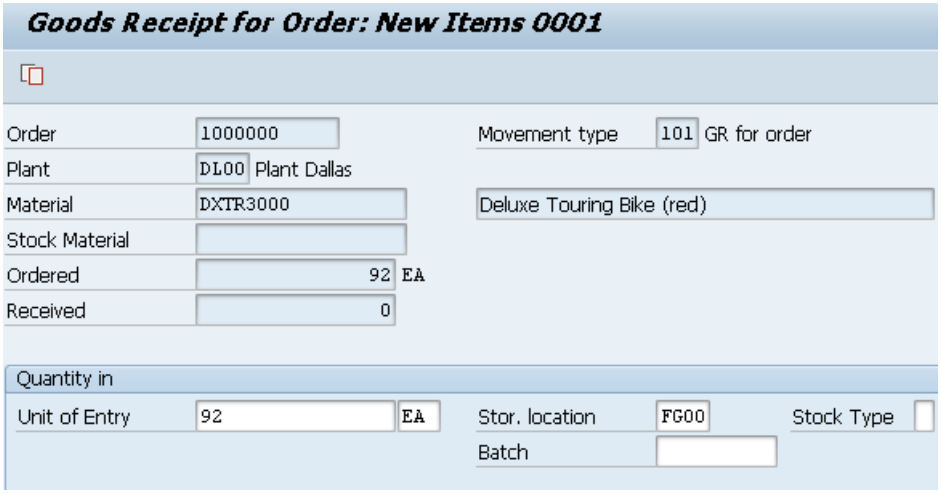
Logistics ► Production ► Shop Floor Control ► Goods Movements ► Goods Receipt

This produces the following screen.

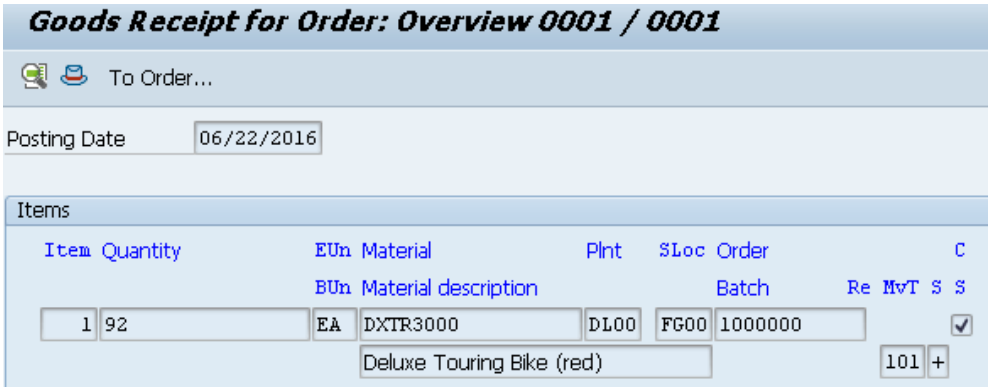


101
Production order number
DL00
FG00

Enter Movement Type **101** (Goods receipt for order to warehouse), your **production order number**, Plant **DL00**, Stor. Location **FG00** (Finished Goods), and select Adopt + Details.



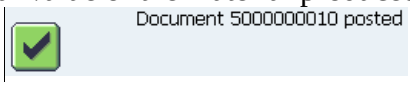
Ensure that the quantity to be placed into inventory and the storage location are correct. Then, click on to accept the details for the new bikes received from production.



In the overview screen, review the item to ensure that all the data is correct.

- Movement Type → 101 (goods receipt into Inventory)
- Storage Location → FG00 (Inventory)
- Quantity → should equal the amount that you confirmed in the previous task

Click on to post the goods receipt. When you save this material document the actual value of the material produced was entered into the production order.



Material document number

Record the material document number.

Click on the exit icon to return to the SAP Easy Access screen.

Step 15: Review Costs Assigned to Production Order

Task Review costs assigned to your production order. **Time** 5 min

Short Description Display and review the costs that have been assigned to your production order.

Name (Position) Jamie Shamblin (Cost Accountant)

To display costs assigned, follow the menu path:

Menu path

Logistics ► Production ► Shop Floor Control ► Order ► Display

Enter your **production order number**, and click on (Enter).

Production order number

In the system menu, select:

Goto ► Costs ► Analysis

Cost Element	Cost Element (Text)	Origin	Σ Total target costs	Σ Total actual costs	Σ Target/actual var.	T/I var(%)	Currency
720300	Semi-Finished Consumption Expense	DL00/TRWA1000	0.00	20,240.00	20,240.00		USD
741700	Manufacturing Output Settlement Va...	DL00/DXTR3000	0.00	128,800.00-	128,800.00-		USD
			0.00	**108,560.00-**	**108,560.00-**		**USD**
800000	Labor	NAPR1000/LABOR	0.00	2,301.75	2,301.75		USD
Production			**0.00**	**2,301.75**	**2,301.75**		**USD**
720000	Raw Material Consumption Expense	DL00/DGAM1000	0.00	6,900.00	6,900.00		USD
720000	Raw Material Consumption Expense	DL00/TRFR3000	0.00	18,400.00	18,400.00		USD
720000	Raw Material Consumption Expense	DL00/TRSK1000	0.00	4,600.00	4,600.00		USD
720000	Raw Material Consumption Expense	DL00/TRHB1000	0.00	2,300.00	2,300.00		USD
720000	Raw Material Consumption Expense	DL00/PEDL1000	0.00	4,140.00	4,140.00		USD
720000	Raw Material Consumption Expense	DL00/CHAN1000	0.00	920.00	920.00		USD
720000	Raw Material Consumption Expense	DL00/BRKT1000	0.00	6,440.00	6,440.00		USD
720000	Raw Material Consumption Expense	DL00/WDOC1000	0.00	92.00	92.00		USD
720000	Raw Material Consumption Expense	DL00/PCKG1000	0.00	322.00	322.00		USD
Raw Materials			**0.00**	**44,114.00**	**44,114.00**		**USD**
			0.00	**62,144.25-**	**62,144.25-**		**USD**

Now that the finished products have been received in the Inventory, the Manufacturing Output Settlement Variance has been added. How is this figure calculated by the system?

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Click on the exit icon to return to the SAP Easy Access screen.

Step 16: Settle Costs of Production Order

Task Settle costs of your production order. **Time** 20 min

Short Description Settle the costs of your production order. The costs are temporarily captured in the production order and they need to be assigned to an appropriate cost object. Compare the actual costs to the planned costs to identify any deviations or potential problems in this regard.

Name (Position) Jamie Shamblin (Cost Accountant)

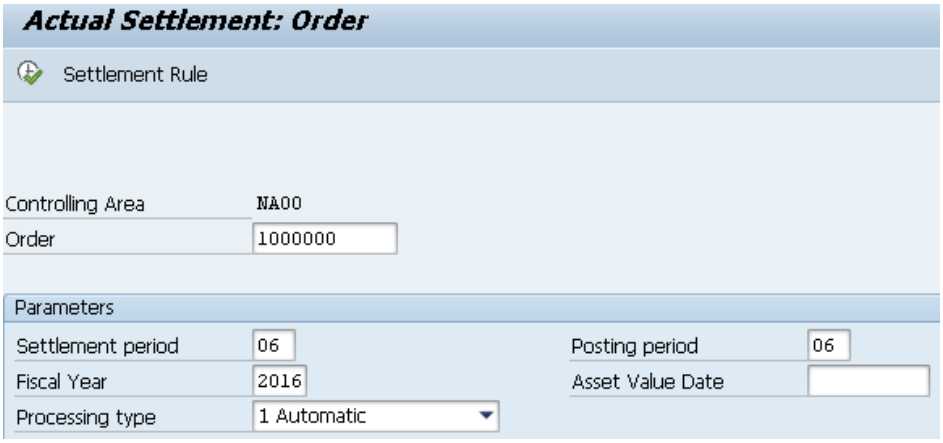
To settle costs of a production order, follow the menu path:

Menu path

Logistics ► Production ► Shop Floor Control ► Period-End Closing ► Settlement ► Individual Processing

If you have to input the Controlling Area, enter **NA00**, and click on ✓.

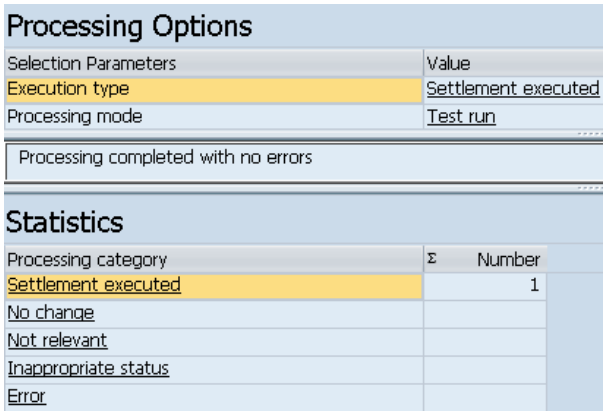
NA00



Enter your **production order number**, the **current month** as Settlement period (e.g. 007 for July), the **current month** as Posting period, and the **current year** as Fiscal year. Make sure that **Test Run** is selected.

Production order number
current month
current month
current year
Test Run

Then, click on (Execute).

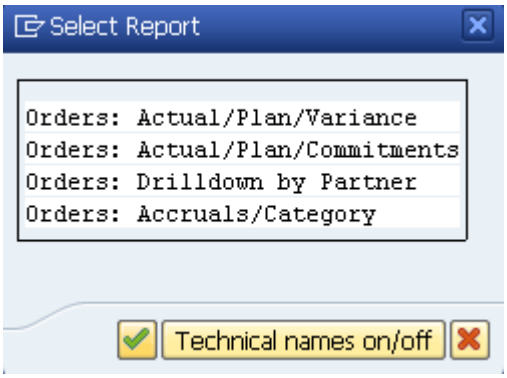


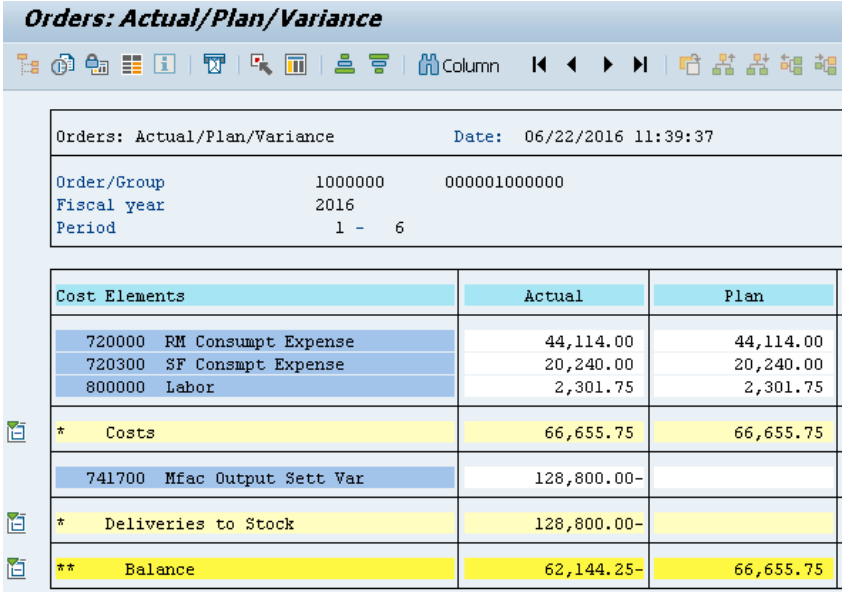
Click on (Detail lists). In the system menu, choose:

Environments ▶ Report

Then, double-click on **Actual/Plan/Variance** to select the report.

Actual/Plan/Variance





Click on to go back. Then, select Yes and click on twice.

Yes

Deselect **Test Run** and execute again with . Click on (Detail lists) and select (Report). Choose report **Actual/Plan/Variance**.

~~Test Run~~
Actual/Plan/Variance

Orders: Actual/Plan/Variance

Column

Orders: Actual/Plan/Variance Date: 06/22/2016 11:42:04

Order/Group	1000000	000001000000
Fiscal year	2016	
Period	1 - 6	

Cost Elements	Actual	Plan
720000 RM Consumpt Expense	44,114.00	44,114.00
720300 SF Consmpt Expense	20,240.00	20,240.00
800000 Labor	2,301.75	2,301.75
* Costs	66,655.75	66,655.75
741700 Mfac Output Sett Var	62,144.25	
* Settled Costs	62,144.25	
741700 Mfac Output Sett Var	128,800.00-	
* Deliveries to Stock	128,800.00-	
** Balance		66,655.75

Note The manufacturing output settlement ist higher than the consumption expenses for raw materials and semi-finished goods? Review and explain the expenses and the settlements of your production order in detail. How is the balance derived?

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Click on , choose Yes and click on again to return to the SAP Easy Access screen.

Yes

☐

PP Challenge

Learning Objective Understand and perform an integrated manufacturing process.

Time 60 min

Motivation After you have successfully worked through the *Production Planning and Execution* case study you should be able to solve the following challenge on your own.

Scenario In this challenge you should create sales and operations plan (SOP) for the product group (product family) Mountainbikes. Take into consideration that the materials of the product group have to be assigned to the strategy group. Therefore, enter manually the following sales figures:

Period	Sales (volume)
Current month + 2	150
Current month + 3	175
Current month + 4	200
Current month + 5	85
Current month + 6	90
Current month + 7	115

In addition, you must post the correct goods for Material ORMN1### in the storage location in order to be able to produce and settle costs afterwards.

Task Information Since this task is based on the *Production Planning and Execution* 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.