Production Planning and Execution (PP)

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

S/4HANA 1809
Global Bike

GUI 7.50

Level

Undergraduate
Graduate
Beginner

Focus

Production Planning and Execution

Authors

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Version

3.3

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

Process Overview

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

Scenario In order to experience a complete manufacturing process you will take on different roles within the Global Bike Group, 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.

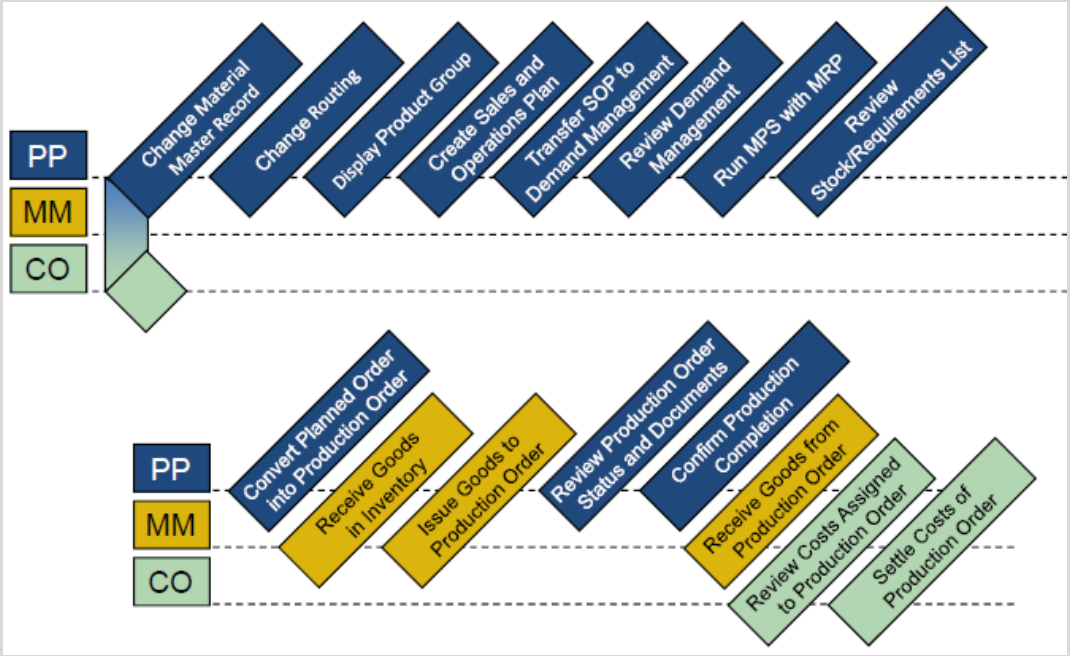
Employees involved

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 needs 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 warehouse storage location and issue them to the production order.

To conclude the process, the production is confirmed as complete, the finished goods are received into the warehouse and costs assigned to the production order are analyzed.



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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:

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

Menu path

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.

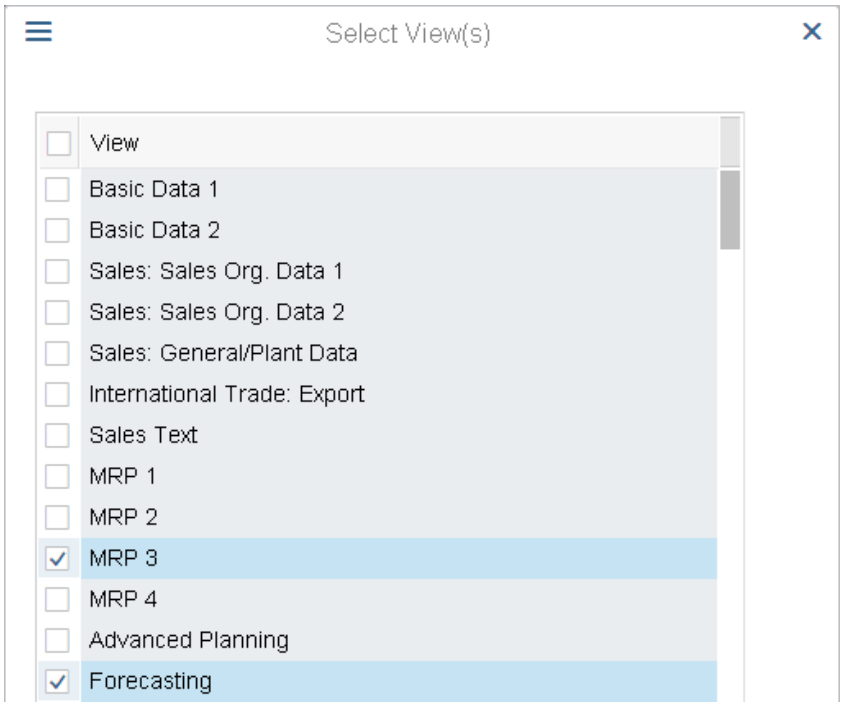
F4
Finished Product
*###

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

DXTR3###

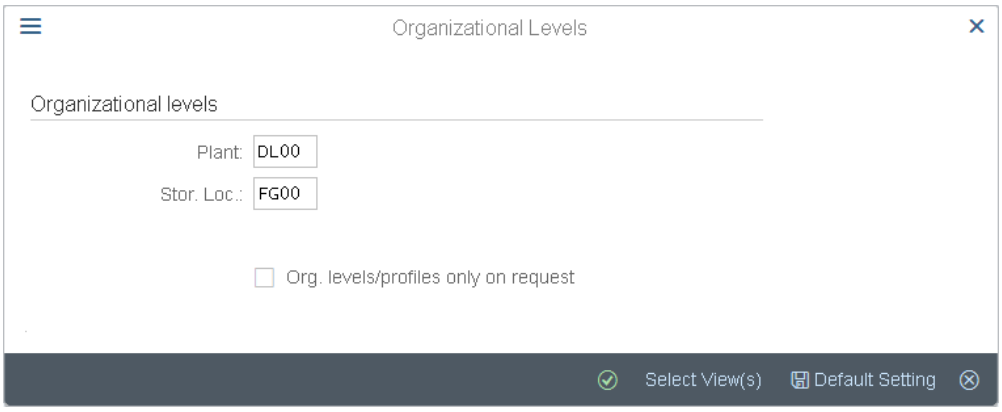
On the following pop up, select **MRP 3** and **Forecasting.** Then, press Enter or click on .

MRP3
Forecast



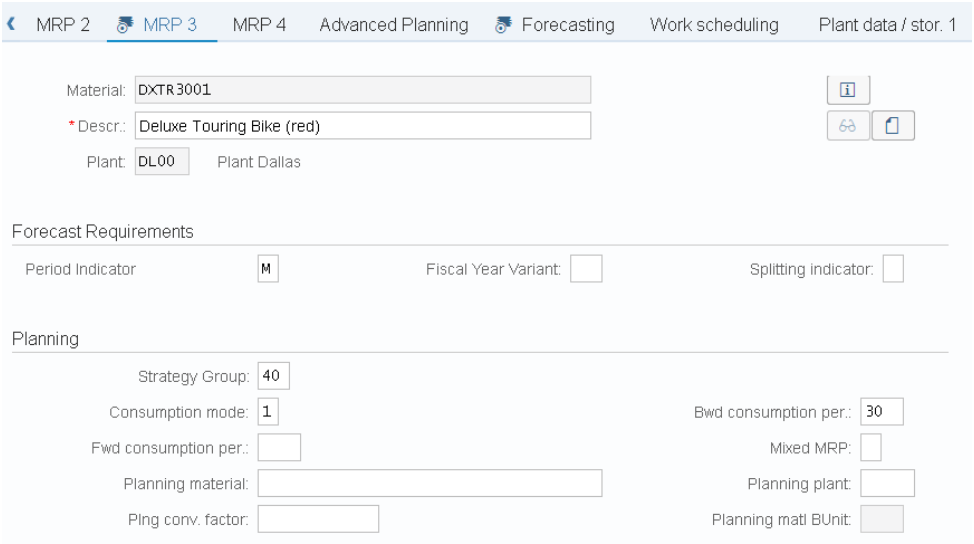
Enter in the following pop up as Plant **DL00** (Dallas) and as Stor. Location **FG00** (Finished Goods). Then click on Enter or on

DL00
FG00



In the *MRP3* tab, enter Strategy group **40** (Planning with final assembly), Consumption mode **1** (Backward consumption only) and Bwd consumption per. **30**. Press Enter to continue to the *Forecasting* tab.

40
1
30

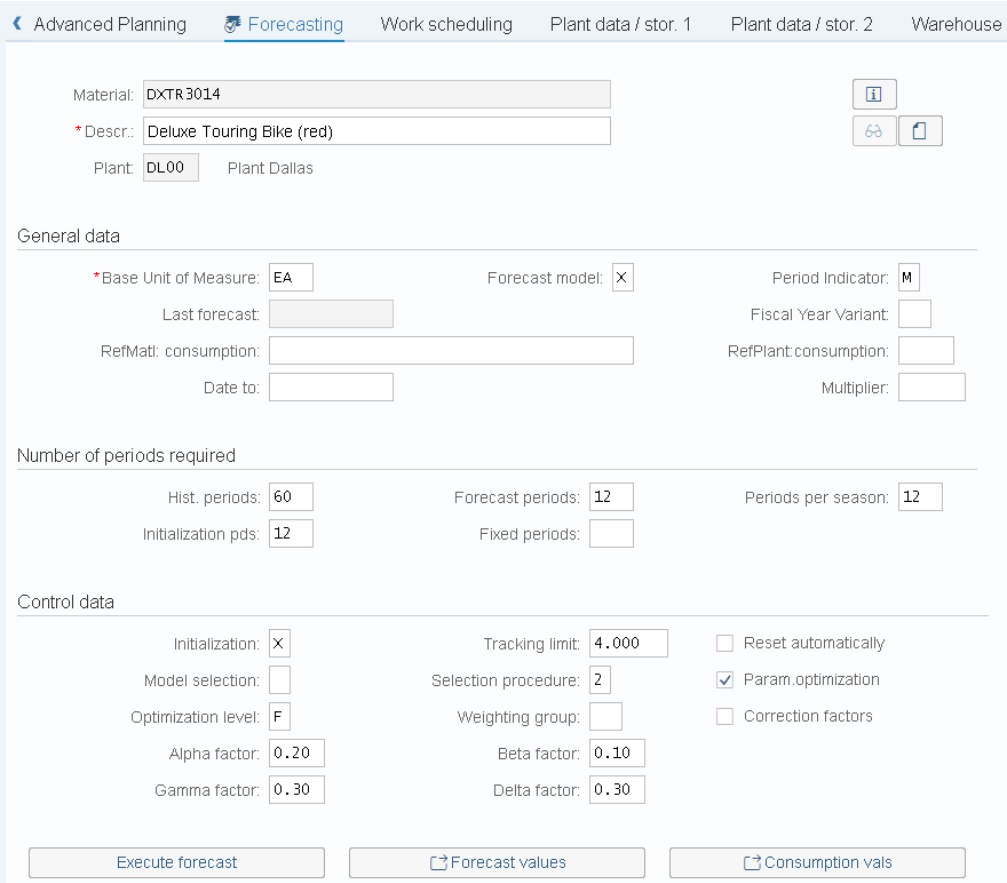


If the following warning message shows up, press Enter again.

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 Corrected Total Consumption for the periods 04.2014 to 03.2018. 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 the warehouse.

Click on Main Data to return to the overview.

Click on Save 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 Exit 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)

Component allocation

After the operational steps are defined, the components that make up the bikes must be allocated to the individual operations. This is a progressive process where each operation builds off the materials that were used in production during a previous operations.

Menu path

To change a routing, follow the menu path:

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

DXTR3###
DL00

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 Continue.

Operation Overview

Op...	SOp	Work cent...	Plant	Co...	Standard ...	Description
0010		ASSY1000	DL00	ASSY		Material staging
0020		ASSY1000	DL00	ASSY		Attach seat to frame
0030		ASSY1000	DL00	ASSY		Attach handle bar assembly
0040		ASSY1000	DL00	ASSY		Attach derailleur gear assm. to wheel
0050		ASSY1000	DL00	ASSY		Attach front and real wheels to chain
0060		ASSY1000	DL00	ASSY		Attach brakes
0070		ASSY1000	DL00	ASSY		Attach peddles
0080		INSP1000	DL00	ASSY		Test bike
0090		PACK1000	DL00	ASSY		Disassemble
0100		PACK1000	DL00	ASSY		Pack bike
0110		PACK1000	DL00	ASSY		Move to storage

Note: A routing can be defined using the routing group and group counter. Moreover, the routing contains reference to the material whose production it describes, and, in addition to the standard sequence, can contain parallel or alternative sequences. Alongside the standard values, the routing also contains the time elements that are relevant for scheduling operations. Each operation in the routing may contain its own base quantity, to which these time elements may refer.

TRFR3###
TRSK1###

Choose Allocation and select the materials **TRFR3###** as well as **TRSK1###**. Afterwards, choose New Assignment.

Item Overview

	...	L...	Path	Ite...	Component
☐	☐	0	0	0010	TRWA1001
☑	☐	0	0	0020	TRFR3001
☐	☐	0	0	0030	DGAM1001
☑	☐	0	0	0040	TRSK1001
☐	☐	0	0	0050	TRHB1001
☐	☐	0	0	0060	PEDL1001
☐	☐	0	0	0070	CHAN1001
☐	☐	0	0	0080	BRKT1001
☐	☐	0	0	0090	WDOC1001
☐	☐	0	0	0100	PCKG1001

In the following pop up, click Oper./act. list.Choose 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

	...	L...	Path	Ite...	Component	Quantity	Sort String	U...	I...	...	Activity
☐	☐	0	0	0010	TRWA1001	2		EA	L		
☐	☐	0	0	0020	TRFR3001	1		EA	L	☐	0020
☐	☐	0	0	0030	DGAM1001	1		EA	L		
☐	☐	0	0	0040	TRSK1001	1		EA	L	☐	0020
☐	☐	0	0	0050	TRHB1001	1		EA	L		
☐	☐	0	0	0060	PEDL1001	1		EA	L		
☐	☐	0	0	0070	CHAN1001	1		EA	L		
☐	☐	0	0	0080	BRKT1001	1		EA	L		
☐	☐	0	0	0090	WDOC1001	1		EA	L		
☐	☐	0	0	0100	PCKG1001	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

	...	L...	Path	Ite...	Component	Quantity	Sort String	U...	I...	...	Activity
		0	0	0010	TRWA1001	2		EA	L		0040
		0	0	0020	TRFR3001	1		EA	L		0020
		0	0	0030	DGAM1001	1		EA	L		0040
		0	0	0040	TRSK1001	1		EA	L		0020
		0	0	0050	TRHB1001	1		EA	L		0030
		0	0	0060	PEDL1001	1		EA	L		0070
		0	0	0070	CHAN1001	1		EA	L		0050
		0	0	0080	BRKT1001	1		EA	L		0060
		0	0	0090	WDOC1001	1		EA	L		0100
		0	0	0100	PCKG1001	1		EA	L		0100

Save your entries with Save.

Routing was saved with group 50000022 and material DXTR3001

Click on Exit 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

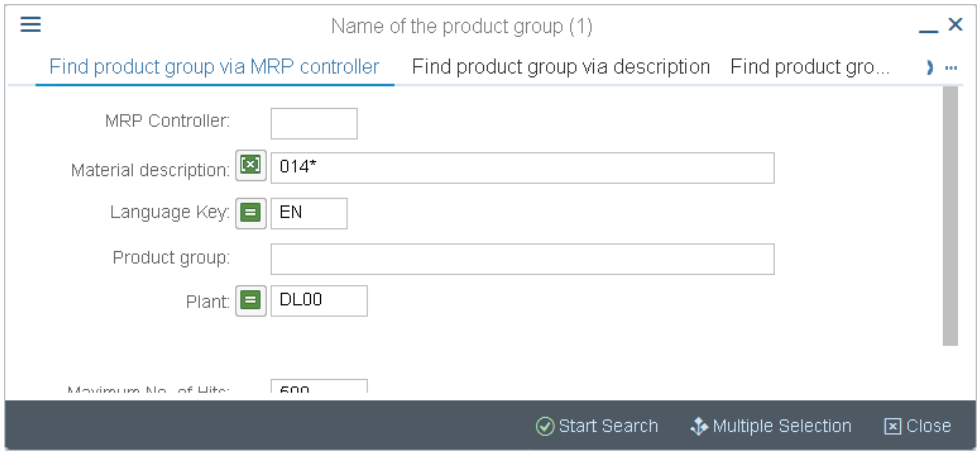
To display the deluxe touring bike product group, follow the menu path:

Logistics ► Production ► SOP ► Product Group ► Display

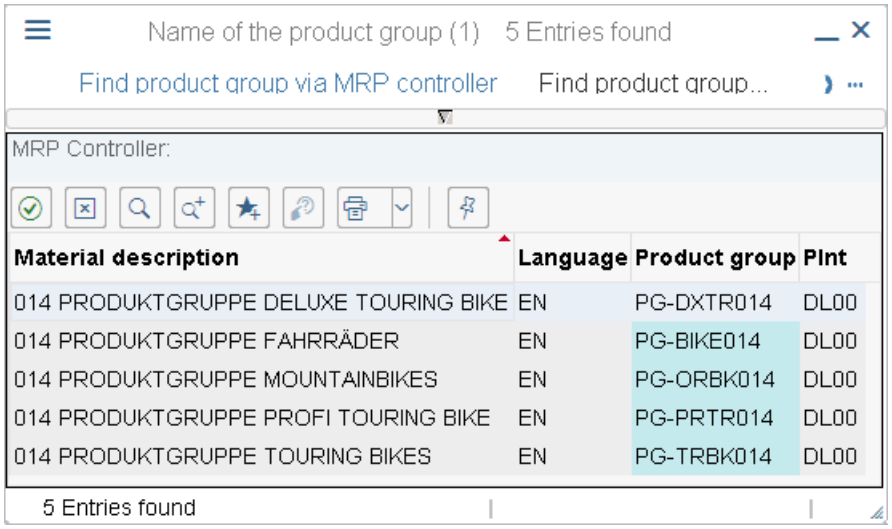
###*

DL00

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. Enter **DL00** as Plant. Then, press Enter or click on Start Search to display the search results. You should see ten product groups already defined for your set of material master data (compare with the screen shown below).

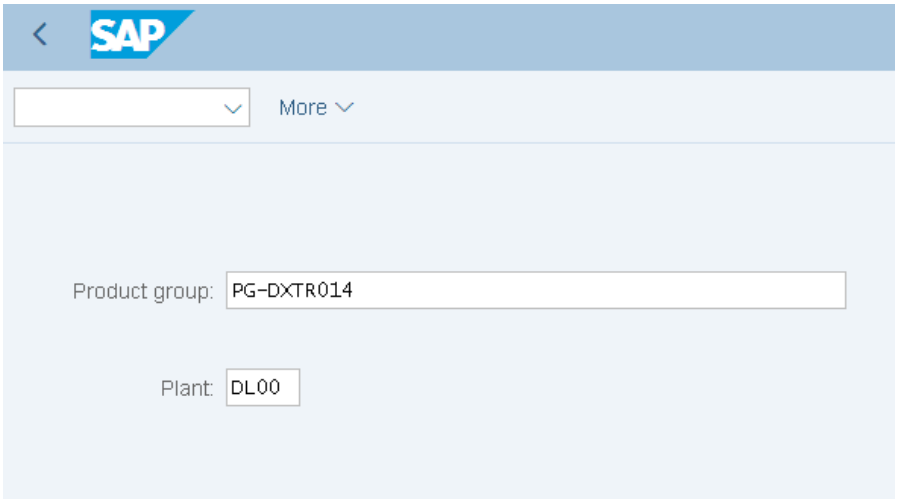


Double-click on the line for deluxe touring bicycles to select the group.



Now that the correct product group (**PG-DXTR###**) is filled in, make sure Plant **DL00** is selected as well. 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 Exit 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)

Sales and operations plan

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.

Menu path

To create an SOP, follow the menu path:

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

PG-DXTR###
DL00

Make sure that Product group **PG-DXTR###** and Plant **DL00** are entered.

Then, select 

.

Record the version number: _____

Menu bar

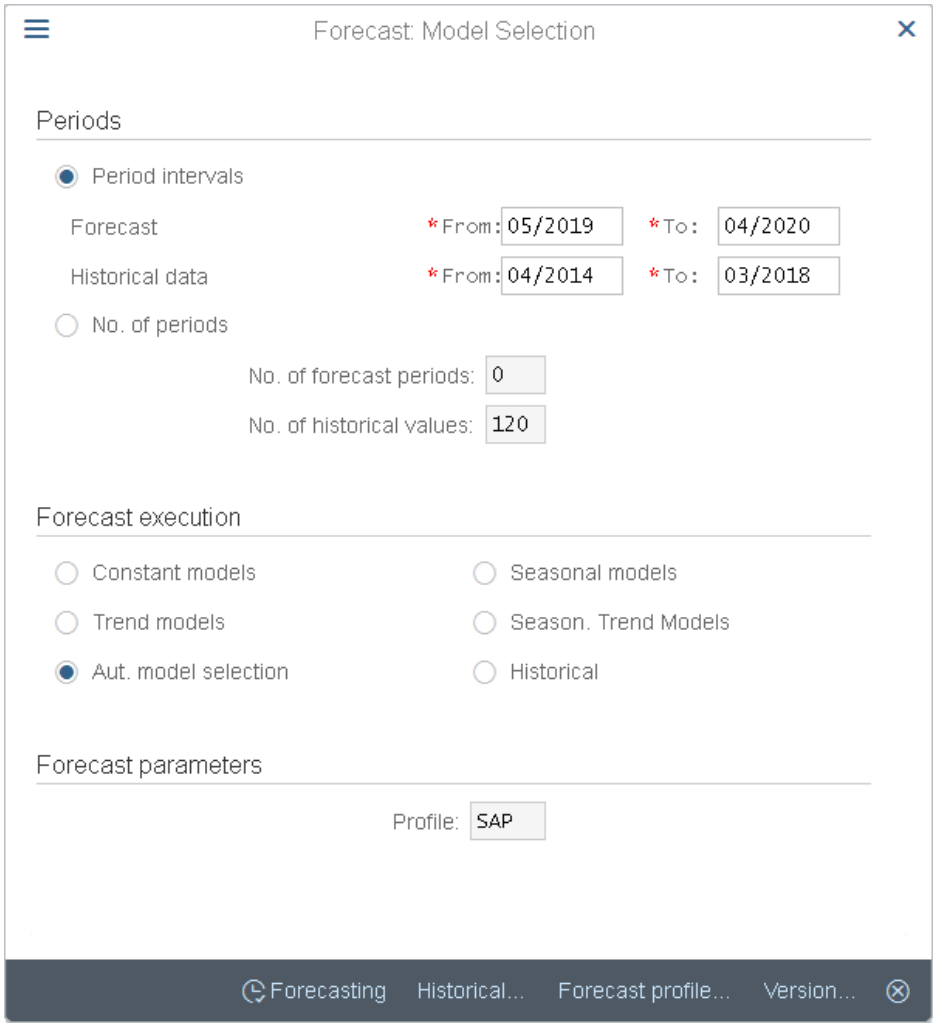
In the system menu, select:

More ► Edit ► Create sales plan ► Forecast…

Period intervals
current period/current year
previous period/next year
04/2014
03/2018
Aut. model selection

Select **Period intervals**, Forecast from **current period/current year** to **previous period/next year**, Historic Data from **04/2014** to **03/2018**, Forecast execution **Aut. model selection**. Compare your screen with the one below before clicking on 

.



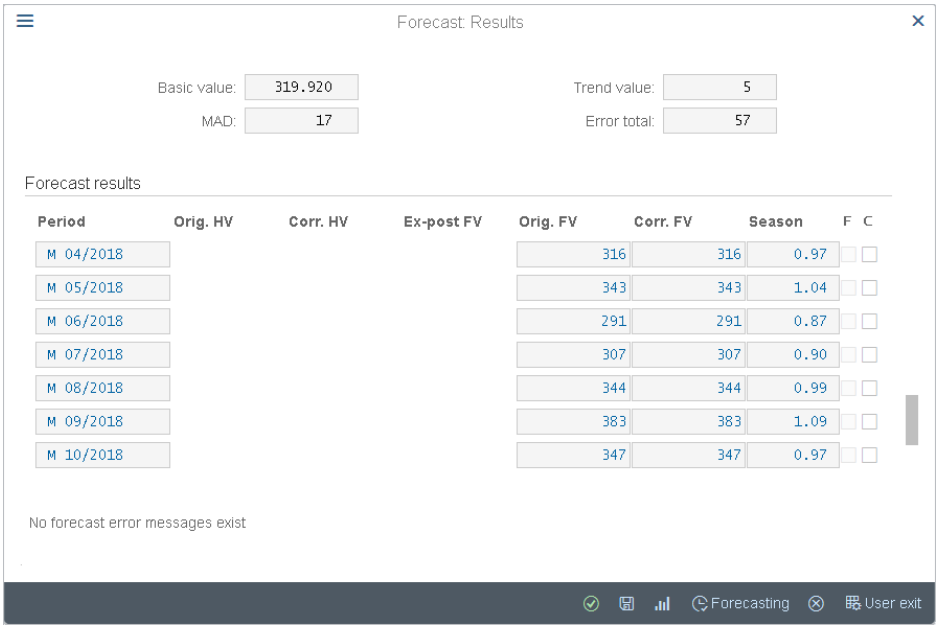
If needed, press Enter and continue through warning messages.

In the next pop up you will see, that the system selected *Trend and season*.

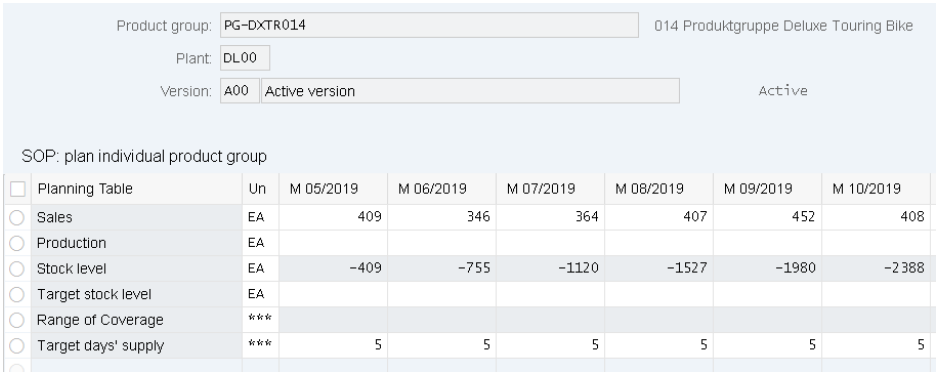
Click on Forecasting.

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. 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 levels proposed.

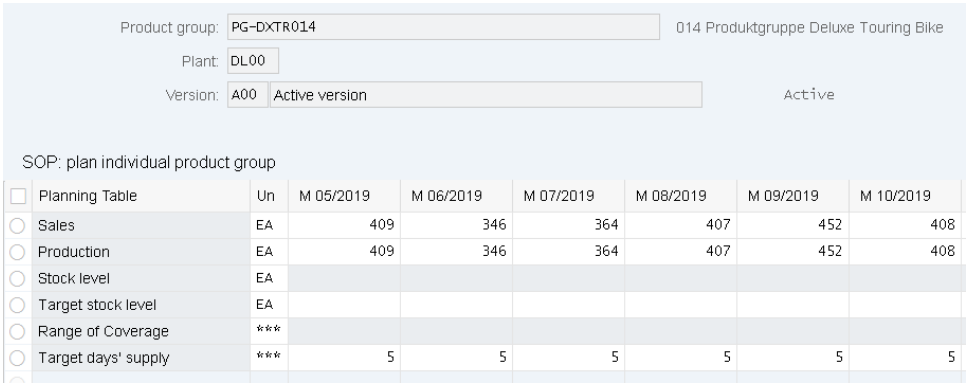
As the SOP is high-level planning, discrete production values are not necessary. The SAP system calculates discrete numbers once the SOP is transferred to the Demand Management.

In the menu bar, select:

Menu bar

More ► Edit ► Create product 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.



Product group: PG-DXTR014 014 Produktgruppe Deluxe Touring Bike
Plant: DL00
Version: A00 Active version Active

SOP: plan individual product group

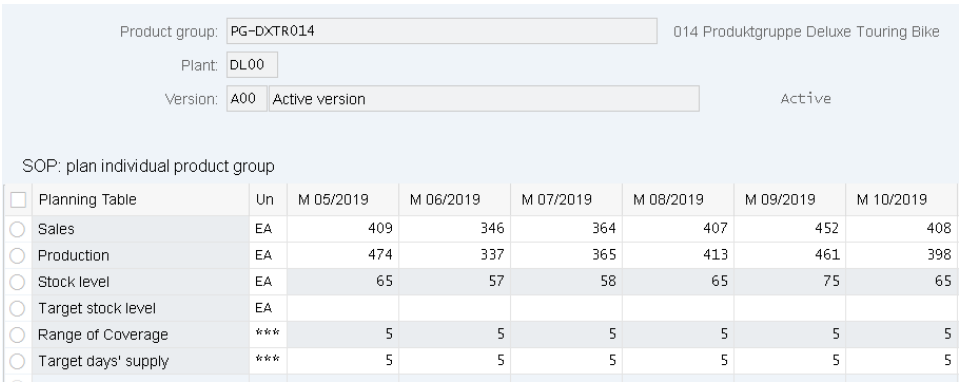
Planning Table	Un	M 05/2019	M 06/2019	M 07/2019	M 08/2019	M 09/2019	M 10/2019
Sales	EA	409	346	364	407	452	408
Production	EA	409	346	364	407	452	408
Stock level	EA						
Target stock level	EA						
Range of Coverage	***						
Target days' supply	***	5	5	5	5	5	5

In the menu bar, select

More ► Edit ► Create product plan ► Target day's supply Menu bar

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).



Product group: PG-DXTR014 014 Produktgruppe Deluxe Touring Bike
Plant: DL00
Version: A00 Active version Active

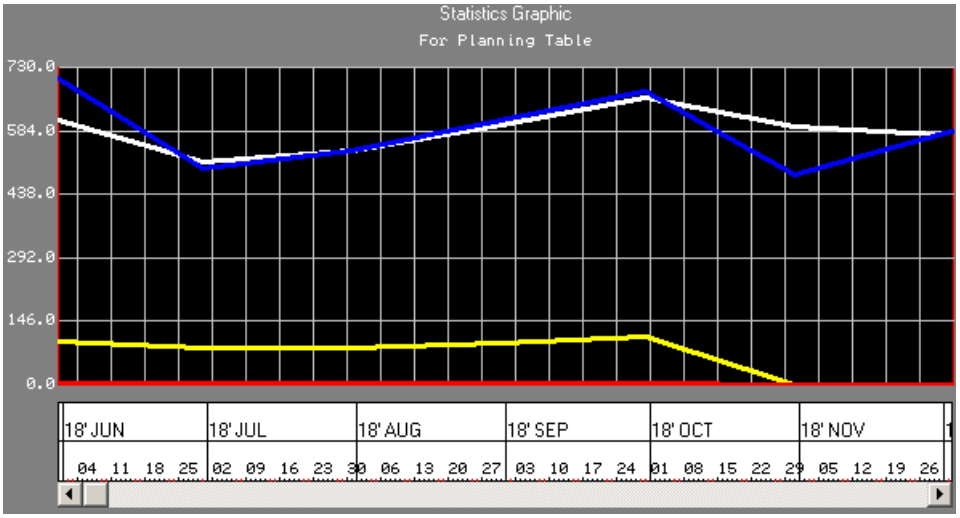
SOP: plan individual product group

Planning Table	Un	M 05/2019	M 06/2019	M 07/2019	M 08/2019	M 09/2019	M 10/2019
Sales	EA	409	346	364	407	452	408
Production	EA	474	337	365	413	461	398
Stock level	EA	65	57	58	65	75	65
Target stock level	EA						
Range of Coverage	***	5	5	5	5	5	5
Target days' supply	***	5	5	5	5	5	5

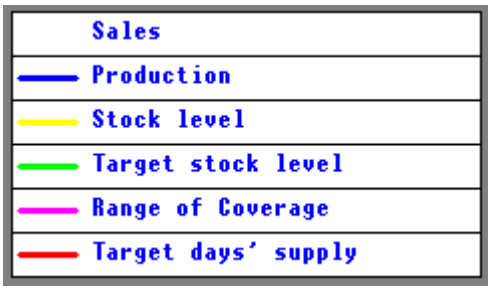
Click on 

to review a graphic representation of your planning table.

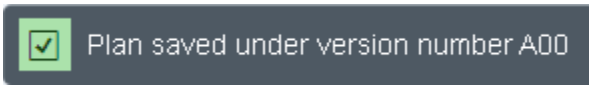
Note: Although the screen displays integer production values, the SAP system calculates with decimal accuracy. You can display the decimal places by highlighting a row and pressing F8 and enter the number of decimal places required. Then (re)create the production plan.



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



Close the pop ups and save with Save.



Click on Exit 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

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.

Menu path

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

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

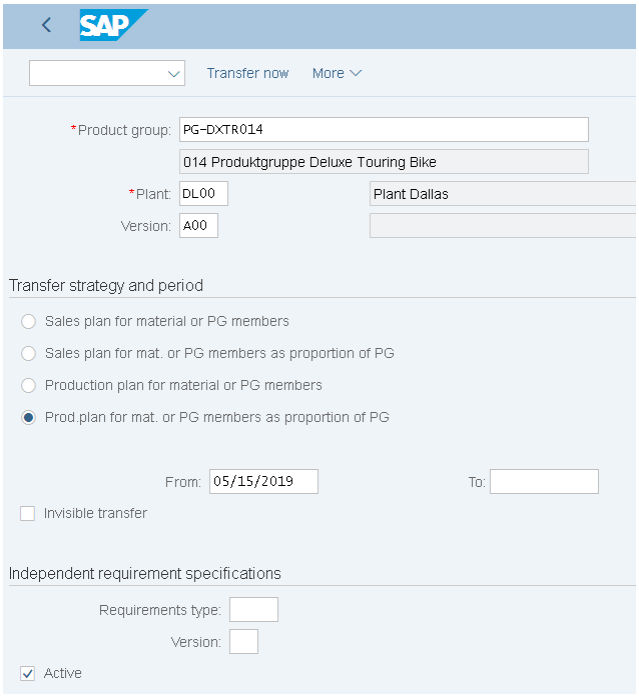
PG-DXTR###
DL00
A00

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

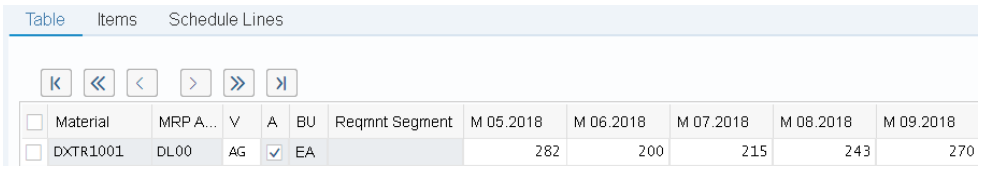
Prod.plan for mat. or PG members as prop. of PG
Active
Invisible Transfer

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.

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



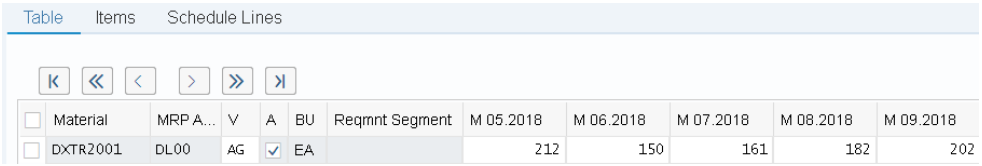
Then, click on Save to save.



Material	MRP A...	V	A	BU	Reqmnt Segment	M 05.2018	M 06.2018	M 07.2018	M 08.2018	M 09.2018
DXTR1001	DL00	AG	☑	EA		282	200	215	243	270

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

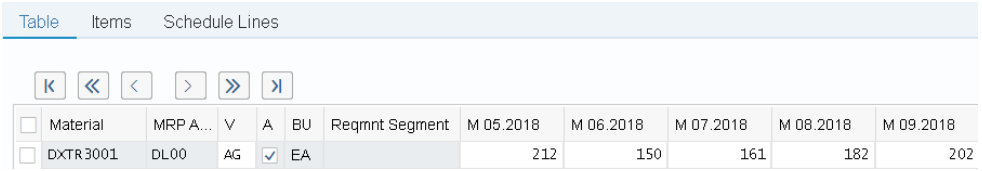
DXTR2###



Material	MRP A...	V	A	BU	Reqmnt Segment	M 05.2018	M 06.2018	M 07.2018	M 08.2018	M 09.2018
DXTR2001	DL00	AG	☑	EA		212	150	161	182	202

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

DXTR3###



Material	MRP A...	V	A	BU	Reqmnt Segment	M 05.2018	M 06.2018	M 07.2018	M 08.2018	M 09.2018
DXTR3001	DL00	AG	☑	EA		212	150	161	182	202

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

_____

_____

_____

Click on Exit 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)

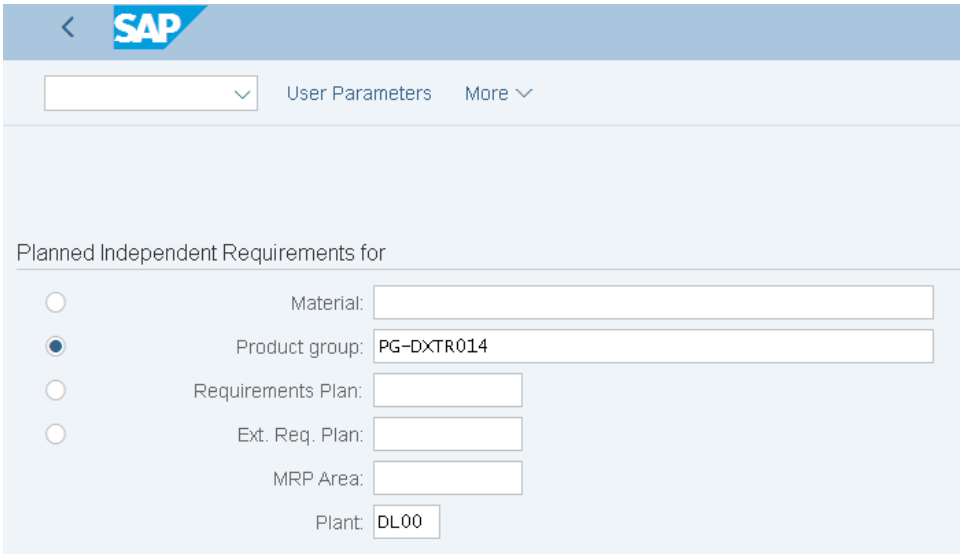
To review planned requirements, follow the menu path:

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

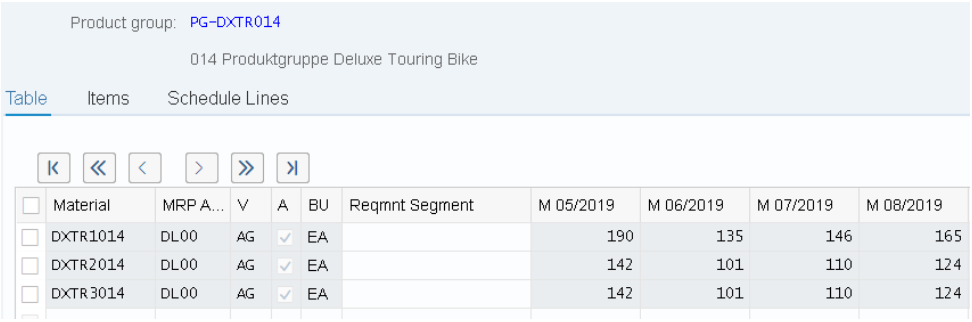
Menu path

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

Product group
PG-DXTR###
DL00

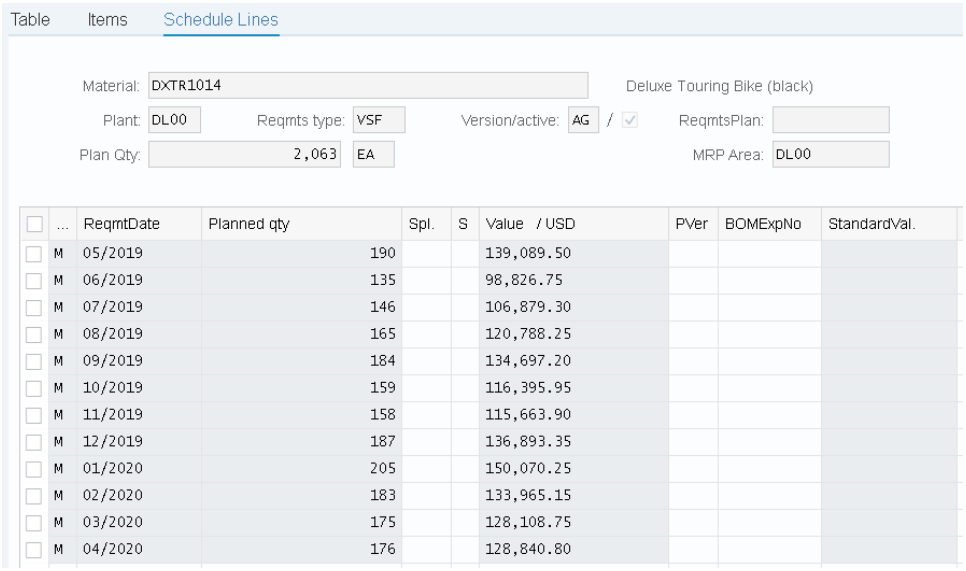


On the *Table* tab, review the Planned Independent Requirements for the Deluxe Touring bike product group by material.



Material	MRP A...	V	A	BU	Reqmnt Segment	M 05/2019	M 06/2019	M 07/2019	M 08/2019
DXTR1014	DL00	AG	✓	EA		190	135	146	165
DXTR2014	DL00	AG	✓	EA		142	101	110	124
DXTR3014	DL00	AG	✓	EA		142	101	110	124

On the *Schedule Lines* tab, review the requirement dates, planned quantities, values, and total planned quantities.



...	ReqmtDate	Planned qty	Spl.	S	Value / USD	PVer	BOMExpNo	StandardVal.
M	05/2019	190			139,089.50			
M	06/2019	135			98,826.75			
M	07/2019	146			106,879.30			
M	08/2019	165			120,788.25			
M	09/2019	184			134,697.20			
M	10/2019	159			116,395.95			
M	11/2019	158			115,663.90			
M	12/2019	187			136,893.35			
M	01/2020	205			150,070.25			
M	02/2020	183			133,965.15			
M	03/2020	175			128,108.75			
M	04/2020	176			128,840.80			

Select Next item to move to the next material.

Click on Exit 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

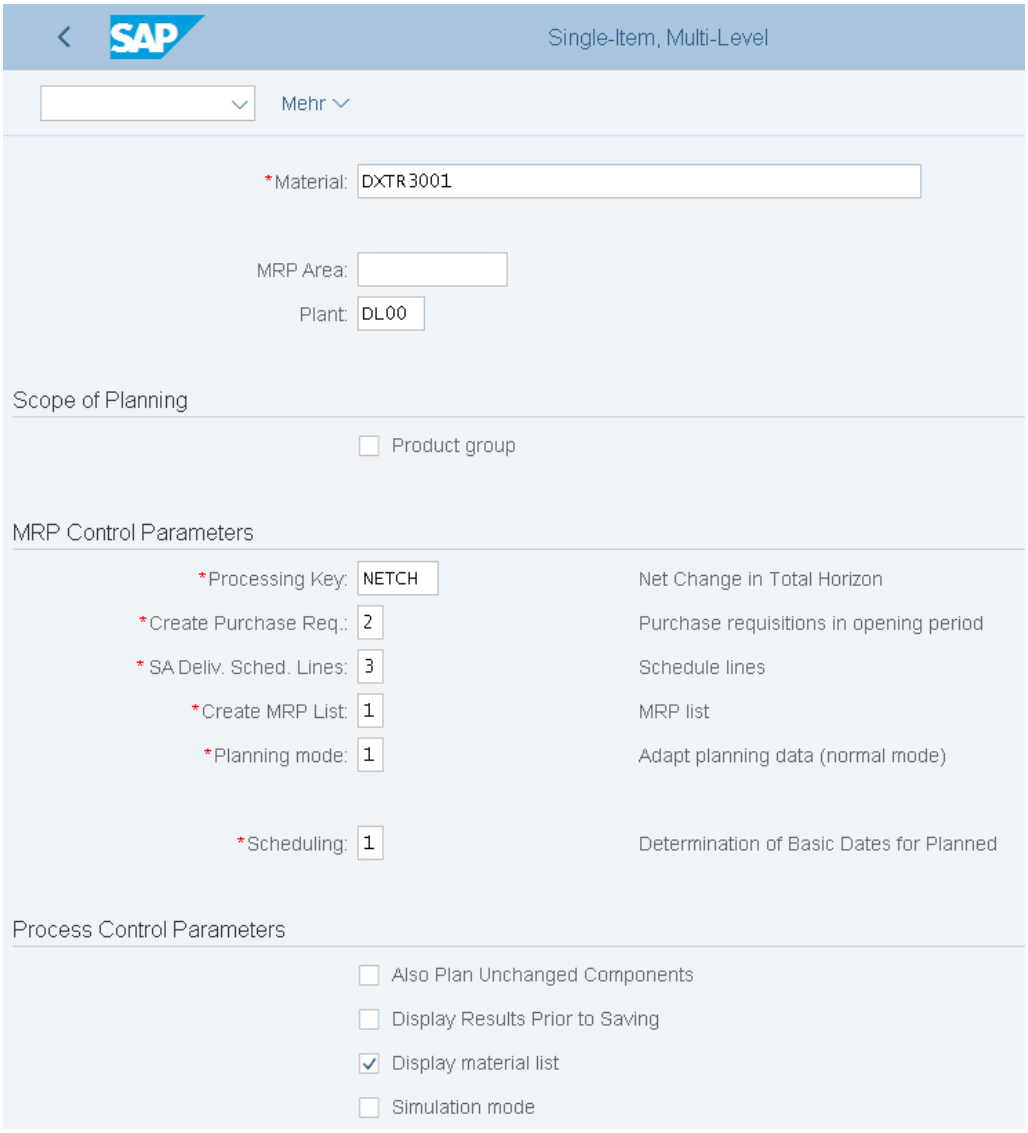
Enter your material **DXTR3###**, Plant **DL00**, Processing key **NETCH**, select **2** (Purchase requisition in opening period), **3** (Schedule lines), **1** (MRP list), **1** (Adapt planning data (normal mode)), and **1** (Determination of Basic Dates for Planned). Then, select **Display material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

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

Press Enter.

Note: In MRP, a net requirements calculation is executed in the planning run to determine whether a material shortage exists for a certain material. In addition, stock and fixed receipts that currently exist (for example, purchase orders, production orders, fixed purchase requisitions and planned orders) are compared with the safety stock and requirements. The result of this comparison is the quantity available for planning.

If the quantity available for planning is lower than zero, a material shortage exists. MRP reacts to material shortages by creating new procurement proposals (purchase requisitions and planned orders). The suggested procurement quantity results from the lot-sizing procedure that is set in the material master.



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

Review the planning details from the List Display.

Statistics	
Materials planned	11
Materials with New Exceptions	11
Materials with Termination MRP List	

Parameters	
MRP Area	DL00
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	132
Dependent requirements created	120

Runtime Statistics	
Start of Planning Run	10:03:42
End of Planning Run	10:03:46
Runtime	00:00:04
CPU Time Read-In	00:00:01
.. Read In Preread Mat. Package	00:00:01

Click on Exit 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 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.

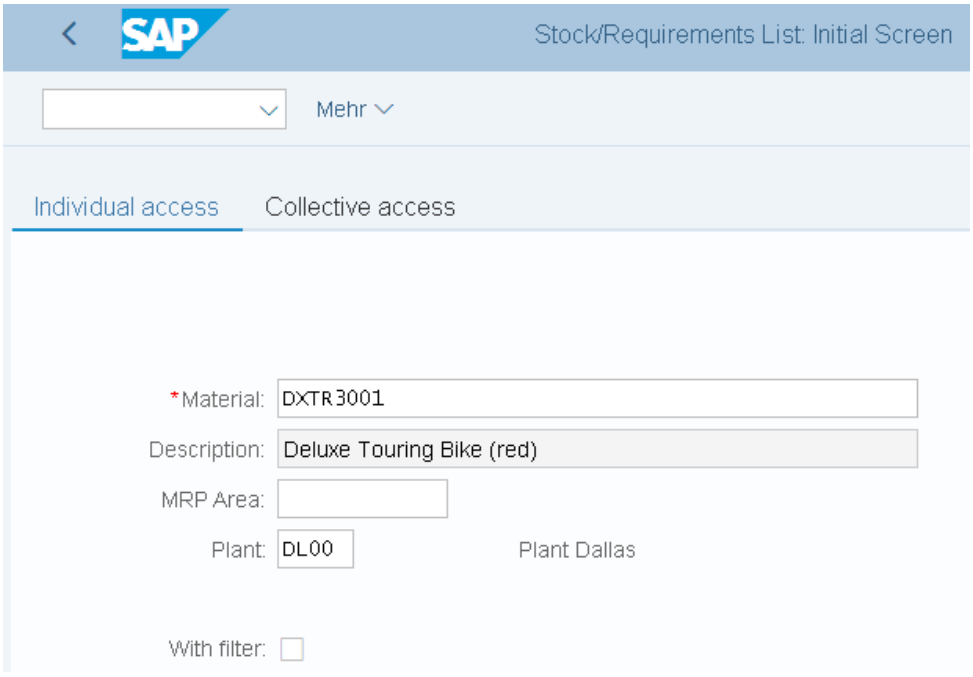
Menu path

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

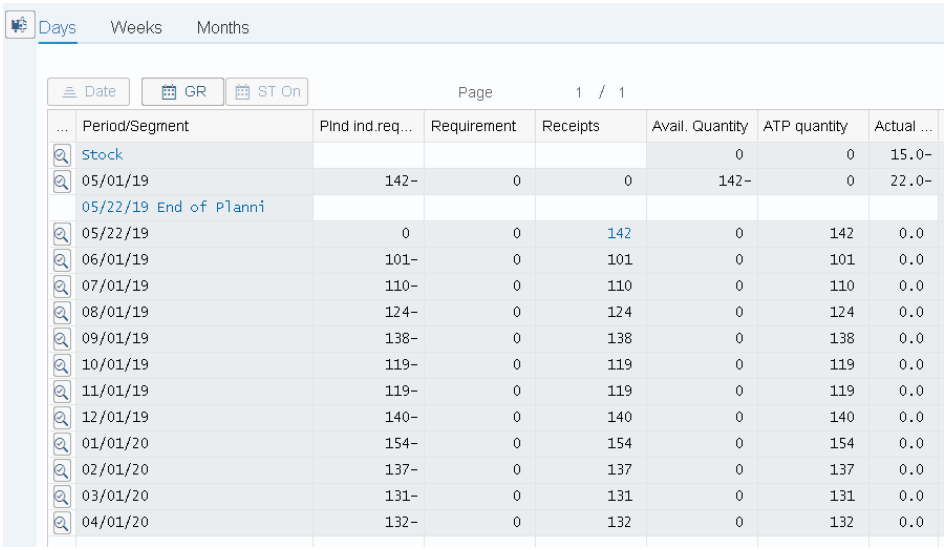
Logistics ▶ Production ▶ Production Planning ▶ MPS ▶ Evaluations ▶ Stock/Reqmts List

DXTR3###
DL00

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

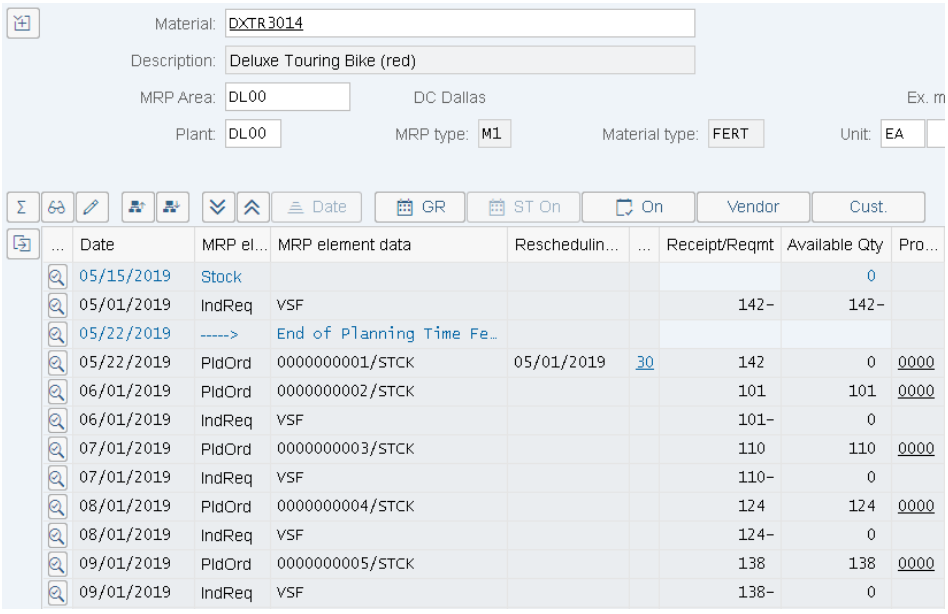


Choose Σ (Switch to Period Totals). This will allow you to see the planned independent requirements, planned receipts, and ATP quantities based on time - days, weeks, or months.



...	Period/Segment	Plnd ind.req...	Requirement	Receipts	Avail. Quantity	ATP quantity	Actual ...
	Stock				0	0	15.0-
	05/01/19	142-	0	0	142-	0	22.0-
	05/22/19 End of Planni						
	05/22/19	0	0	142	0	142	0.0
	06/01/19	101-	0	101	0	101	0.0
	07/01/19	110-	0	110	0	110	0.0
	08/01/19	124-	0	124	0	124	0.0
	09/01/19	138-	0	138	0	138	0.0
	10/01/19	119-	0	119	0	119	0.0
	11/01/19	119-	0	119	0	119	0.0
	12/01/19	140-	0	140	0	140	0.0
	01/01/20	154-	0	154	0	154	0.0
	02/01/20	137-	0	137	0	137	0.0
	03/01/20	131-	0	131	0	131	0.0
	04/01/20	132-	0	132	0	132	0.0

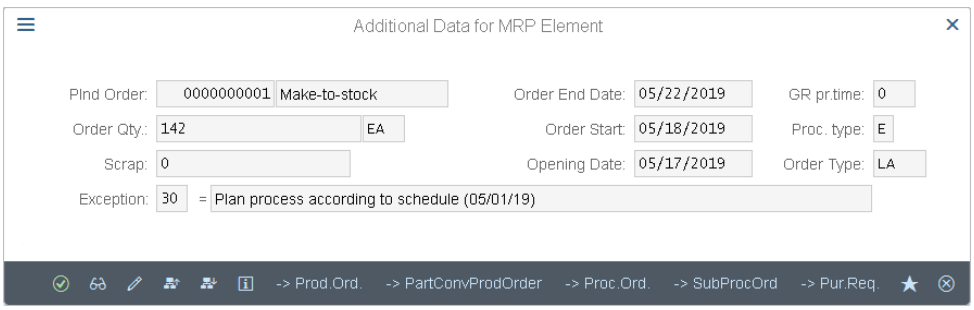
Select  to go back to the individual lines.



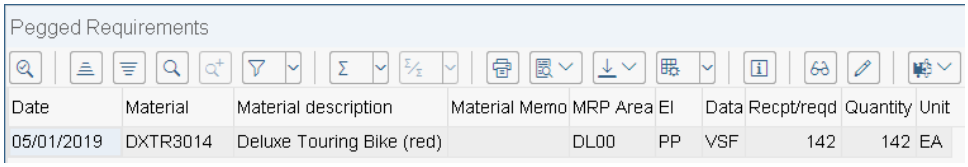
...	Date	MRP el...	MRP element data	Reschedulin...	...	Receipt/Reqmt	Available Qty	Pro...
	05/15/2019	Stock					0	
	05/01/2019	IndReq	VSF			142-	142-	
	05/22/2019	----->	End of Planning Time Fe...					
	05/22/2019	PldOrd	0000000001/STCK	05/01/2019	30	142	0	0000
	06/01/2019	PldOrd	0000000002/STCK			101	101	0000
	06/01/2019	IndReq	VSF			101-	0	
	07/01/2019	PldOrd	0000000003/STCK			110	110	0000
	07/01/2019	IndReq	VSF			110-	0	
	08/01/2019	PldOrd	0000000004/STCK			124	124	0000
	08/01/2019	IndReq	VSF			124-	0	
	09/01/2019	PldOrd	0000000005/STCK			138	138	0000
	09/01/2019	IndReq	VSF			138-	0	

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.



Click on Exit 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:

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

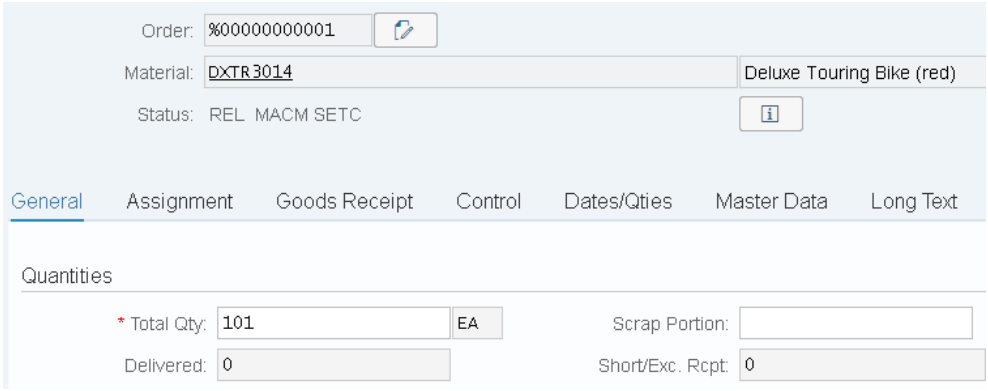
Menu path

Enter Material **DXTR3###**, Plant **DL00**, and click on Continue or press Enter. Then, double-click on the second planned order.

DXTR3###
DL00

...	Date	MRP el...	MRP element data	Reschedulin...	...	Receipt/Reqmt
	05/15/2019	Stock				
	05/01/2019	IndReq	VSF			142-
	05/22/2019	----->	End of Planning Time Fe…			
	05/22/2019	PldOrd	0000000001/STCK	05/01/2019	30	142
	06/01/2019	PldOrd	0000000002/STCK			101
	06/01/2019	IndReq	VSF			101-
	07/01/2019	PldOrd	0000000003/STCK			110

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  . What does this mean? _____

_____

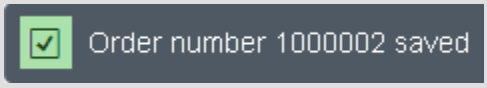
_____

_____

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 *Production order Create: Header* screen and  your production order.

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.



Make sure you record your production order number.

Production order number

_____

Select  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*.

...	Date	MRP el...	MRP element data	Reschedulin...	...	Receipt/Reqmt	Available Qty
	05/15/2019	Stock					0
	05/01/2019	IndReq	VSF			142-	142-
	05/22/2019	----->	End of Planning Time Fe...				
	05/22/2019	PldOrd	0000000001/STCK	05/01/2019	30	142	0
	06/01/2019	PrdOrd	000001000000/PP01/Re	05/01/2019	10	101	101
	06/01/2019	IndReq	VSF			101-	0
	07/01/2019	PldOrd	0000000003/STCK			110	110

Click on  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

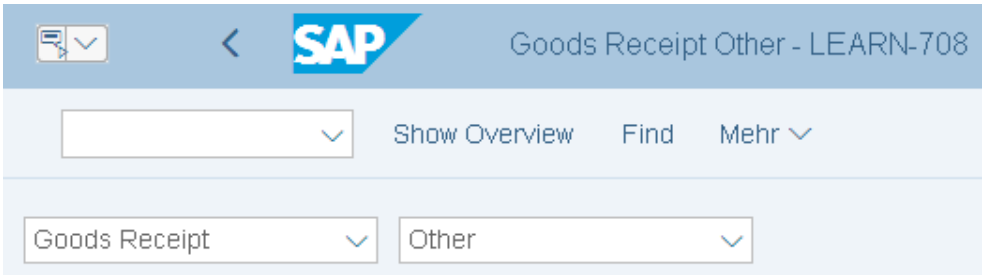
Usually, at this point the purchasing department in Dallas would take over and procure enough raw materials from vendors to fill the inventory so that the production process can be initiated. In this case study, we are bypassing this procurement process (this process is explained in the MM unit in detail). 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 Movement

Make sure that *Goods Receipt* and *Other* is selected in the drop-down menu.



today
561

Enter Movement Type **561** (Receipt per initial entry of stock balances into unr.-use), **today** as Document and Posting Date. Then, press Enter. If necessary, confirm the information pop-up.

In the *Goods Receipt Other* screen, enter the following data. Each of these ten materials are components that you need in your production order later on. Note that all materials are stored in the raw materials storage location in DL00 (Dallas) except the touring wheel assembly (first component in the list) which is a semi-finished good.

If the material field is shown grayed click on  to minimize the *Detail data*.

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###

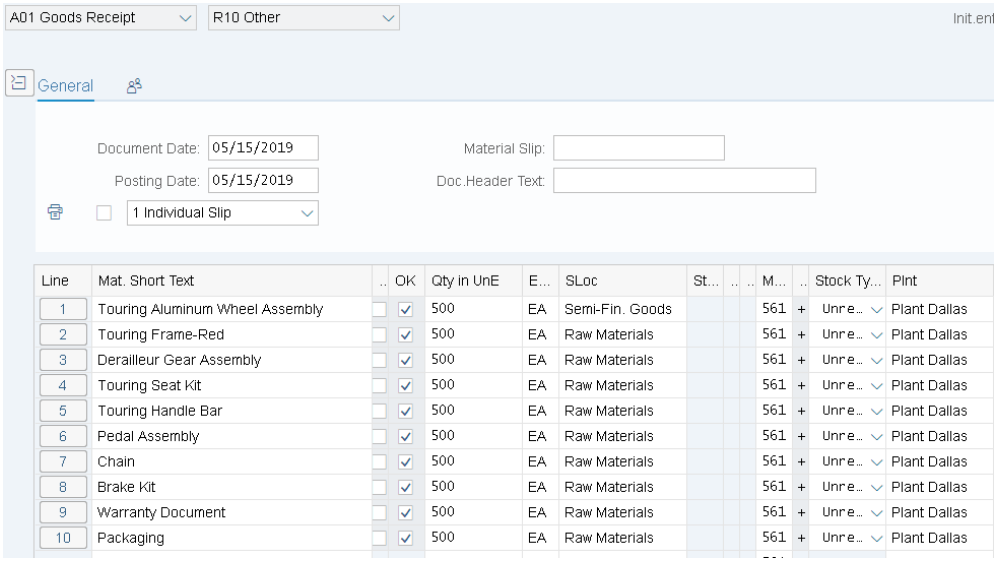
PCKG1###

Enter DL00 as Plnt in all of the ten lines.

DL00

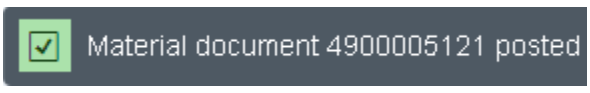
Press Enter.

Then compare your screen with the screenshot shown below. Remember that your material numbers are different.



Save your goods receipt with Post and record the material document number.

Material document number



Then, click on Exit to return to the SAP Easy Access screen.

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)

Goods issue

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, they 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.

Menu path

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

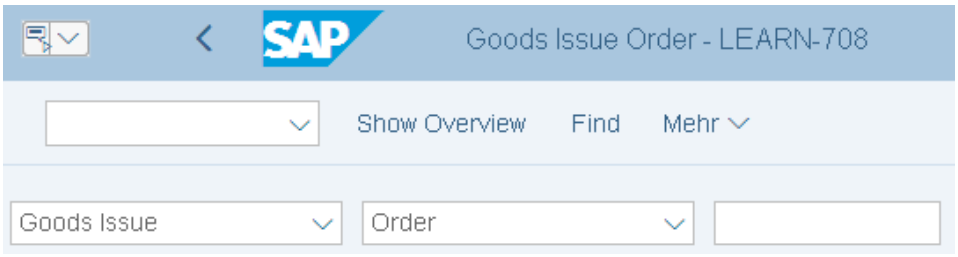
Logistics ► Production ► Shop Floor Control ► Goods Movements ► Goods Issue / Goods Receipt

Make sure that *Goods Issue* and *Order* is selected.

Note: Goods issues posting for the required components is another milestone in the production order process. The following functions are performed when a GI for the components of the production order is posted:

- Storage-location-specific update of the stock and consumption fields
- Reduction of the reservation (for planned withdrawal)
- Update of costs for unplanned withdrawals
- Determination of actual costs (valuation) and order update
- Consumption update
- Generation of material and accounting documents (FI and CO documents)
- Creation of material document.
- Creation of accounting document
- Creation of controlling document
- Printing of GI document

The goods issues posting is controlled through a movement type (261), to which each posting refers. This can take place manually or automatically.



today
today
261

Enter Movement Type **261** (Consumption for order from warehouse), **today** as Document Date and Posting Date.

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

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###

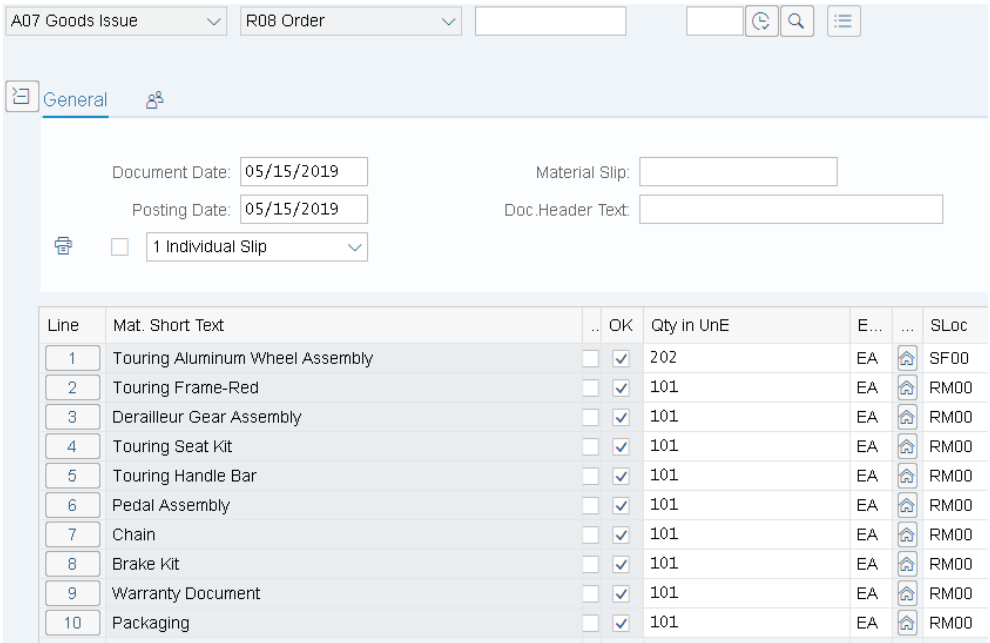
Execute

Once you have found and entered your production order number, click on Enter 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 Touring Aluminum Wheel Assembly (TRWA1###), enter **SF00** (Semi-finished goods) and for all other materials **RM00** (Raw materials) in the SLoc fields. Furthermore, flag each item with **OK**. Before pressing Enter compare your screen with the one shown below. Notice that your quantity could be different.

SF00
RM00

OK



Click on  and record the material document number _____.

Post

Material document number

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

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 number**.

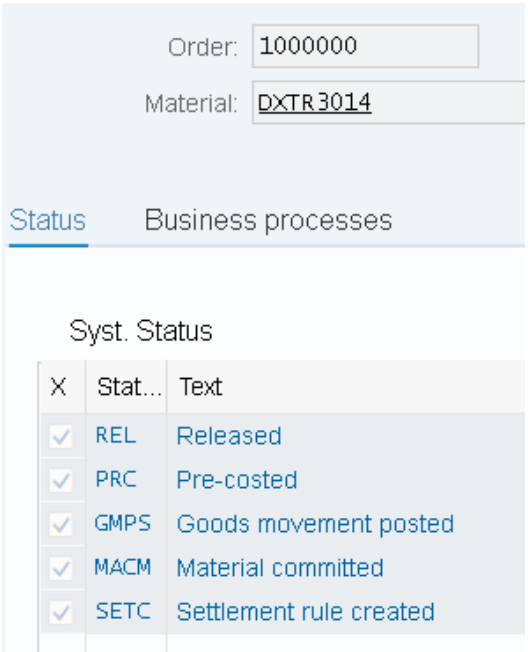
Production order number

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 Execute. 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 Continue. 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.

Then in the system menu select:

More ▶ Goto ▶ Costs ▶ Analysis

Menu bar

Cost Element	Cost Element (Text)	Origin	Σ	Total Target Costs	Σ	Total Actual Costs
720300	Aufwendungen Halbfertigerzeugnisse	DL00/TRWA1014		0.00		22,826.00
			▪	**0.00**	▪	**22,826.00**
720000	Aufwendungen Rohstoffe	DL00/TRFR3014		0.00		20,200.00
720000	Aufwendungen Rohstoffe	DL00/DGAM1014		0.00		7,575.00
720000	Aufwendungen Rohstoffe	DL00/TRSK1014		0.00		5,050.00
720000	Aufwendungen Rohstoffe	DL00/TRHB1014		0.00		2,525.00
720000	Aufwendungen Rohstoffe	DL00/PEDL1014		0.00		4,545.00
720000	Aufwendungen Rohstoffe	DL00/CHAN1014		0.00		1,010.00
720000	Aufwendungen Rohstoffe	DL00/BRKT1014		0.00		7,070.00
720000	Aufwendungen Rohstoffe	DL00/WDOC1014		0.00		101.00
720000	Aufwendungen Rohstoffe	DL00/PCKG1014		0.00		353.50
Raw Materials			▪	**0.00**	▪	**48,429.50**
			▪ ▪	**0.00**	▪ ▪	**71,255.50**

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

Click on 

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)

Production completion

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.

To confirm production completion, follow the menu path:

Menu path

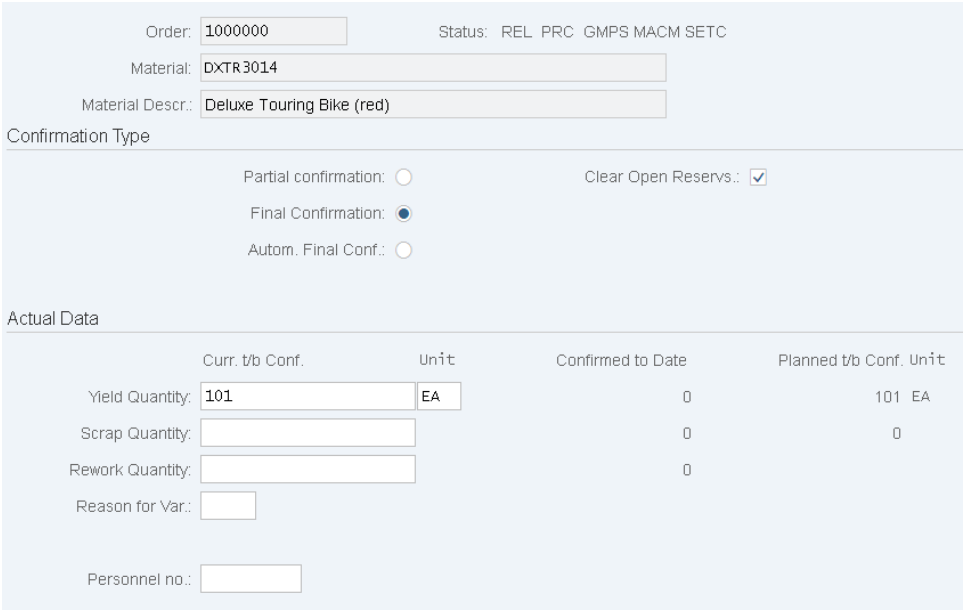
Logistics ► Production ► Shop Floor Control ► Confirmation ► Enter ► For Order

Production order number

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

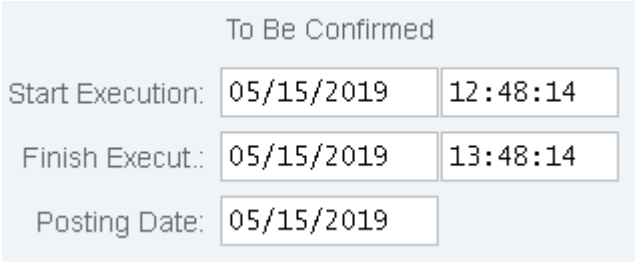
Final Confirm. Clear Reservation Amount

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



1 hour earlier

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



Save your entries with Save.

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 Exit 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 proposed 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 Issue / Goods Receipt

Select *Goods Receipt* and *Order* in the drop-down menu.

101
Production order number

Enter Movement Type **101** (Goods receipt for order to warehouse) and your **production order number**.

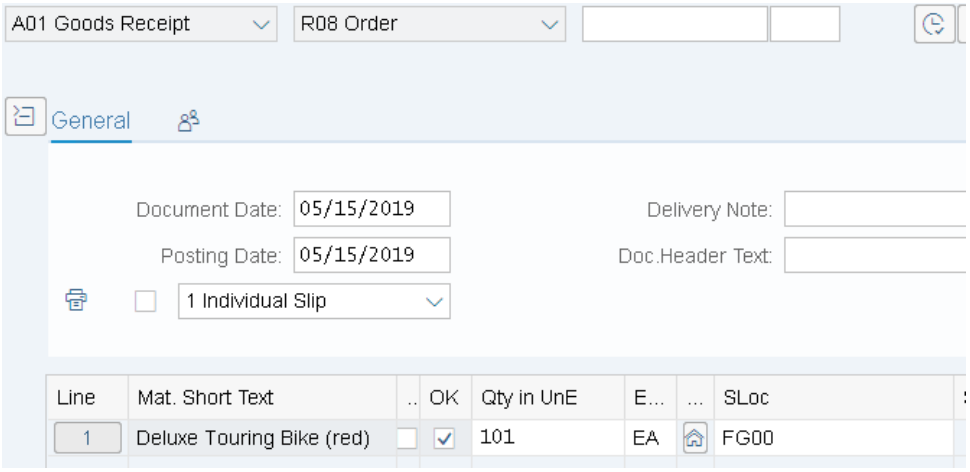
Choose Enter.

OK

Select **OK** for your item and enter FG00 in the SLoc field.

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

Record the material document number _____.

Material document number

Click on Exit 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:

Logistics ► Production ► Shop Floor Control ► Order ► Display

Menu path

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

Production order number

In the system menu, select:

More ► Goto ► Costs ► Analysis

Menu bar

Cost Element	Cost Element (Text)	Origin	Σ Total Target Costs	Σ Total Actual Costs
720300	Aufwendungen Halbfertigerzeugnisse	DL00/TRWA1014	0.00	22,826.00
741600	Ausgleich Produktionsmengen	DL00/DXTR3014	0.00	73,937.05-
			0.00	**51,111.05-**
800000	Arbeit	NAPR1000/LABOR	0.00	2,526.75
Production			**0.00**	**2,526.75**
720000	Aufwendungen Rohstoffe	DL00/TRFR3014	0.00	20,200.00
720000	Aufwendungen Rohstoffe	DL00/DGAM1014	0.00	7,575.00
720000	Aufwendungen Rohstoffe	DL00/TRSK1014	0.00	5,050.00
720000	Aufwendungen Rohstoffe	DL00/TRHB1014	0.00	2,525.00
720000	Aufwendungen Rohstoffe	DL00/PEDL1014	0.00	4,545.00
720000	Aufwendungen Rohstoffe	DL00/CHAN1014	0.00	1,010.00
720000	Aufwendungen Rohstoffe	DL00/BRKT1014	0.00	7,070.00
720000	Aufwendungen Rohstoffe	DL00/WDOC1014	0.00	101.00
720000	Aufwendungen Rohstoffe	DL00/PCKG1014	0.00	353.50
Raw Materials			**0.00**	**48,429.50**
			0.00	**154.80-**

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?

_____

_____

_____

Click on Exit 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:

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

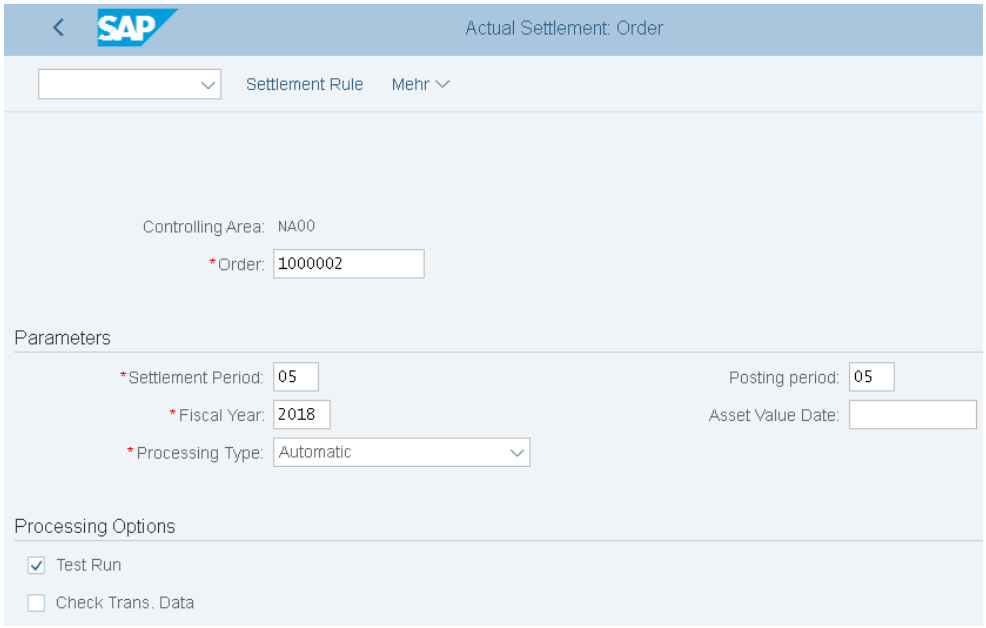
Menu path

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

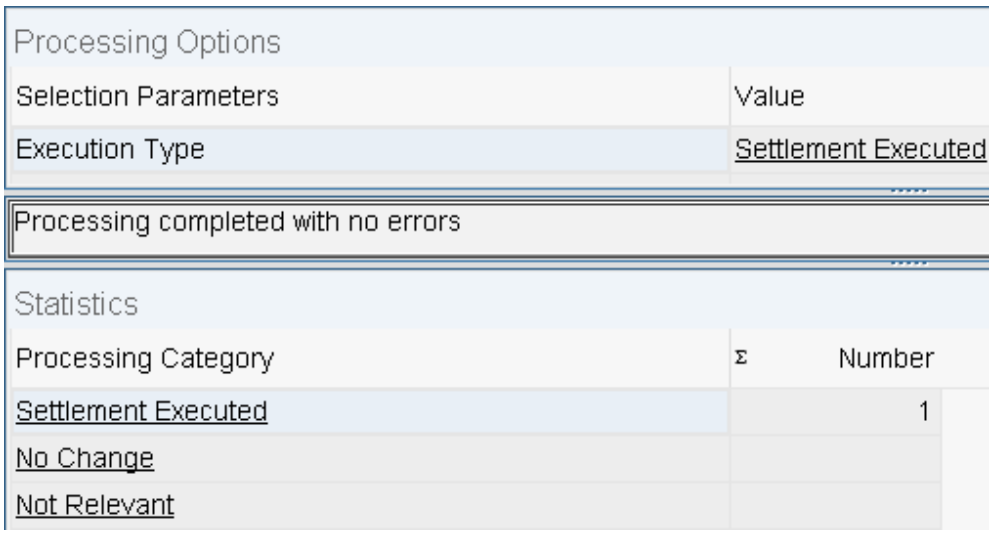
NA00

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. Confirm any occurring pop-up.

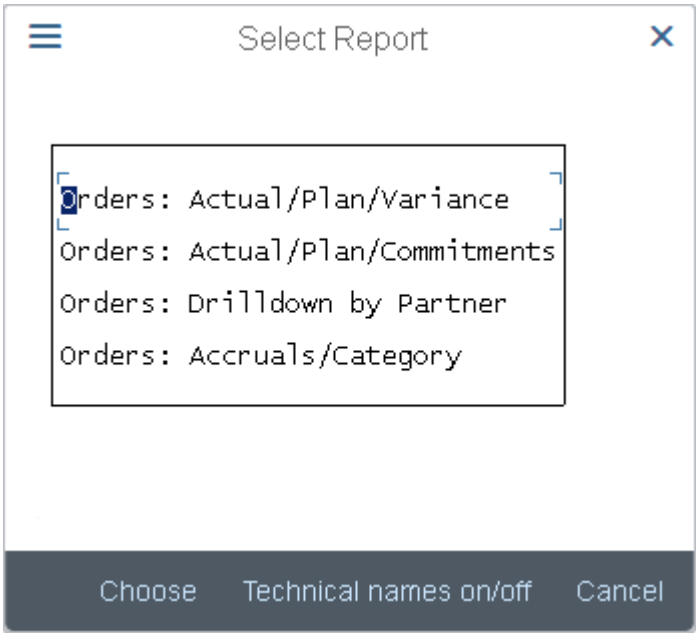


Click on Detail lists.

In the system menu, choose:

More ► Environments ► Report Menu bar

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



Acknowledge any warning which may pop-up.

Orders: Actual/Plan/Variance Date: 05/15/2019 14:04:27 Page: 2 / 2

Order/Group	1000000	000001000000
Fiscal year	2019	
Period	1 - 5	

Cost Elements	Actual	Plan	Var.(Abs.)	Var.(%)
720000 Aufwendungen Rohstoffe	48,429.50	48,429.50		
720300 Aufw Halb	22,826.00	22,826.00		
800000 Arbeit	2,526.75	2,526.75		
* Costs	73,782.25	73,782.25		
741600 Ausgleich Produktionsmengen	73,937.05-		73,937.05-	
* Deliveries to Stock	73,937.05-		73,937.05-	
** Balance	154.80-	73,782.25	73,937.05-	100.21-

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

Yes

Deselect **Test Run** and execute again with  . Click on  and select  . Choose report **Actual/Plan/Variance**.

Test Run

Actual/Plan/Variance

Orders: Actual/Plan/Variance Date: 05/15/2019 14:08:50 Page: 2 / 2

Order/Group	1000000	000001000000
Fiscal year	2019	
Period	1 - 5	

Cost Elements	Actual	Plan	Var.(Abs.)	Var.(%)
720000 Aufwendungen Rohstoffe	48,429.50	48,429.50		
720300 Aufw Halb	22,826.00	22,826.00		
800000 Arbeit	2,526.75	2,526.75		
* Costs	73,782.25	73,782.25		
741600 Ausgleich Produktionsmengen	154.80		154.80	
* Settled Costs	154.80		154.80	
741600 Ausgleich Produktionsmengen	73,937.05-		73,937.05-	
* Deliveries to Stock	73,937.05-		73,937.05-	
** Balance		73,782.25	73,782.25-	100.00-

Note: The manufacturing output settlement is 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?

_____

_____

_____

_____

_____

Click on Exit, choose Yes and click on Exit 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.