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 2020
Global Bike

Fiori 3.0

Level

Undergraduate
Graduate
Beginner

Focus

Production Planning and Execution

Authors

Michael Boldau
Bret Wagner
Stefan Weidner

Version

4.1

Last Update

June 2022

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, are 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.

SAP University Alliances

Process Overview

Learning Objective Understand and perform a manufacturing process cycle. **Time** 200 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 Manager) Hiro Abe (Plant Manager) Lars Iseler (Shop Floor Worker 2) Susanne Castro (Goods Receipt Clerk) Sanjay Datar (Warehous Employee) Michael Brauer (Shop Floor Worker 4) Jamie Shamblin (Controller)

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 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.

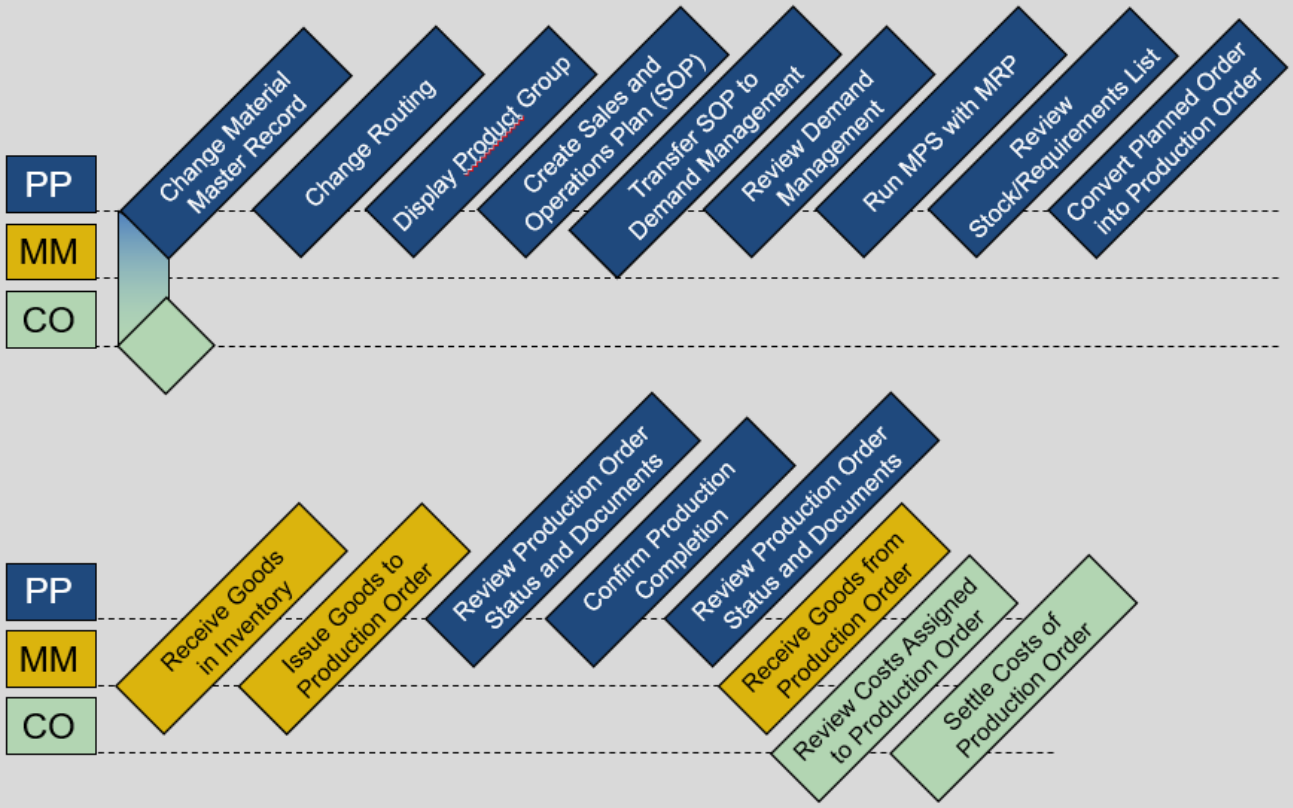


Table of Contents

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 adding planning-relevant data to these records.

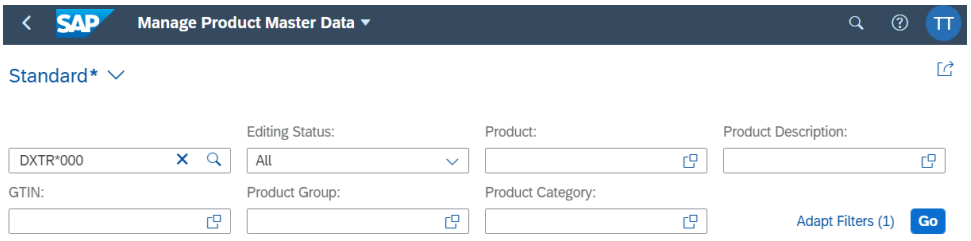
Name (Position) Jun Lee (Production Manager)

To change the views of a material, use the *Manage Product Master Data* app in the *Production Planning and Execution* area.

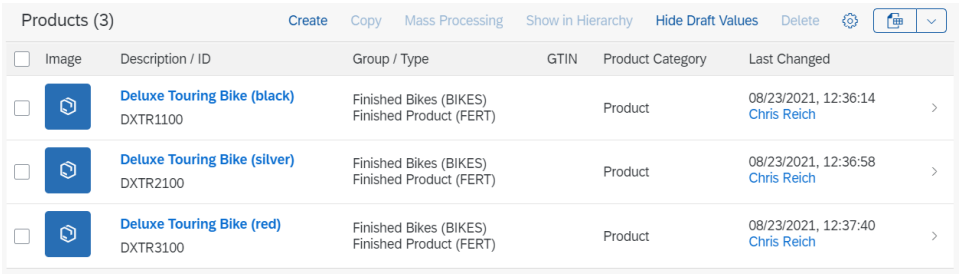
Manage Product Master Data

In the search screen, enter **DXTR*###** (replace ### with your three-digit number) in the search field.

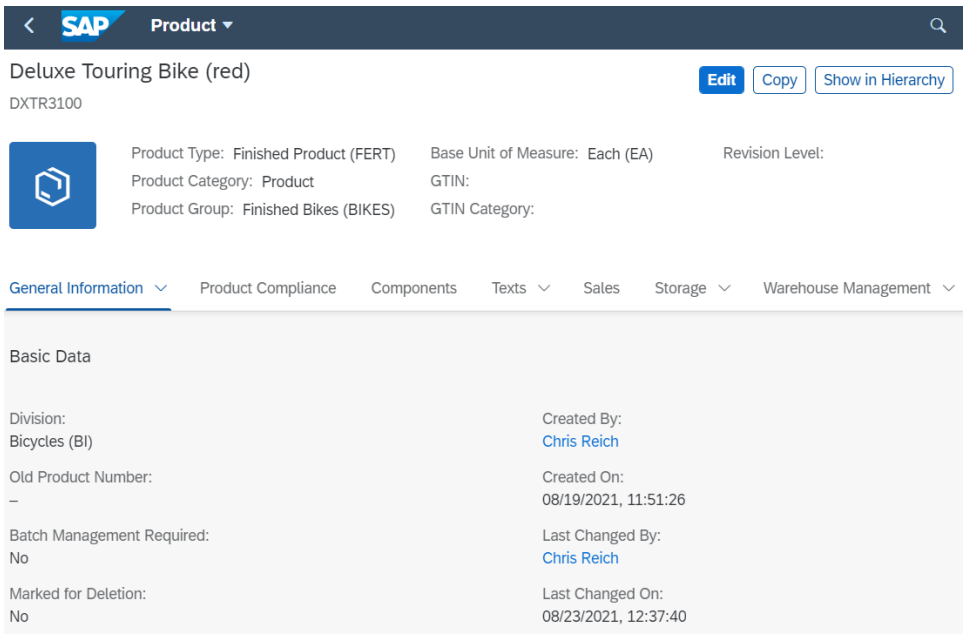
DXTR*###



Press **Go**. Your various Deluxe Touring Bikes will be displayed.



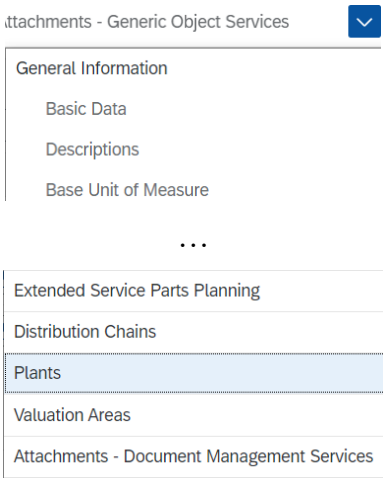
Click the line of **Deluxe Touring Bike (red)** (DXTR3##) to open the details of the product.



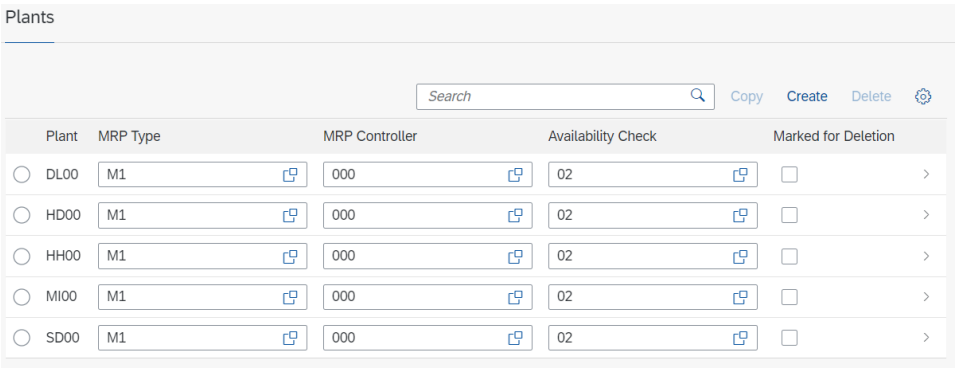
Press **Edit** to switch to the edit mode.

Use the pull-down menu to select the *Plants* section. The window automatically scrolls to the correct position.

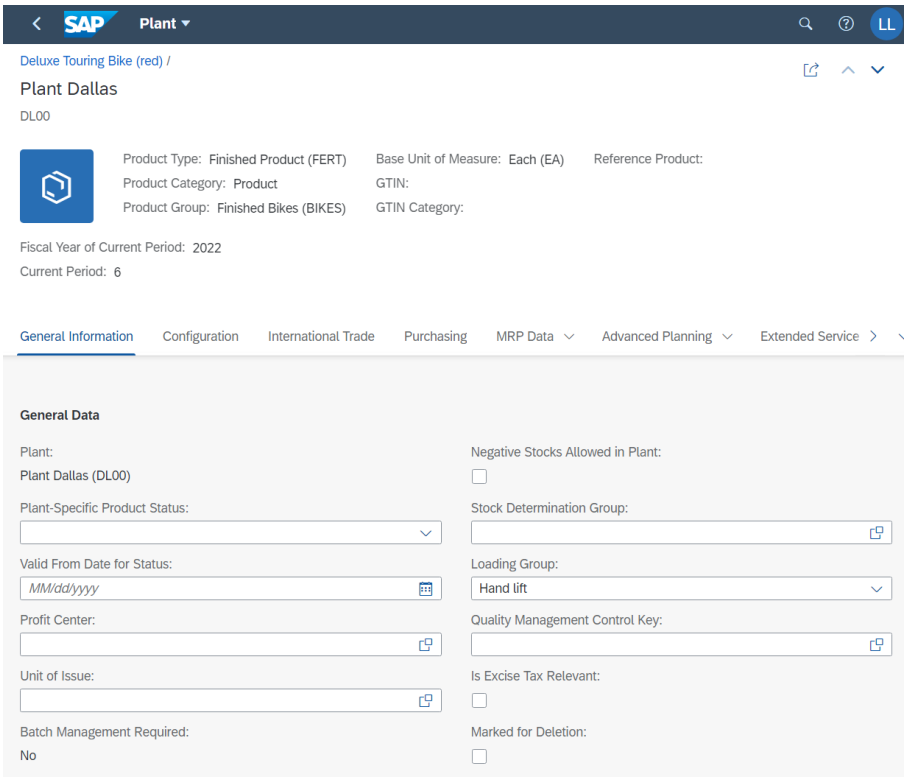
Plants



You will see a list of all plants for which the product has been defined.

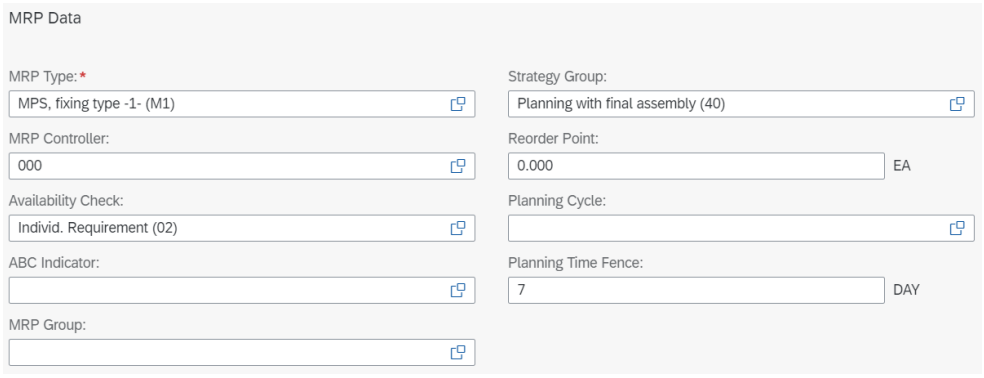


Press › at the end of the line with the DL00 plant to open the plant-specific product master data.



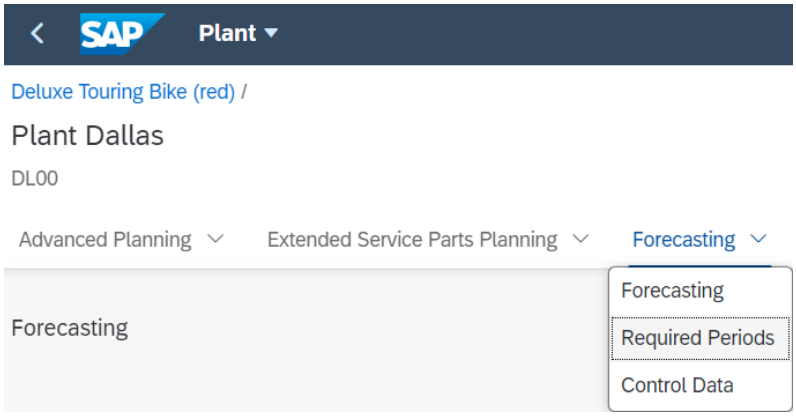
Select the *MRP Data* area. The window automatically scrolls to the correct position. Enter **40** in the *Strategy Group* field (Planning with final assembly).

MRP Data
40



Select the *Forecasting* ► *Required Periods* area. If the tab is not visible, you can use the pull-down menu ⌄ again.

Forecasting → Required Periods



In the *Periods for Initialization* field enter **12**. Scroll down to the next area *Control data*.

12

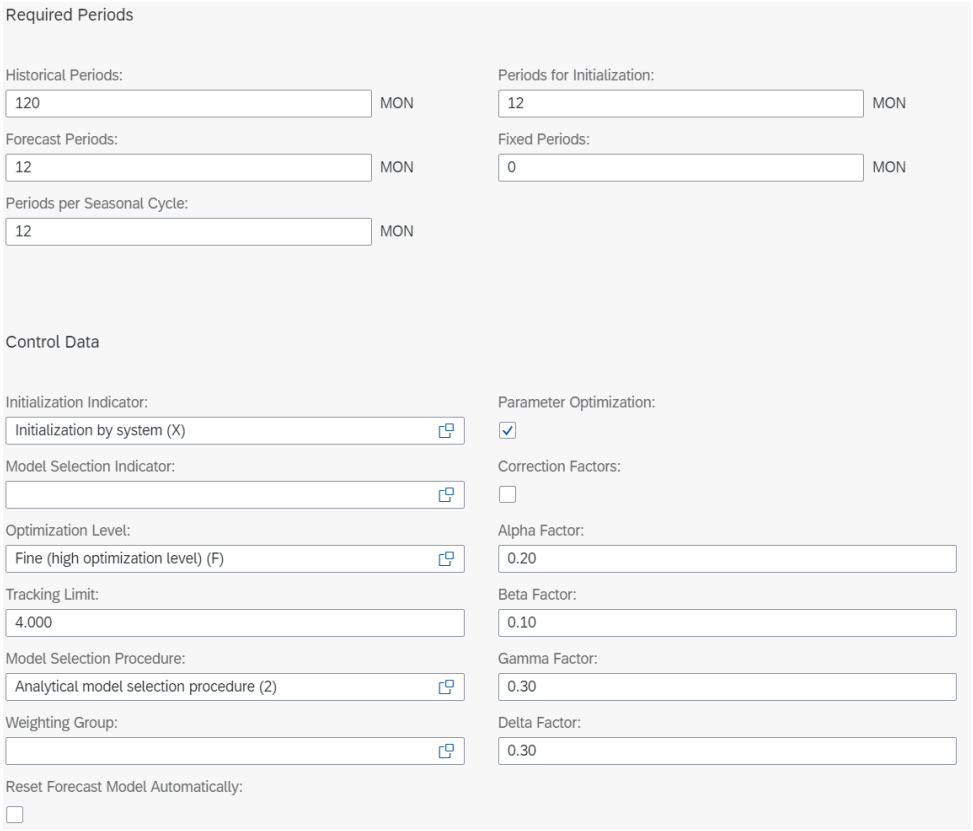
In the *Control Data* area below, click on the value help icon of the *Optimization Level* field and select the optimization level **F** - Fine (high optimization level). Then select **Parameter Optimization**.

F

Parameter Optimization

Now assign the smoothing factors. Enter **0.20** for the *Alpha Factor* (base value), **0.10** for the *Beta Factor* (trend value), **0.30** for the *Gamma Factor* (seasonal index) and **0.30** for the *Delta Factor* (MAD).

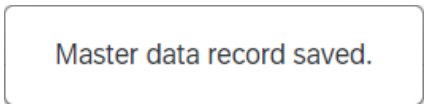
0,20
0,10
0,30
0,30



Select Apply to save the plant-specific data for plant DL00.

Click Save to save your changes to the red Deluxe Touring Bike.

The SAP system updates the master data record for material DXTR3### and displays a corresponding message.



Select  to return to the Manage Product Master Data screen.

Repeat the same procedure for the silver and black Deluxe Touring Bike. Start with the silver one (**DXTR2###**) and then change the black bike (**DXTR1###**).

DXTR2###
DXTR1###

Click  to return to the SAP Fiori Launchpad.

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 Manager)

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.

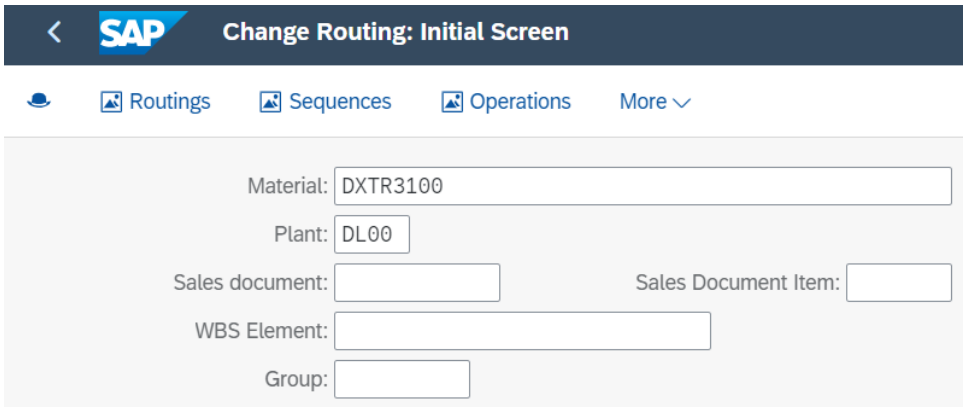
To change the routing, use the *Change Routing* app in the *Production Planning and Execution* area.

Change Routing

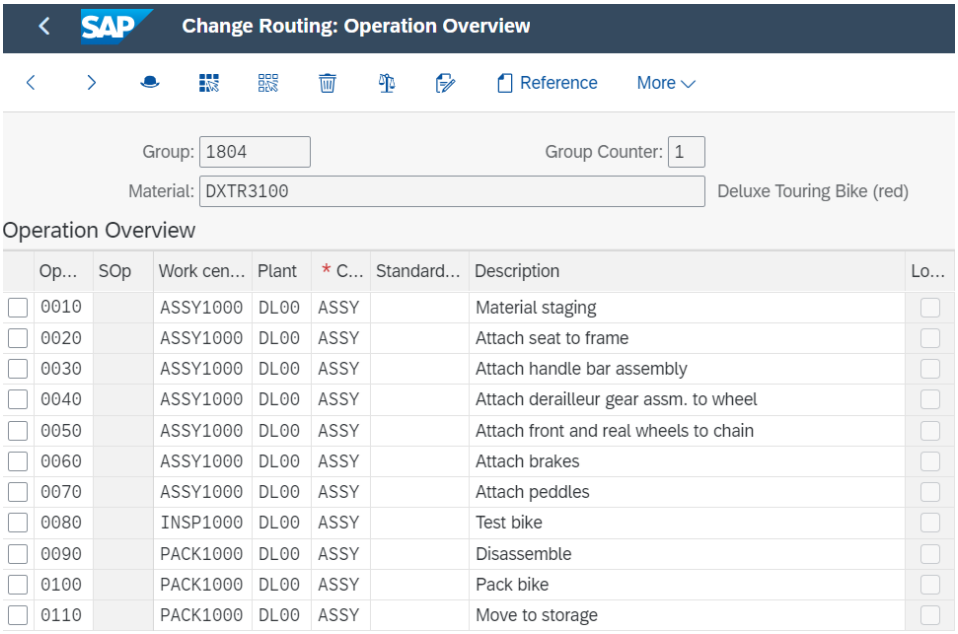
Enter the material number of your red Deluxe Touring bike (**DXTR3###).** In the *Plant* field, enter the Global Bike plant number in Dallas (**DL00**).

DXTR3###

DL00



Also make sure that the *Planner Group* field is empty. Then press Operations.



	Op...	SOp	Work cen...	Plant	* C...	Standard...	Description	Lo...
☐	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	☐

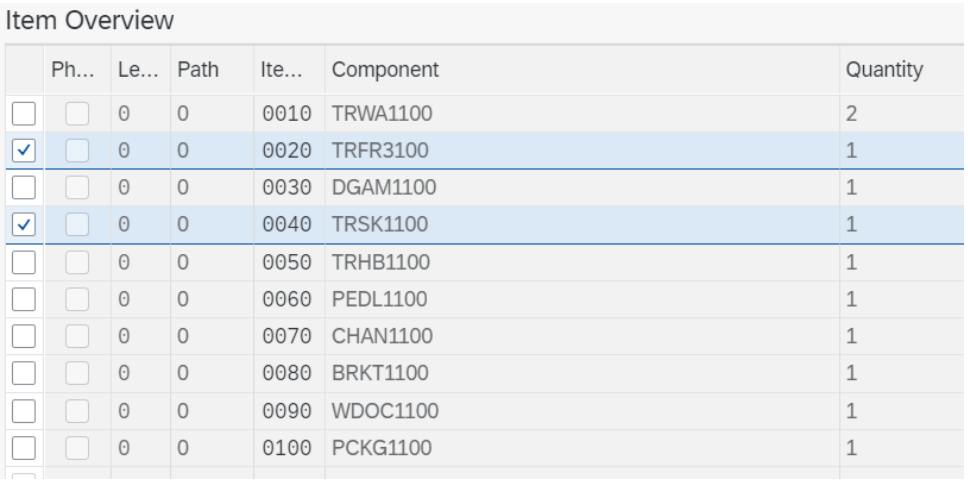
Note A routing is defined by the routing group and the routing group counter. Moreover, the routing contains a reference to the material whose production is described by the routing.

Besides the standard sequence, it can also have parallel or alternative sequences. Alongside the standard values, the routing also contains 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.

Select Allocation to display a list of all components. If this is not displayed, you will find the entry in the pull-down menu under **More ► Allocation**.

Select the rows Touring Frame-Red (**TRFR3##**) and Touring Seat Kit (**TRSK1##**).

TRFR3###
TRSK1###



	Ph...	Le...	Path	Ite...	Component	Quantity
☐	☐	0	0	0010	TRWA1100	2
☑	☐	0	0	0020	TRFR3100	1
☐	☐	0	0	0030	DGAM1100	1
☑	☐	0	0	0040	TRSK1100	1
☐	☐	0	0	0050	TRHB1100	1
☐	☐	0	0	0060	PEDL1100	1
☐	☐	0	0	0070	CHAN1100	1
☐	☐	0	0	0080	BRKT1100	1
☐	☐	0	0	0090	WDOC1100	1
☐	☐	0	0	0100	PCKG1100	1

Press New Assignment. In the popup that appears, enter **0020** for *Activity* and confirm the entry with ✓.

0020

Back in the *Material Component Overview* you can see that both components have now been assigned to *Activity* **0020**.

Item Overview

	Ph...	Le...	Path	Ite...	Component	Quantity	Sort String	Un...	It...	Ba...	Activity	Seq.
		0	0	0010	TRWA1100	2		EA	L			
		0	**0**	0020	**TRFR3100**	**1**		**EA**	**L**		**0020**	**0**
		0	0	0030	DGAM1100	1		EA	L			
		0	**0**	0040	**TRSK1100**	**1**		**EA**	**L**		**0020**	**0**
		0	0	0050	TRHB1100	1		EA	L			
		0	0	0060	PEDL1100	1		EA	L			
		0	0	0070	CHAN1100	1		EA	L			
		0	0	0080	BRKT1100	1		EA	L			
		0	0	0090	WDOC1100	1		EA	L			
		0	0	0100	PCKG1100	1		EA	L			

Repeat this process for all other components and assign them to the operations below.

Component	**Operation**
TRHB1### (touring handlebar)	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### - 0030

TRWA1### - 0040

DGAM1### - 0040

CHAN1### - 0050

BRKT1### - 0060

PEDL1### - 0070

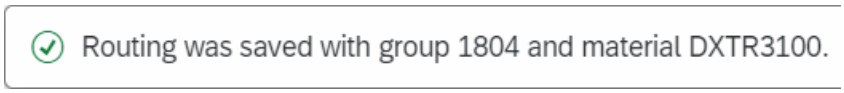
WDOC1### - 0100

PCKG1### - 0100

Item Overview

	Ph...	Le...	Path	Ite...	Component	Quantity	Sort String	Un...	It...	Ba...	Activity	Seq.
		0	**0**	0010	**TRWA1100**	**2**		**EA**	**L**		**0040**	**0**
		0	**0**	0020	**TRFR3100**	**1**		**EA**	**L**		**0020**	**0**
		0	**0**	0030	**DGAM1100**	**1**		**EA**	**L**		**0040**	**0**
		0	**0**	0040	**TRSK1100**	**1**		**EA**	**L**		**0020**	**0**
		0	**0**	0050	**TRHB1100**	**1**		**EA**	**L**		**0030**	**0**
		0	**0**	0060	**PEDL1100**	**1**		**EA**	**L**		**0070**	**0**
		0	**0**	0070	**CHAN1100**	**1**		**EA**	**L**		**0050**	**0**
		0	**0**	0080	**BRKT1100**	**1**		**EA**	**L**		**0060**	**0**
		0	**0**	0090	**WDOC1100**	**1**		**EA**	**L**		**0100**	**0**
		0	**0**	0100	**PCKG1100**	**1**		**EA**	**L**		**0100**	**0**

Apply your changes with Save. The system issues a message that the routing has been saved.



Click SAP to return to the SAP Fiori Launchpad.

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 Manager)

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.

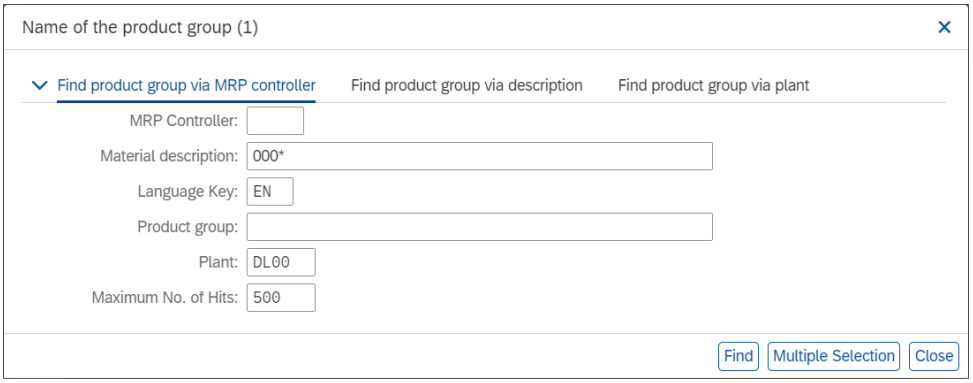
Display Product Group

To view the Deluxe Touring bike product group, use the *Display Product Group* app in the *Production Planning and Execution* area.

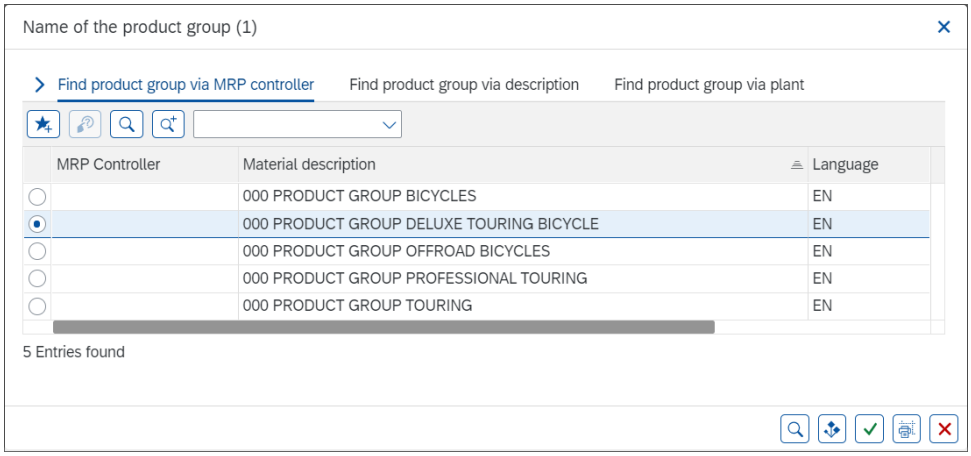
In the *Display Product Group: Initial Screen*, in the *Product group* field find and select your group for deluxe touring bikes. In order to do so, press the search icon (or pressed F4), enter ***###**** in the *Material description* field. Remember to replace ### with your three-digit number, e.g., enter 009* if your number is 009. Enter **DL00** as *Plant*.

###*

DL00



Then, press Enter or click on Find to display the search results.

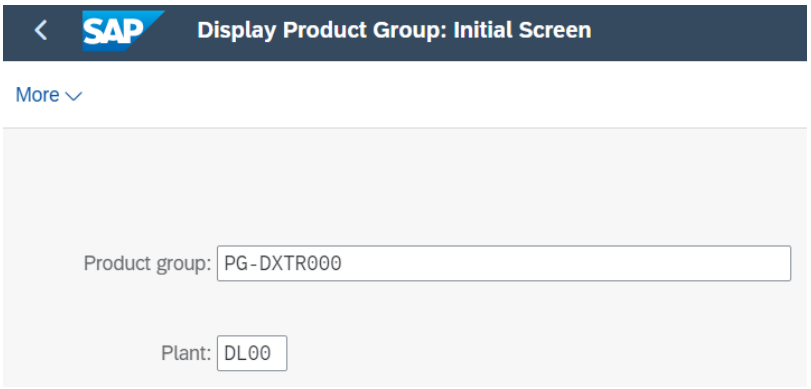


You will see a list of all your product groups, e.g., for mountain bikes or touring bikes. Select the group of Deluxe Touring Bikes (**PG-DXTR##**). Then click  to apply the selection.

PG-DXTR###

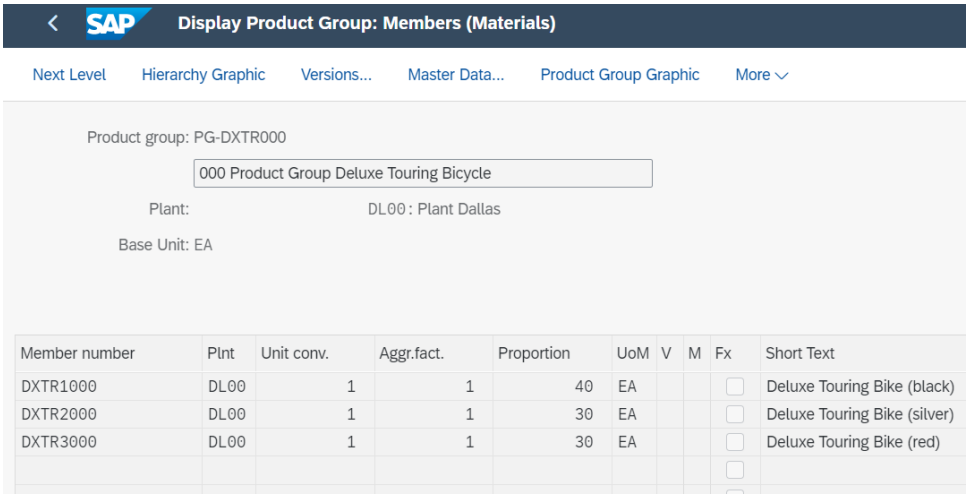
Now that the correct *Product group* (**PG-DXTR###**) is filled in, make sure that *Plant* **DL00** is entered.

DL00



Then, press Enter to display the product group details.

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  to return to the SAP Fiori Launchpad.

Step 4: Create Sales and Operations Plan (SOP)

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.

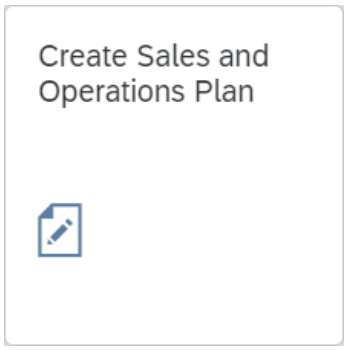
Name (Position) Jun Lee (Production Manager)

Sales and operations plan

A sales and operations plan (SOP) is a planning tool that is 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.

Create Sales and Operations Plan

To create an SOP, use the *Create Sales and Operations Plan* app in the *Production Planning and Execution* area.



PG-DXTR###
DL00

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

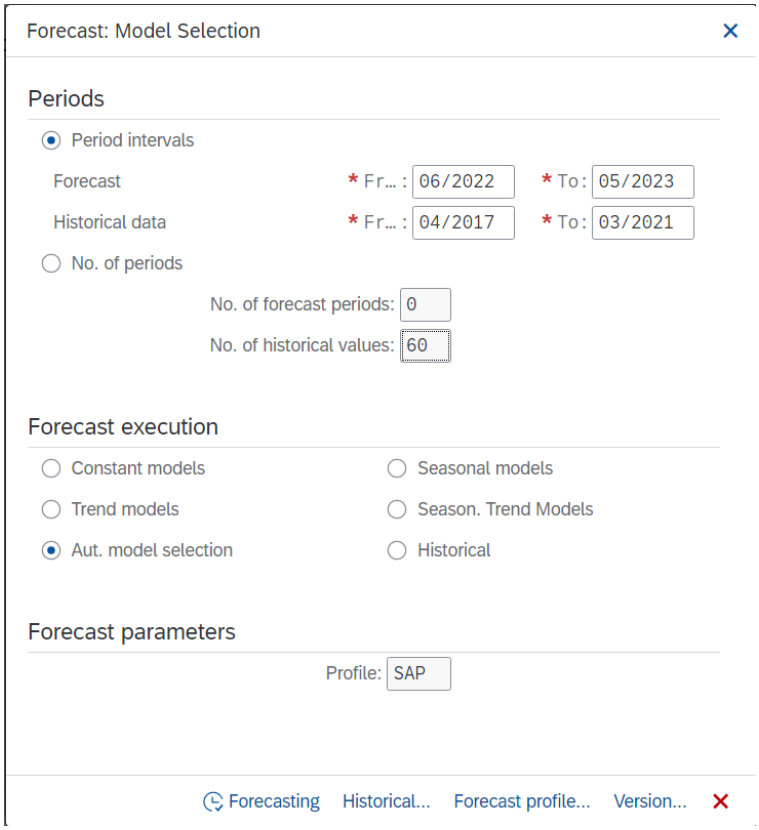
Record the version number:_____

In the menu bar, select:

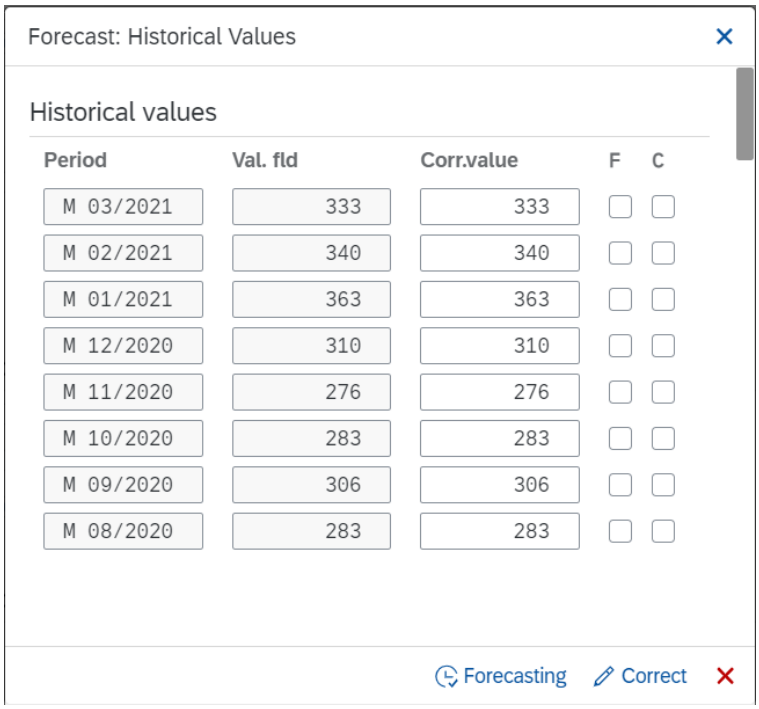
More ► Edit ► Create sales plan ► Forecast…

Period intervals
current period/current year
previous period/next year
04/2017
03/2021
Aut. model selection

Select **Period intervals**, *Forecast* from **current period/current year** to **previous period/next year**, *Historic Data* from **06/2017** to **03/2021**, *Forecast execution* **Aut. model selection**. Compare your screen with the one below before clicking on Historical... to view the historical values.



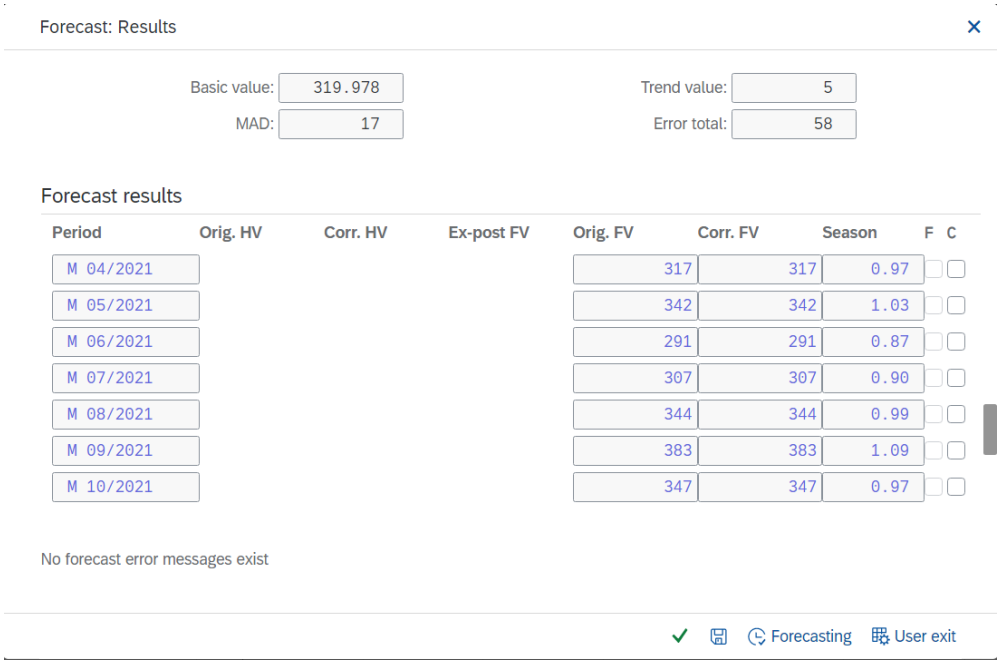
You will get an overview of the passed periods in the specified time range.



Click on Forecasting.

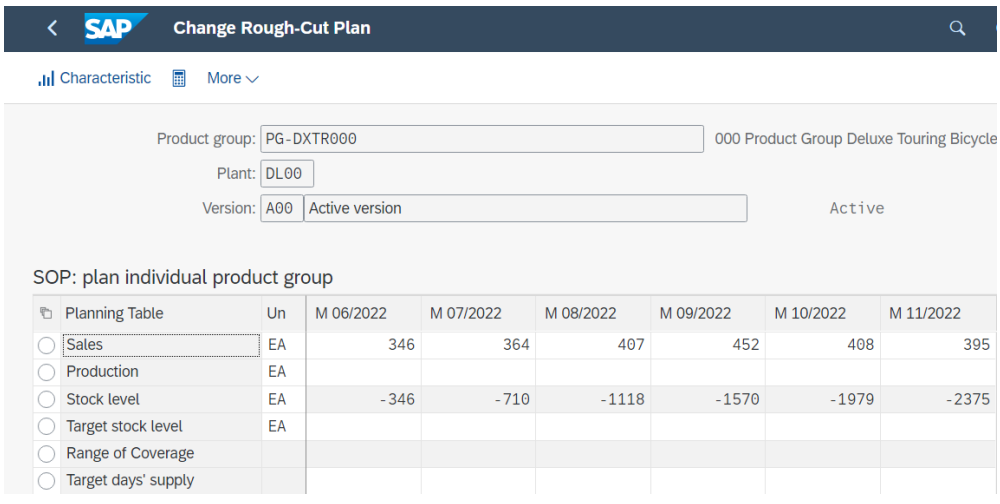
In the next Popup the system selected *Trend and season*. Click on Forecasting again.

In the next pop-up 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.



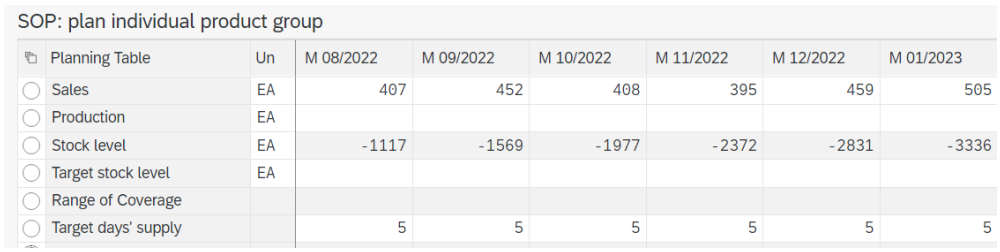
Press  , the sales forecast has been transferred to the SOP.

Look at the planning table. Note that your values may differ from the screenshot.



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 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 menu bar, select:

More ► Edit ► Create production plan ► Synchronous to sales

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

SOP: plan individual product group

Planning Table	Un	M 08/2022	M 09/2022	M 10/2022	M 11/2022	M 12/2022	M 01/2023
Sales	EA	407	452	408	395	459	505
Production	EA	407	452	408	395	459	505
Stock level	EA						
Target stock level	EA						
Range of Coverage							
Target days' supply		5	5	5	5	5	5

In the system menu, select

More ► Edit ► Create production plan ► Target day's supply

Note the impact on the production plan and stock levels. Production levels are generated to match the sales plus the amount needed to be put into stock to meet the target days' supply specifications.

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

SOP: plan individual product group

Planning Table	Un	M 08/2022	M 09/2022	M 10/2022	M 11/2022	M 12/2022	M 01/2023
Sales	EA	407	452	408	395	459	505
Production	EA	413	461	398	395	467	512
Stock level	EA	65	75	65	65	74	81
Target stock level	EA						
Range of Coverage		5	5	5	5	5	5
Target days' supply		5	5	5	5	5	5

Note Although the screen displays integer production values, the SAP system calculates with decimal precision. You can display the decimal places of a series by pressing F8. Then create the production plan.

Accept the SOP with **Save**. A system message appears and you return to the initial screen.

Click  to return to the SAP Fiori Launchpad.

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.

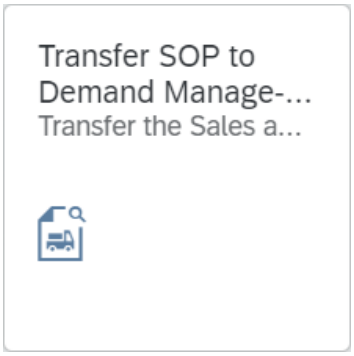
Name (Position) Jun Lee (Production Manager)

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.

Transfer Planning Data to Demand Management

To transfer sales/rough planning to Demand Management, use the *Transfer Planning Data to Demand Management* app in *Production Planning and Execution* area.

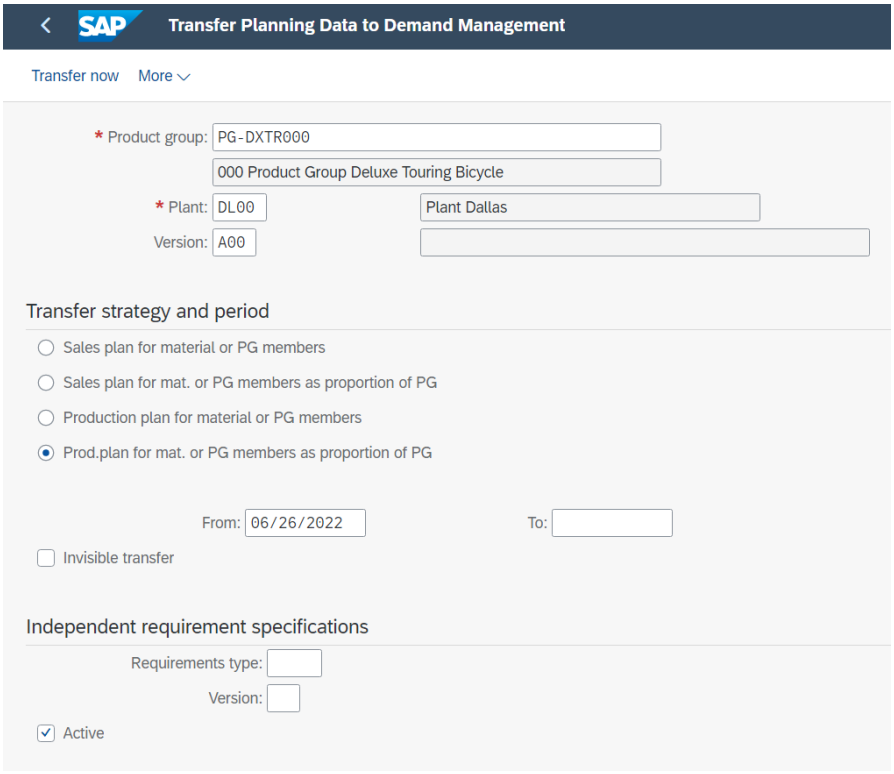


PG-DXTR###
DL00
A00

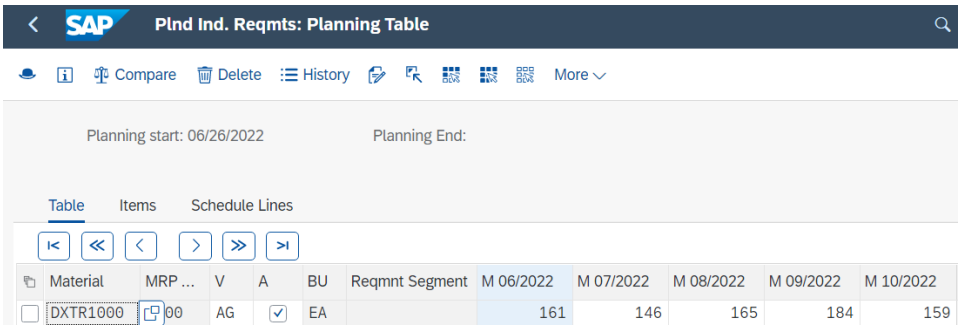
Enter *Product group* **PG-DXTR###**, *Plant* **DL00**, and the version saved in the previous task (**A00**).

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.

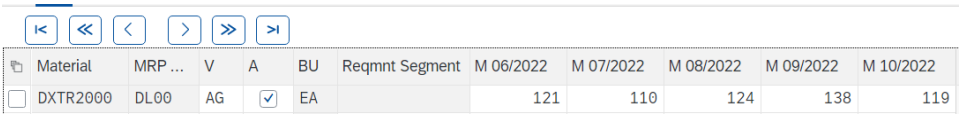


Select Transfer now and examine the Planned Independent Requirements generated for **DXTR1###**.

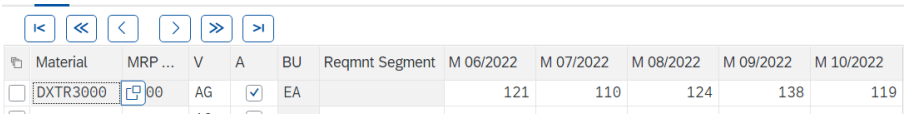


Then click on Save to save the demand for the DXTR1###.

After saving, the system jumps to the independent requirement of the next material (DXTR2###). Now examine the independent requirement generated for DXTR2###.



Continue with Save. Finally, examine the planned independent requirement of material DXTR3###.



Material	MRP ...	V	A	BU	Reqmnt Segment	M 06/2022	M 07/2022	M 08/2022	M 09/2022	M 10/2022
DXTR3000	00	AG	☑	EA		121	110	124	138	119

Also save this requirement with Save.

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

You will automatically return to the initial screen. The system also provides you with a message that the requirement has been saved. You can also see this in the other materials in advance.

Click SAP to return to the SAP Fiori Launchpad.

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)

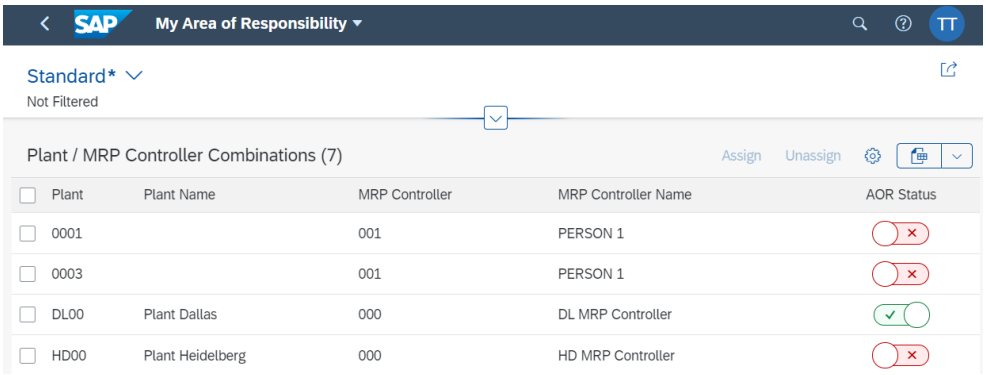
To view planned requirements, use the *Maintain PIRs* app in *Production Planning and Execution* area.

Maintain PIRs

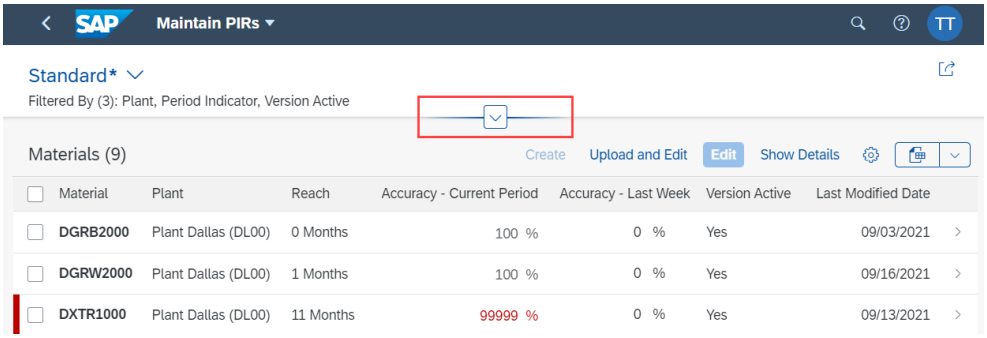
A welcome message is displayed informing you that you do not yet belong to any area of responsibility. Confirm this with OK. You will be forwarded automatically.

The *My Area of Responsibility* screen appears with a list of existing plants. Set your responsibility for the plant **DL00**.

DL00

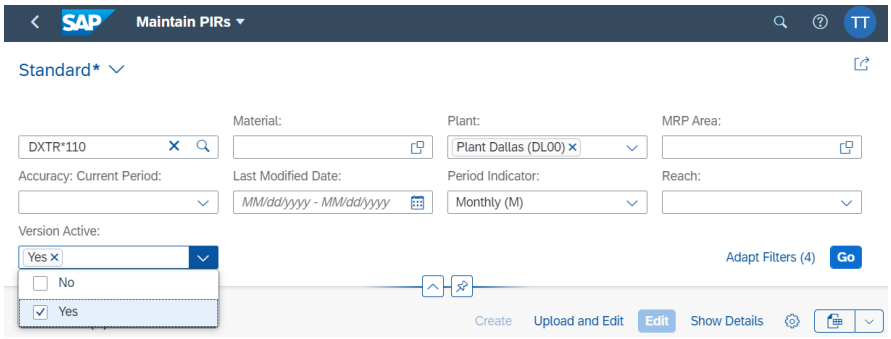


Then click ‹ to return. In the *Maintain PIRs* screen expand the search by pressing ⌄.

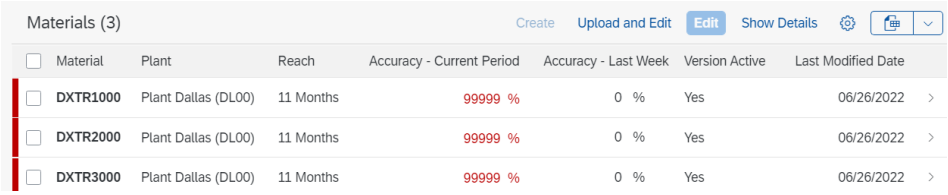


The plant in Dallas (DL00) is already preselected. Now enter **DXTR*###** as the *search term* and change the *Version Active* field to ~~**No**~~ and select **Yes**.

DXTR*###
~~no~~
yes

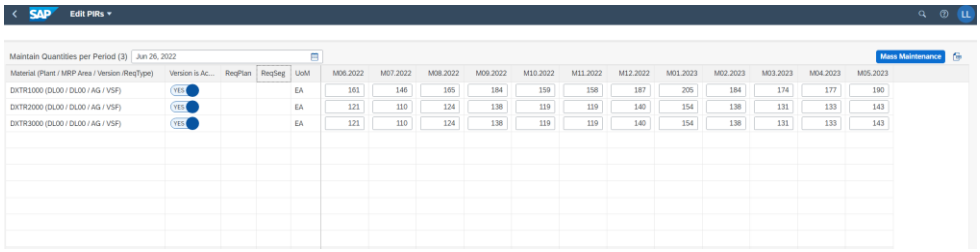


Press **Go** to run the search with the new criteria. You will now be shown your three Deluxe Touring Bikes.



Select all three lines and click **Edit (3)**.

View planned independent demands for the Deluxe Touring Bike product group for all 3 materials.



Click **SAP** to return to the SAP Fiori Launchpad.

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 Manager)

To start Master Production Scheduling, use the *Schedule MRP Run - Run MPS with MRP* app in the *Production Planning and Execution* area.

Schedule MRP Run

Enter your *Material* **DXTR3###**, and as *Plant* **DL00**.

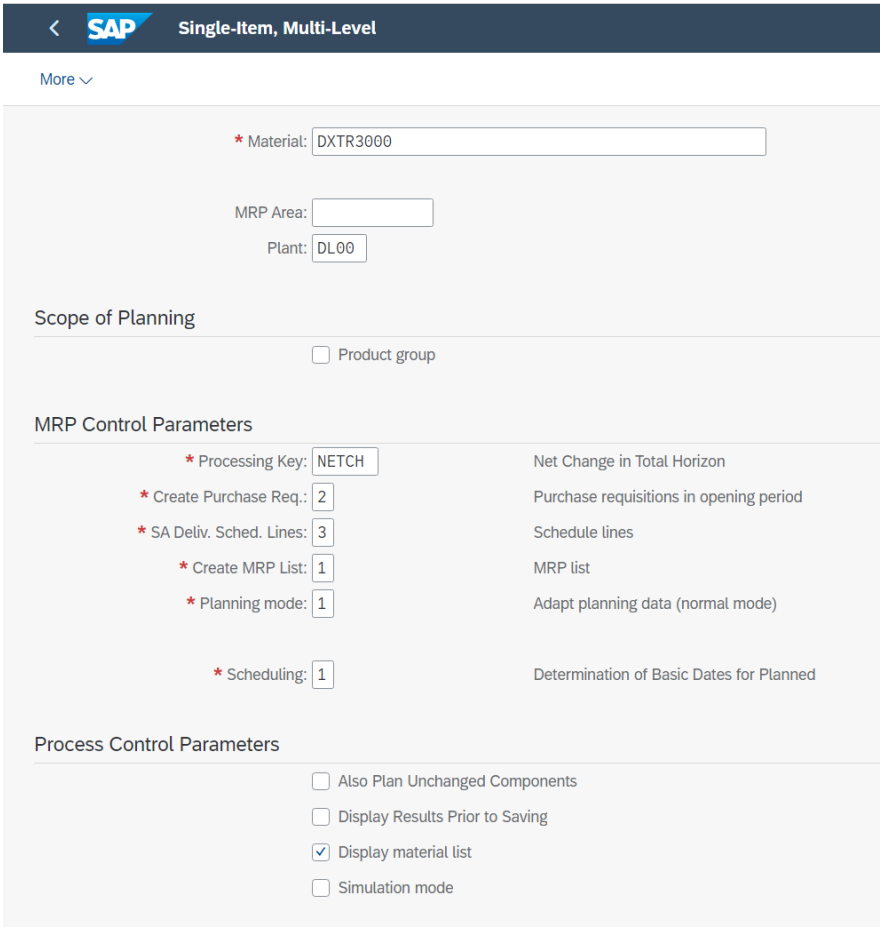
DXTR3###
DL00

The control parameters can be adopted and should be filled in by the system as follows:

- *Processing Key*: **NETCH** (Net-Change in Total Horizon) — NETCH
- *Create Purchase Req.*: **2** (Purchase requisition in opening period) — 2
- *SA Deliv. Sched. Lines*: **3** (Schedule lines) — 3
- *Create MRP List*: **1** (MRP list) — 1
- *Planning mode*: **1** (Adapt planning data (normal mode)) — 1
- *Scheduling*: **1** (Determination of Basic Date for Planned) — 1

Then, select **Display material list**.

Display material list



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

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.

As soon as the planning run is completed, a result overview is displayed. Check the planning details of the result overview.

Materials More

Statistics	
Materials planned	17
Materials with New Exceptions	17
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

Scroll down further, there you will see a detailed listing of all materials considered.

Ranking List of Materials with Highest CPU Times (in ms)

Material			MRP Area		Plnt
Runtime	Read	Net Calc.	BOM	LdTmeSched	Update
DXTR3000			DL00		DL00
9,868	993	579	411	0	1,206
BRKT1000			DL00		DL00
1,353	8	1,233	0	0	36
BOLT1000			DL00		DL00
421	2	15	0	0	402
TRWA1000			DL00		DL00
285	2	11	140	0	131
TRWH1000			DL00		DL00
77	2	10	0	0	64
TRTR1000			DL00		DL00
60	2	10	0	0	47
LWSH1000			DL00		DL00
59	2	9	0	0	47
PEDL1000			DL00		DL00
56	2	21	0	0	32
HXNT1000			DL00		DL00
54	2	9	0	0	42
CHAN1000			DL00		DL00
51	2	16	0	0	32

Click  to return to the SAP Fiori Launchpad.

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 (Shop Floor Worker 2)

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.

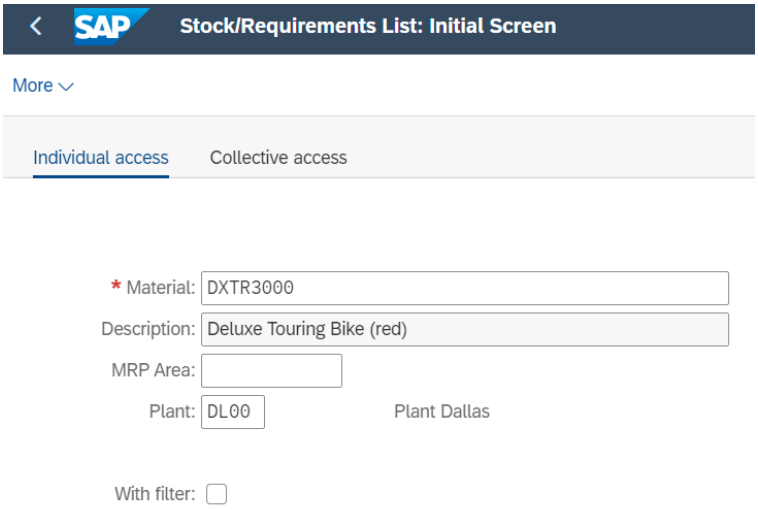
Monitor Stock/Requirements List

To display the stock/requirements list, use the M*onitor Stock/Requirements List* app in the *Production Planning and Execution* area.

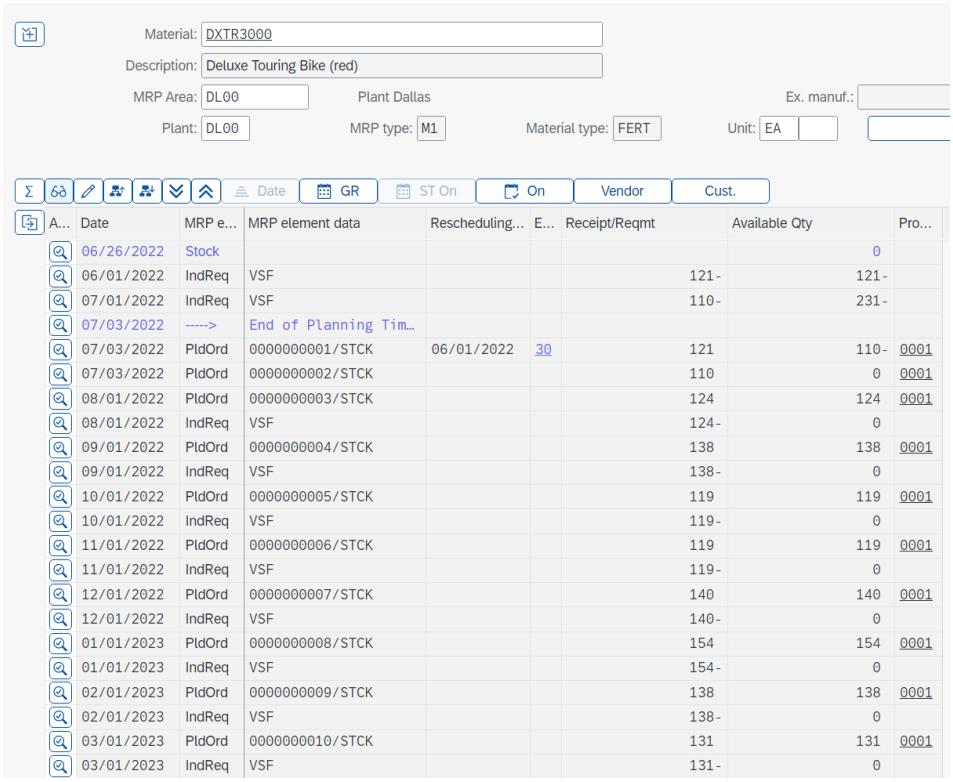
DXTR3###
DL00

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

Click on Continue to display the associated stock/requirements list.

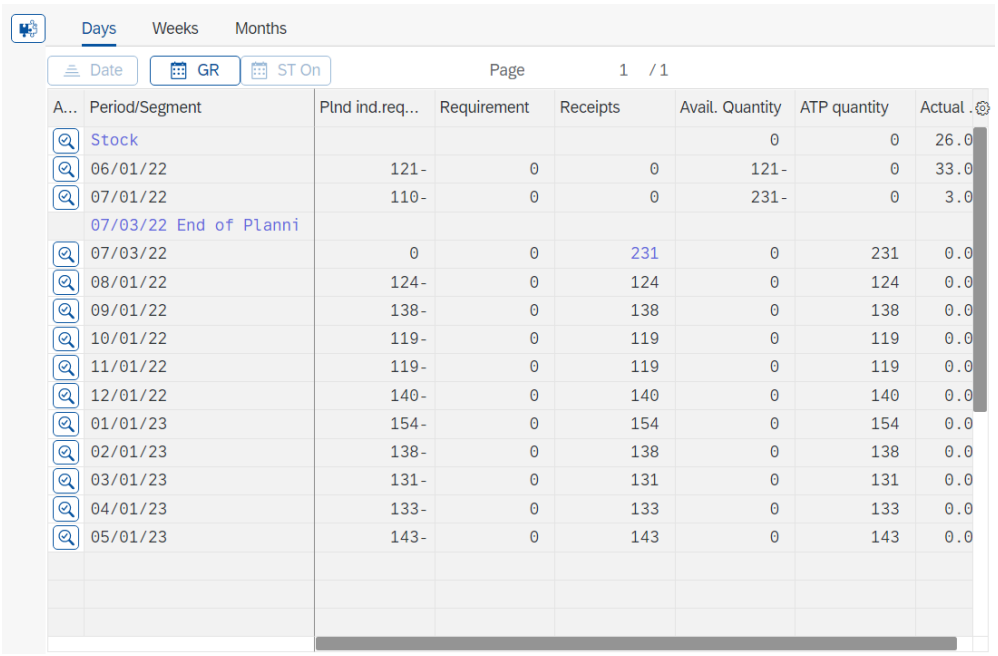


Currently, the system lists all entries as single rows.



A...	Date	MRP e...	MRP element data	Rescheduling...	E...	Receipt/Reqmt	Available Qty	Pro...
	06/26/2022	Stock					0	
	06/01/2022	IndReq	VSF			121-	121-	
	07/01/2022	IndReq	VSF			110-	231-	
	07/03/2022	----->	End of Planning Tim…					
	07/03/2022	PldOrd	0000000001/STCK	06/01/2022	30	121	110-	0001
	07/03/2022	PldOrd	0000000002/STCK			110	0	0001
	08/01/2022	PldOrd	0000000003/STCK			124	124	0001
	08/01/2022	IndReq	VSF			124-	0	
	09/01/2022	PldOrd	0000000004/STCK			138	138	0001
	09/01/2022	IndReq	VSF			138-	0	
	10/01/2022	PldOrd	0000000005/STCK			119	119	0001
	10/01/2022	IndReq	VSF			119-	0	
	11/01/2022	PldOrd	0000000006/STCK			119	119	0001
	11/01/2022	IndReq	VSF			119-	0	
	12/01/2022	PldOrd	0000000007/STCK			140	140	0001
	12/01/2022	IndReq	VSF			140-	0	
	01/01/2023	PldOrd	0000000008/STCK			154	154	0001
	01/01/2023	IndReq	VSF			154-	0	
	02/01/2023	PldOrd	0000000009/STCK			138	138	0001
	02/01/2023	IndReq	VSF			138-	0	
	03/01/2023	PldOrd	0000000010/STCK			131	131	0001
	03/01/2023	IndReq	VSF			131-	0	

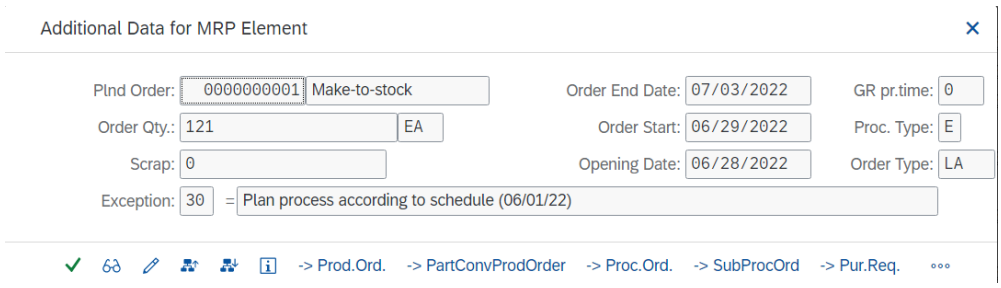
Choose  (Switch to Period Totals). This will allow you to see the planned independent requirements, planned receipts, and ATP quantities based on time - days, weeks, or months.



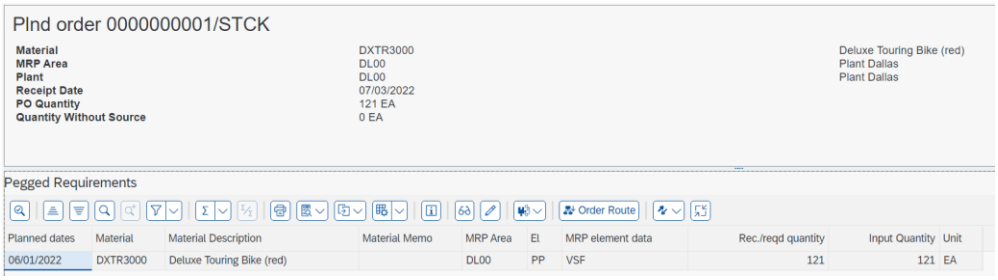
A...	Period/Segment	Plnd ind.req...	Requirement	Receipts	Avail. Quantity	ATP quantity	Actual .
	Stock				0	0	26.0
	06/01/22	121-	0	0	121-	0	33.0
	07/01/22	110-	0	0	231-	0	3.0
	07/03/22 End of Planni						
	07/03/22	0	0	231	0	231	0.0
	08/01/22	124-	0	124	0	124	0.0
	09/01/22	138-	0	138	0	138	0.0
	10/01/22	119-	0	119	0	119	0.0
	11/01/22	119-	0	119	0	119	0.0
	12/01/22	140-	0	140	0	140	0.0
	01/01/23	154-	0	154	0	154	0.0
	02/01/23	138-	0	138	0	138	0.0
	03/01/23	131-	0	131	0	131	0.0
	04/01/23	133-	0	133	0	133	0.0
	05/01/23	143-	0	143	0	143	0.0

Select  to go back to the individual rows.

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



Select  to display the 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  to return to the SAP Fiori Launchpad.

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.

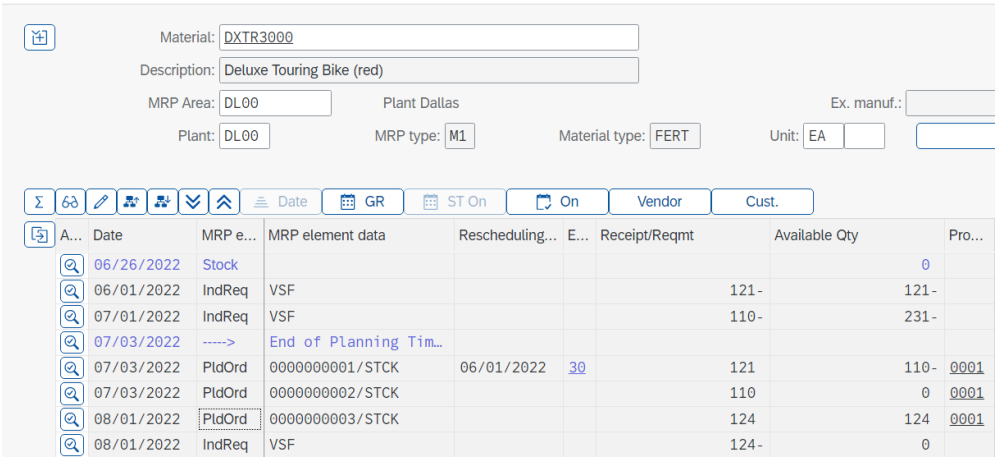
Name (Position) Lars Iseler (Shop Floor Worker 2)

To convert planned orders into production orders, use the SAP Fiori app *Monitor Stock / Requirements List* in the *Production Planning and Execution* area.

Monitor Stock / Requirements List

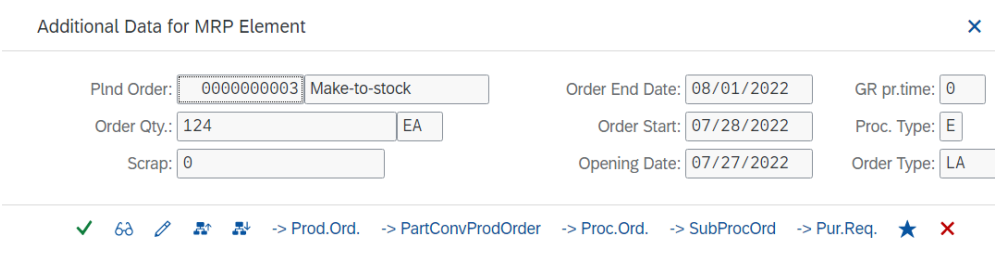
Enter *Material* **DXTR3###**, *Plant* **DL00**, and click on **Continue**.

DXTR3###
DL00



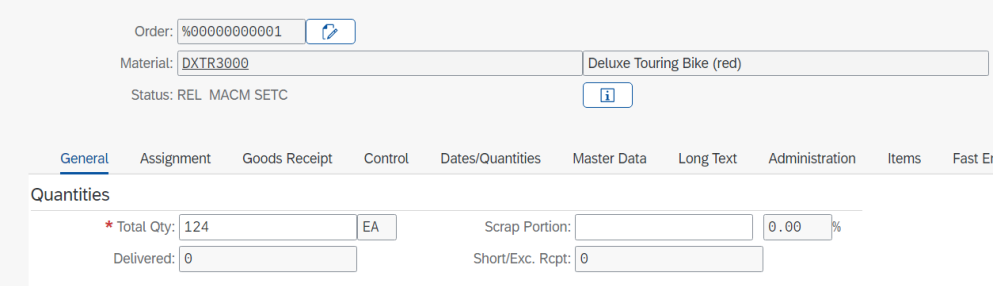
A...	Date	MRP e...	MRP element data	Rescheduling...	E...	Receipt/Reqmt	Available Qty	Pro...
	06/26/2022	Stock					0	
	06/01/2022	IndReq	VSF			121-	121-	
	07/01/2022	IndReq	VSF			110-	231-	
	07/03/2022	----->	End of Planning Tim...					
	07/03/2022	PldOrd	0000000001/STCK	06/01/2022	30	121	110-	0001
	07/03/2022	PldOrd	0000000002/STCK			110	0	0001
	08/01/2022	PldOrd	0000000003/STCK			124	124	0001
	08/01/2022	IndReq	VSF			124-	0	

Choose  at the beginning of the **third** planned order. A popup opens with details about the order.



Monitor Stock / Requirements List

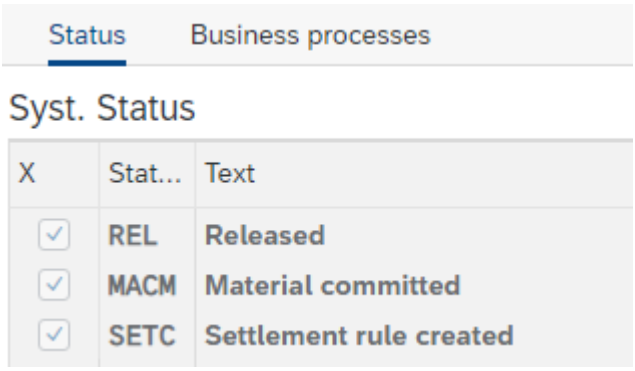
The planned order should now be converted into a production order. To do this, press -> Prod.Ord. . The system creates a temporary production order, identified by the generic order number, and releases it automatically.



Total quantity

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

Determine the status of your order by clicking on .

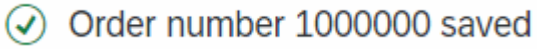


Note When you converted the planned order to a production order, scheduling took place, an availability check was automatically carried out and a reservation was placed on the materials specified within the bill of materials.

Click on , to go back to the *Production order Create: Header* screen and save your production order with Save.

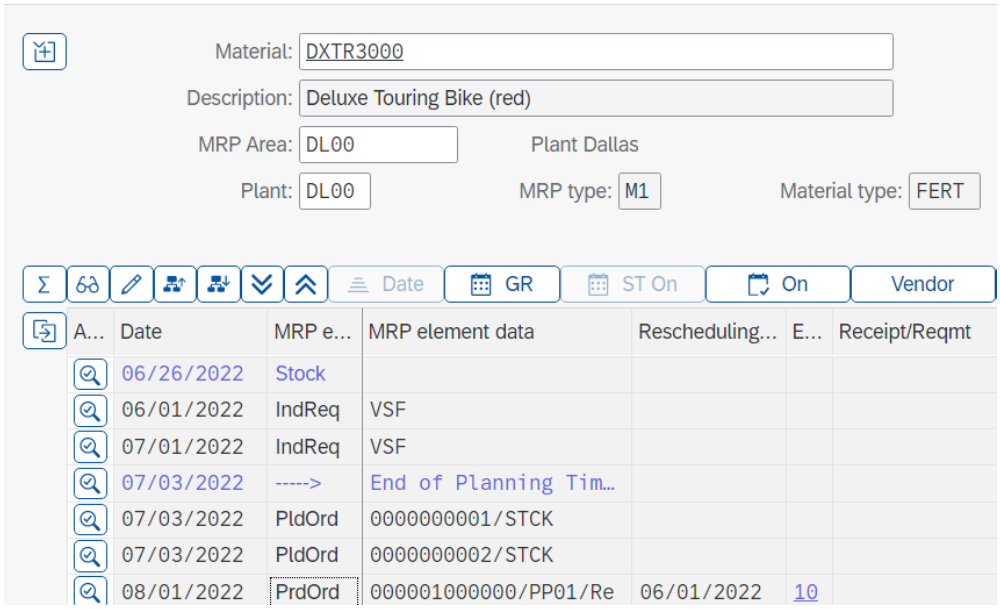
Note When you save the production order the system will automatically calculate the planned costs for the production order.

The system assigns a unique number to the production order. Please make a note of the production order number.



Production order number

You will automatically return to the requirements/inventory list. Select to refresh the list. The planned order **PldOrd** that you had selected is now available as a production order **PrdOrd**.



Click SAP to return to the SAP Fiori Launchpad.

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 (Goods Receipt Clerk)

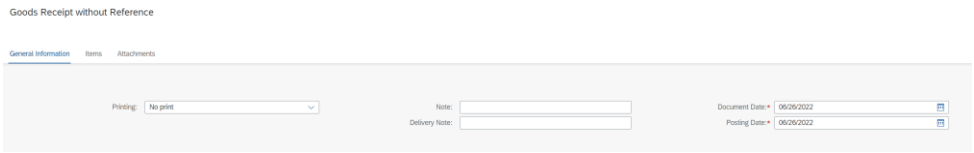
Goods receipt

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.

Post Goods Receipt without Reference

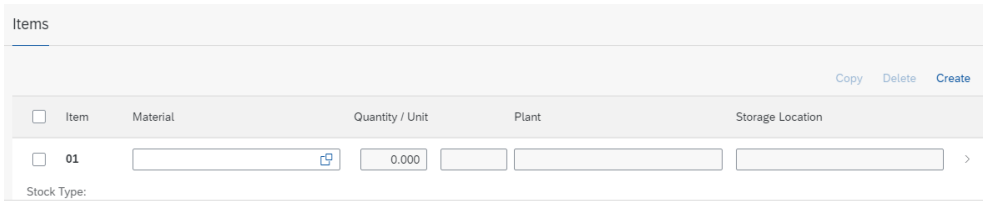
To receive goods in the inventory, use the app *Post Goods Receipt without Reference* in the *Production Planning and Execution* area.

The document and posting date are already defaulted with the current date and can thus be transferred.



Items

Directly below you will find the *Item* section. The table there is ready for input and offers **item 01** in advance.



Click on the line of **item 01**, you will switch to a separate input window.

Enter your *Material* **TRWA1###** and press Enter.

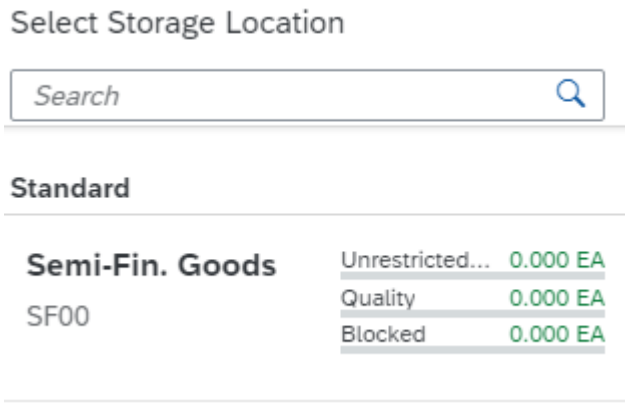
TRWA1###

Now you can enter the *Quantity* **500** with *Unit* **EA**.

500
EA

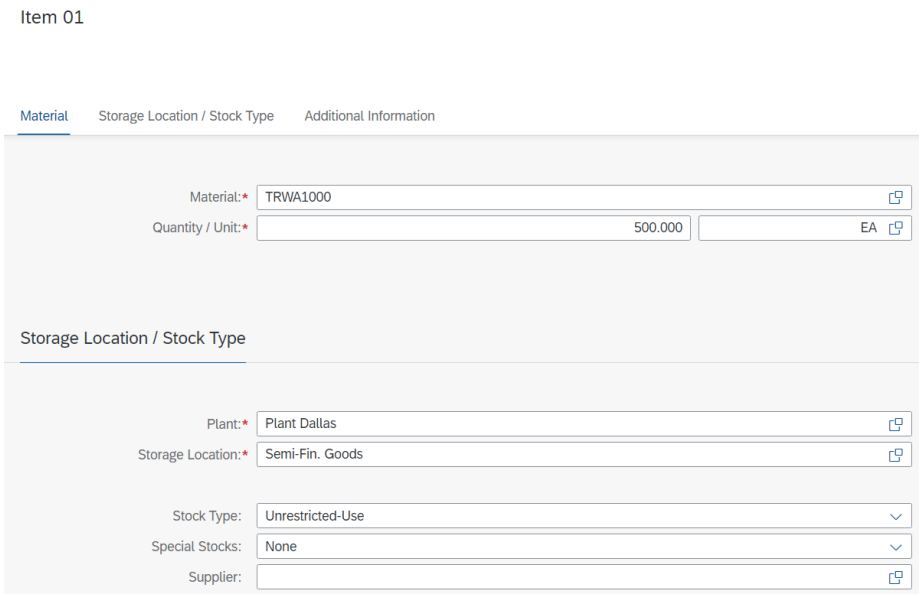
Next, choose *Plant* **DL00**. When choosing the *Storage Location* your storage for semi-finished goods is will be proposed. You can check the status directly in the selection screen.

DL00
SF00

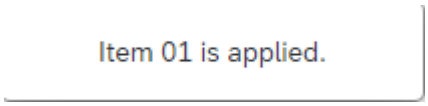


Choose the *Storage Location* **SF00**. The *Stock Type* is automatically set to **Unrestricted-Use**, and the *Special Stocks* is **None**.

Unrestricted-Use
None



Click on **Apply and New** to accept your entries and, at the same time, to be able to specify a new item. The system confirms the transfer of the item.



Now repeat the procedure for the other components of the bike DXTR3###.

Material	Quantity	Unit	Plant	SLoc
TRFR3### (Touring-Frame-Red)	500	EA	DL00	RM00

TRFR3###

DGAM1### (Derailleur Gear Assembly)	500	EA	DL00	RM00
TRSK1### (Touring Seat Kit)	500	EA	DL00	RM00
TRHB1### (Touring Handlebar)	500	EA	DL00	RM00
PEDL1### (Pedal Assembly)	500	EA	DL00	RM00
CHAN1### (Chain)	500	EA	DL00	RM00
BRKT1### (Brake Kit)	500	EA	DL00	RM00
WDOC1### (Warranty Document)	500	EA	DL00	RM00
PCKG1### (Packaging)	500	EA	DL00	RM00

DGAM1###

TRSK1###

TRHB1###

PEDL1###

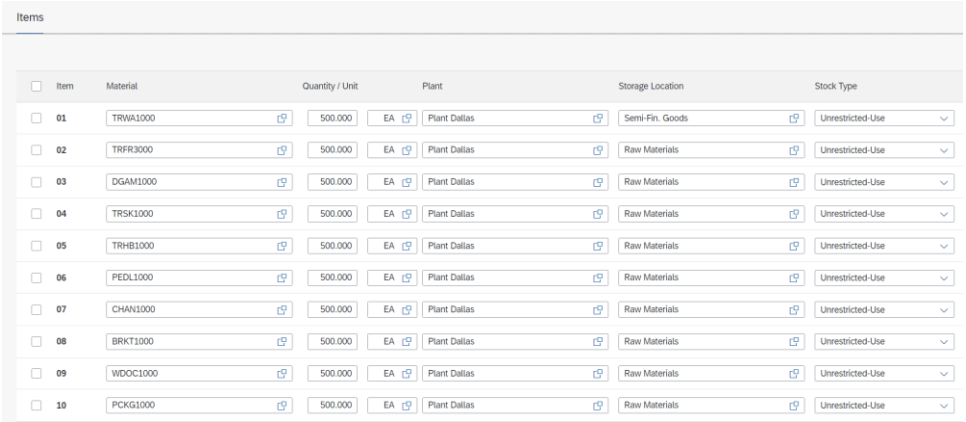
CHAN1###

BRKT1###

WDOC1###

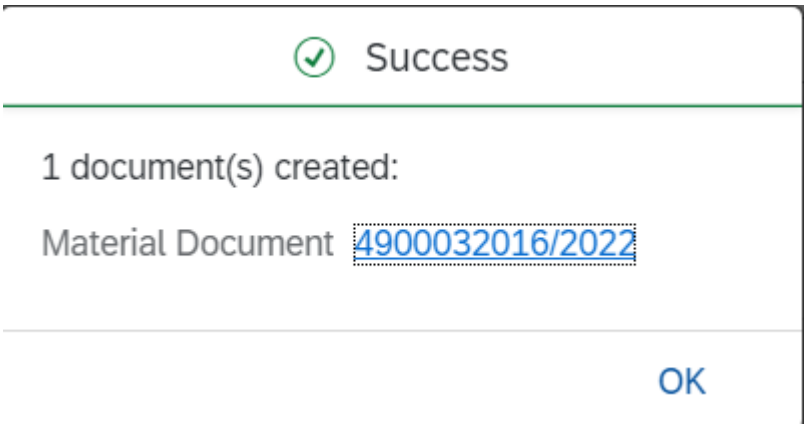
PCKG1###

As soon as you create the last item, confirm it with Apply to automatically return to the goods receipt posting. There you will see all created items.



Note If you have forgotten an item, you can add further items by clicking on Create. Furthermore, you can also correct entries if necessary.

Secure your goods receipt with Post. The SAP system will assign a unique number to the goods receipt and issue an associated message.



Material Document Number

Confirm the success message with OK.

Click SAP to return to the SAP Fiori Launchpad.

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.

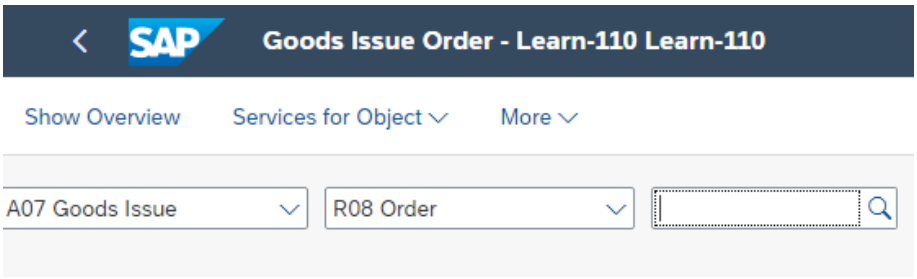
Name (Position) Sanjay Datar (Warehouse Employee)

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, 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.

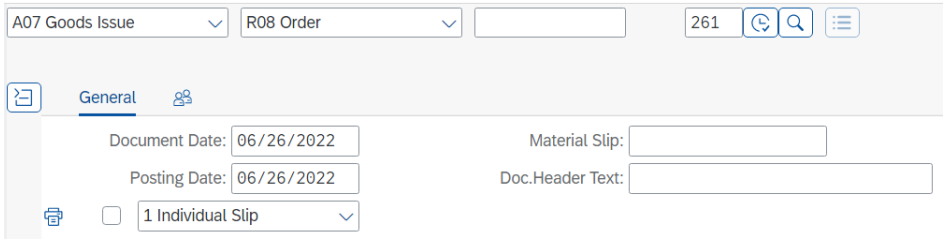
To issue goods to a production order, use the app *Post Goods Movement* in the *Production Planning and Execution* area.

Post Goods Movement

Make sure that **Goods Issue** and **Order** are selected in the drop-down menus.



The *Document Date* as well as the *Posting Date* should be already set to the current date. The *Movement Type* should be set to 261 (GI for order).

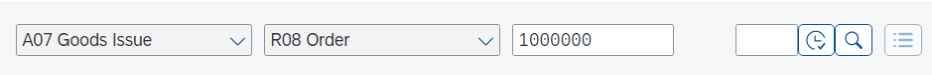


Enter your noted **production order** number.

Alternatively, click the value help icon in the order field. In the Order Number popup (1), use the icon on the far right to display a list of all tabs. Select the tab *Process Orders using the Info System*. On this tab, enter your material **DXTR3###** in the *Material* field and click Execute. Select your order and accept it with .

Process Orders using the Info System
DXTR3###

Once you have found or entered your production order number, press to load the order details.



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.

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. Before pressing Enter compare your screen with the one shown below. Notice that your quantity could be different.

SF00

RM00

Flag each item with **OK.** If you can't flag the first item please close the detail view with a click on  unter the line item list.

OK

Line	Mat. Short Text	Wa...	OK	Qty in UnE	EUn	S...	SLoc
1	Touring Frame-Red	☐	☑	124	EA		RM00
2	Derailleur Gear Assembly	☐	☑	124	EA		RM00
3	Touring Seat Kit	☐	☑	124	EA		RM00
4	Pedal Assembly	☐	☑	124	EA		RM00
5	Touring Handle Bar	☐	☑	124	EA		RM00
6	Chain	☐	☑	124	EA		RM00
7	Brake Kit	☐	☑	124	EA		RM00
8	Warranty Document	☐	☑	124	EA		RM00
9	Packaging	☐	☑	124	EA		RM00
10	Touring Aluminum Wheel Assembly	☐	☑	248	EA		SF00

Click on 

and record the material document number.

Material Document Number

Click 

to return to the SAP Fiori Launchpad.

Step 12: Review Production Order Status

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

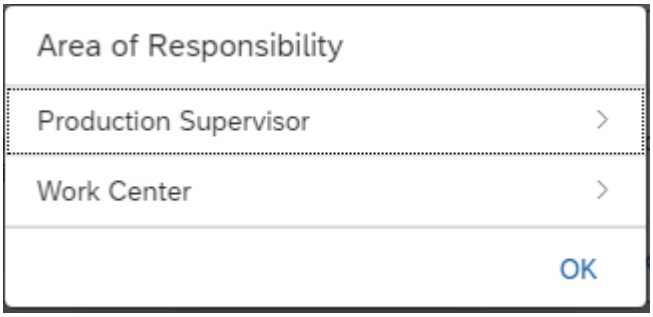
Short Description Review the current production order with respect to the status of the order.

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

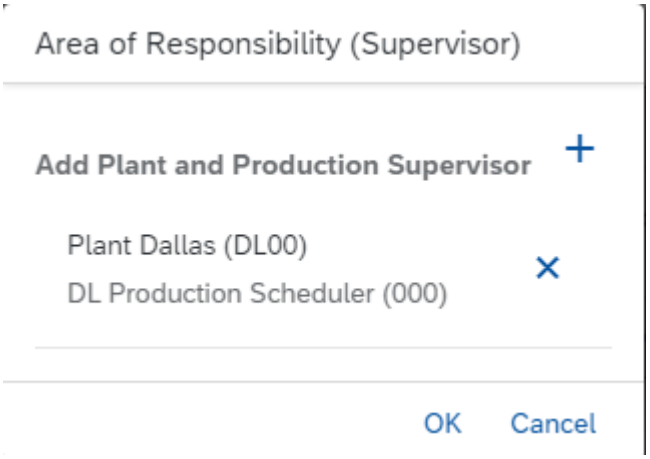
To display the production order, use the app *Manage Production Orders* in the *Production Planning and Execution* area.

Manage Production Orders - Orders

When you open the app for the first time, you will see a welcome message telling you to select an area of responsibility. Confirm this with OK, another popup will appear.

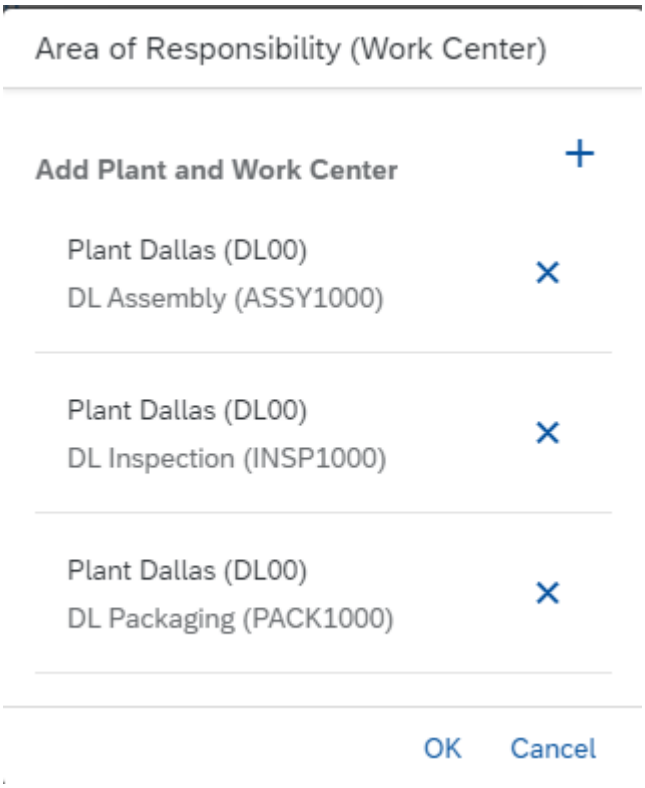


Choose *Production Supervisor*. No Plant is currently assigned. Click on + an choose the **Plant Dallas**. Confirm your selection with Select.



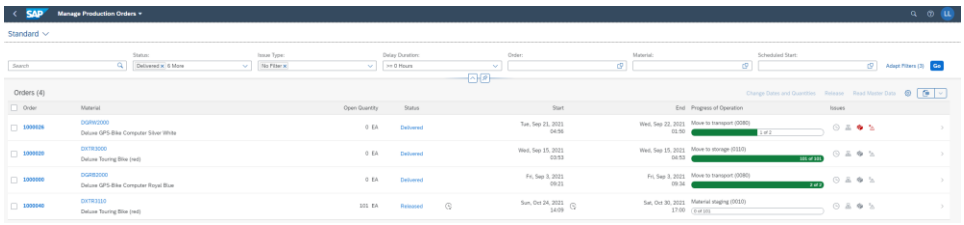
Confirm your selection with OK now click on *Work Center*.

Click on + again and choose the *Work Center* **DL Assembly (ASSY1000)**, **DL Inspection (INSP1000)** and **DL Packaging (PACK1000)** from your Pland Dallas and click on **Select**.



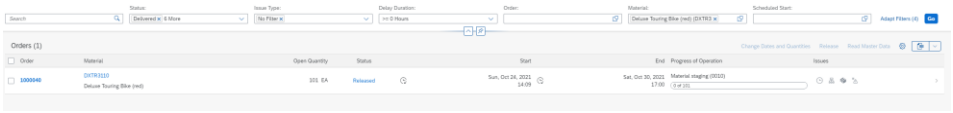
Confirm your selection with OK, and press OK to leave the selection or the area of Responsibility.

You will receive an overview of all existing orders. Depending on the progress of your course, there may be several production orders with different processing statuses.



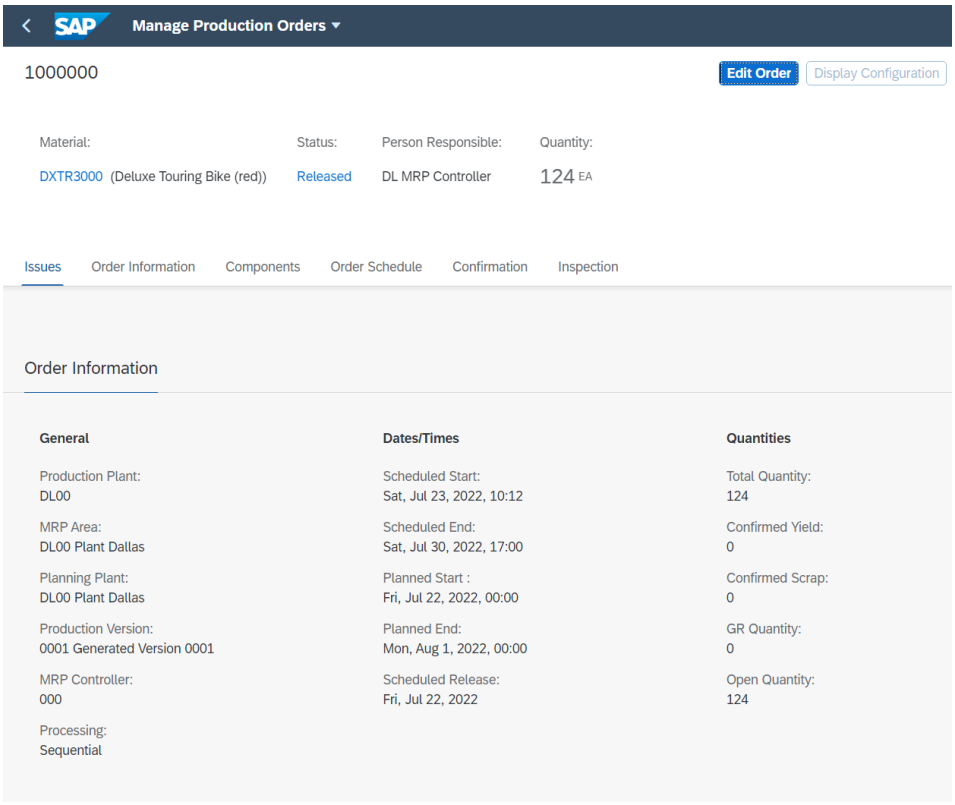
DXTR3###

In the field *Material* enter your material **DXTR3###** and choose Go to display your order.

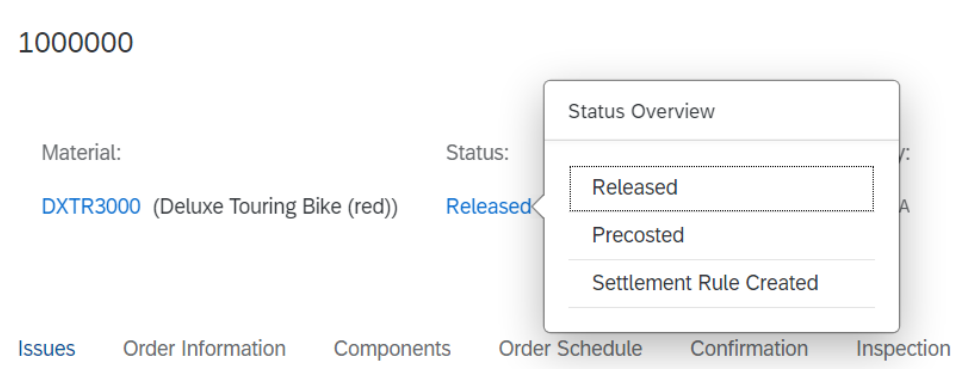


The tabular overview already provides you with various information about your order, such as the current status and the current processing status.

For further information select the entry. You will be forwarded to the details of the production order.

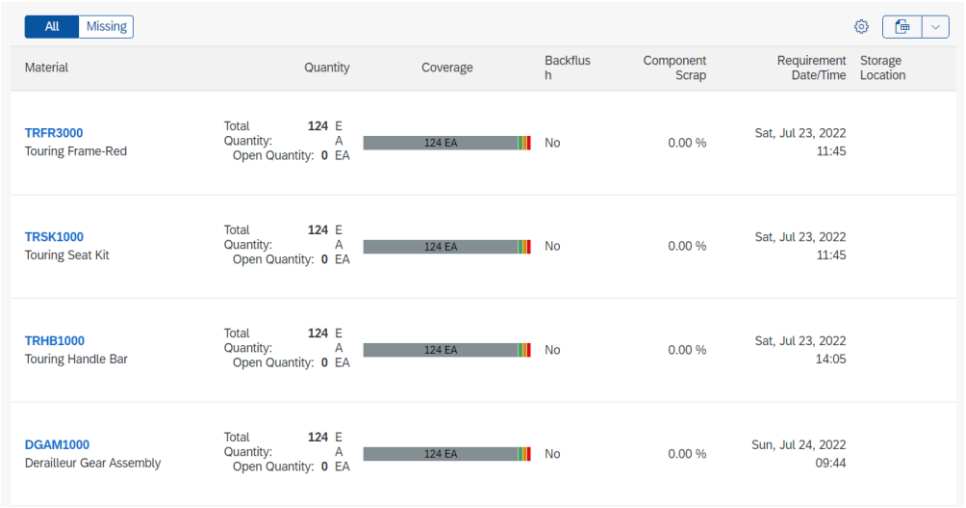


Click on the status Released for more information. You can see that your production order is precosted and a settlement rule has been created.



Now click on the *Components* tab. The screen scrolls to the corresponding position.

Components



In the last task, you posted the goods issue for the production order. In the production order, you now see that there are no more open quantities for this order.

Click SAP to return to the SAP Fiori Launchpad.

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 finished product that has been manufactured.

Enter Production order Confirmation

To confirm production completion, use the app *Enter Production order Confirmation* in the *Production Planning and Execution* area.

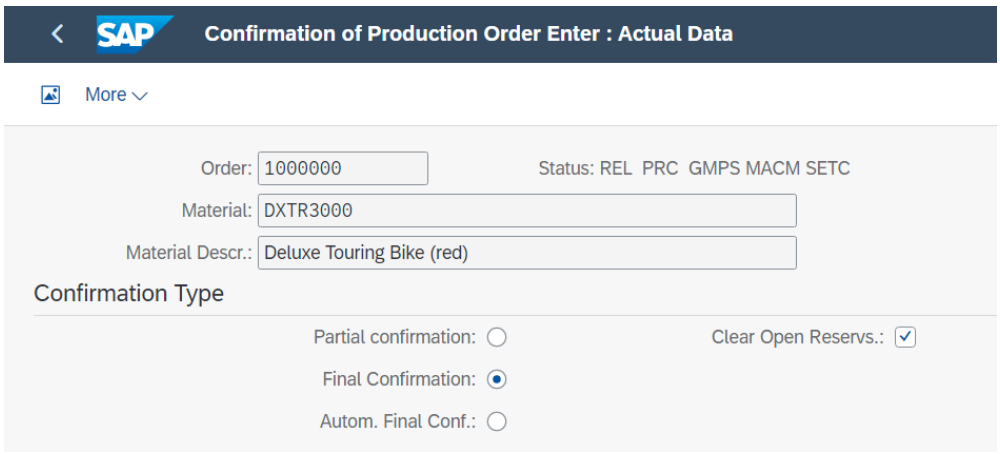
Production order number

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

Alternatively, use the Input-Help-Symbol and switch in the popup with to the tab *production orders by material and routing*, enter your material number **DXTR3##** there and search for your order.

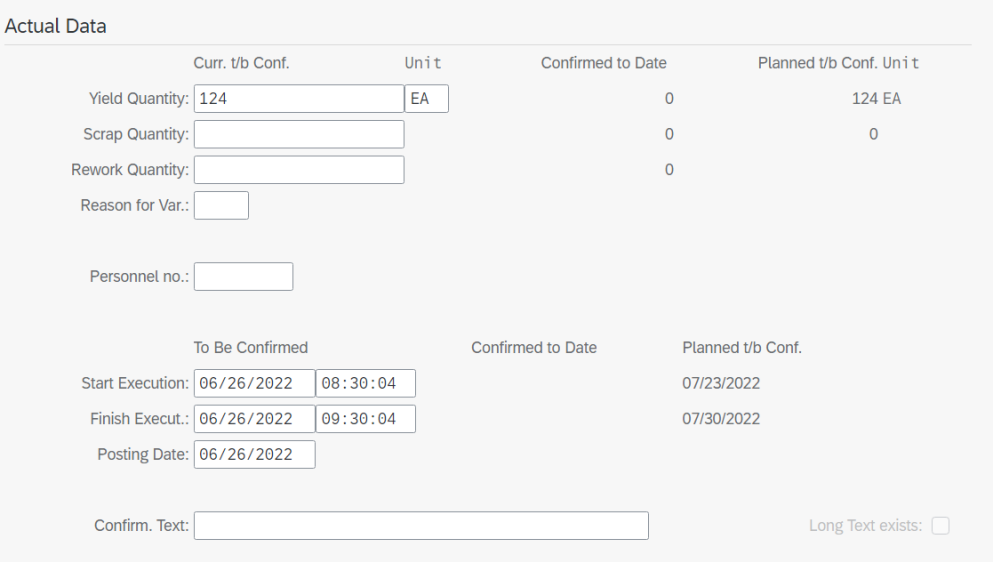
Final Confirm. Clear Reservation Amount

Check if **Final Confirmation** and **Clear Open Reserv.** is already checked in the *Confirmation Type* section.

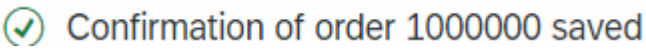


Furthermore, in the *Actual Data* tab, the quantity of bicycles that you should produce for this order should already be entered in the *Yield Quantity* field. Change the *Start Execution* to **1 hour earlier** than the pre-set time.

1 hour earlier



Save your entries with Save. You will get a confirmation from the system.



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 SAP to return to the SAP Fiori Launchpad.

Step 14: Review Production Order Status

Task Review the production order status. **Zeit** 10 Min.

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

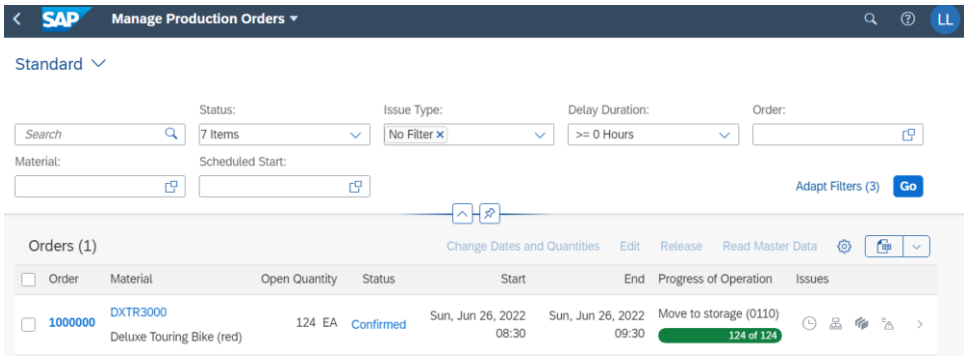
Name (Position) Michael Brauer (Shop Floor Worker 4)

To display the production order, use the app *Manage Production Orders* in the *Production Planning and Execution* area.

Manage Production Orders

In the field *Material* enter your material **DXTR3###** and choose Go to display your order.

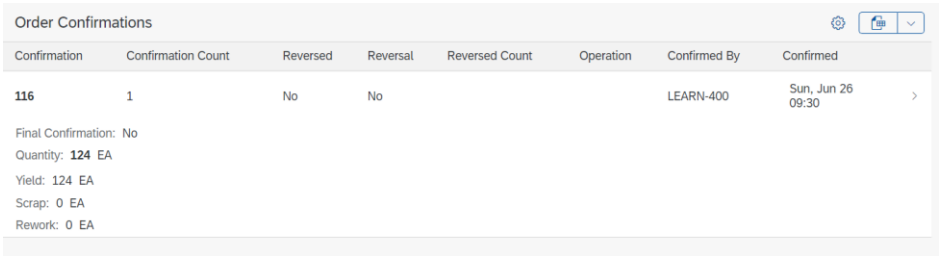
DXTR3###



As you can see, the status of your production order has changed from *Released* to *Confirmed*. Furthermore, the processing status is now at *Move to storage*.

For more information, select the entry, you will be redirected to the details of the production order. Click on the *Confirmation* tab to go to the related area.

Confirmation



An order confirmation is now available. You can see that the complete quantity of your production order has been confirmed and that there is no scrap.

After the confirmation, the goods receipt now needs to take place to complete the order.

Click to return to the SAP Fiori Launchpad.

Step 15: 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 (Goods Receipt 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.

Post goods receipt for production order

To post the goods receipt, use the app *Post goods receipt for production order*.

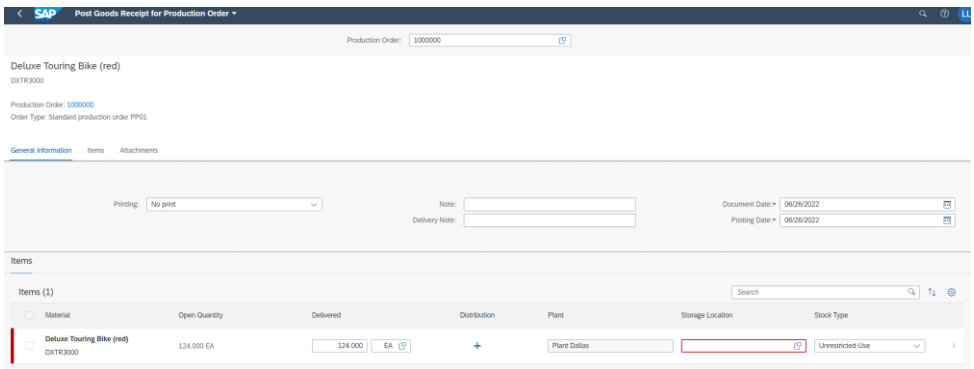
Production oder

Enter your noted **production order** and press Enter.

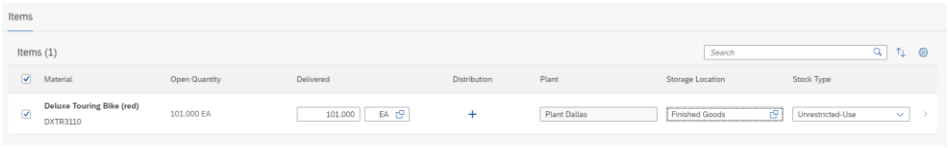
DXTR3###

As an alternative use the Input-Help-Search and enter your material **DXTR3###** and click Go. Then select your production order from the result list.

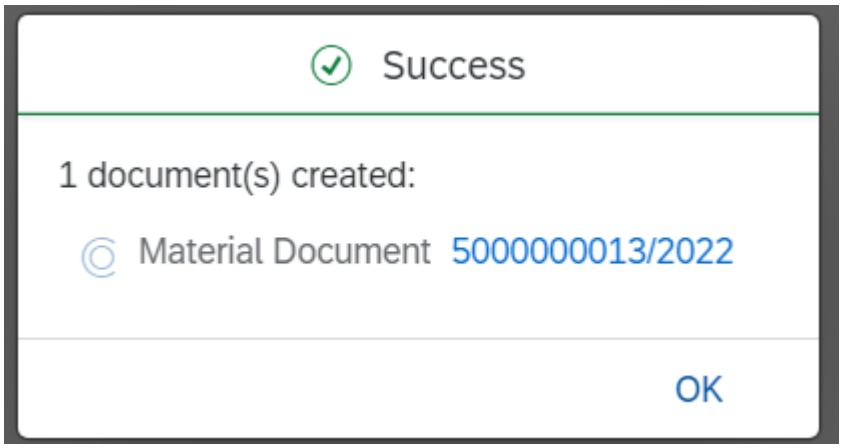
Your production order is loaded and displayed.



Add the storage location **FG00** for end products, all other settings can be accepted.



Save your goods receipt with **Post**. The SAP system will assign a unique number to the goods receipt and issue a corresponding message.



Material Document Number

_____

Furthermore, this updates the current value of the material produced to the production order.

Confirm the successmessage with OK.

Click SAP to return to the SAP Fiori Launchpad.

Step 16: Review Costs Assigned to Production Order

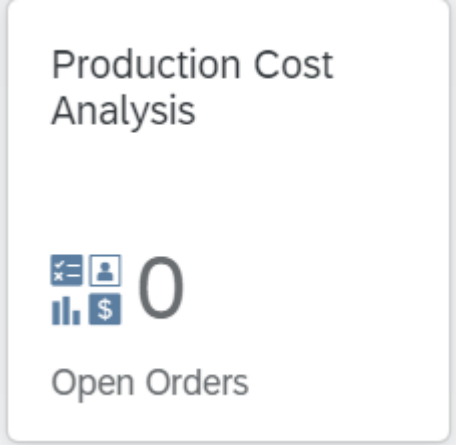
Task View the corresponding costs assigned to your production order. **Zeit** 5 Min.

Description Review all costs associated with your production order.

Name (Position) Jamie Shamblin (Controller)

To view the cost of a manufacturing job, use the *Production Cost Analysis* app.

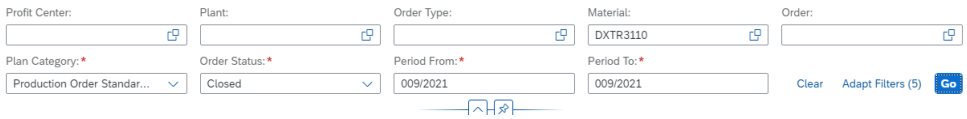
Production Cost Analysis



In the *Material* field enter **DXTR3###** and change the *Order Status* from **Open** to **Closed**

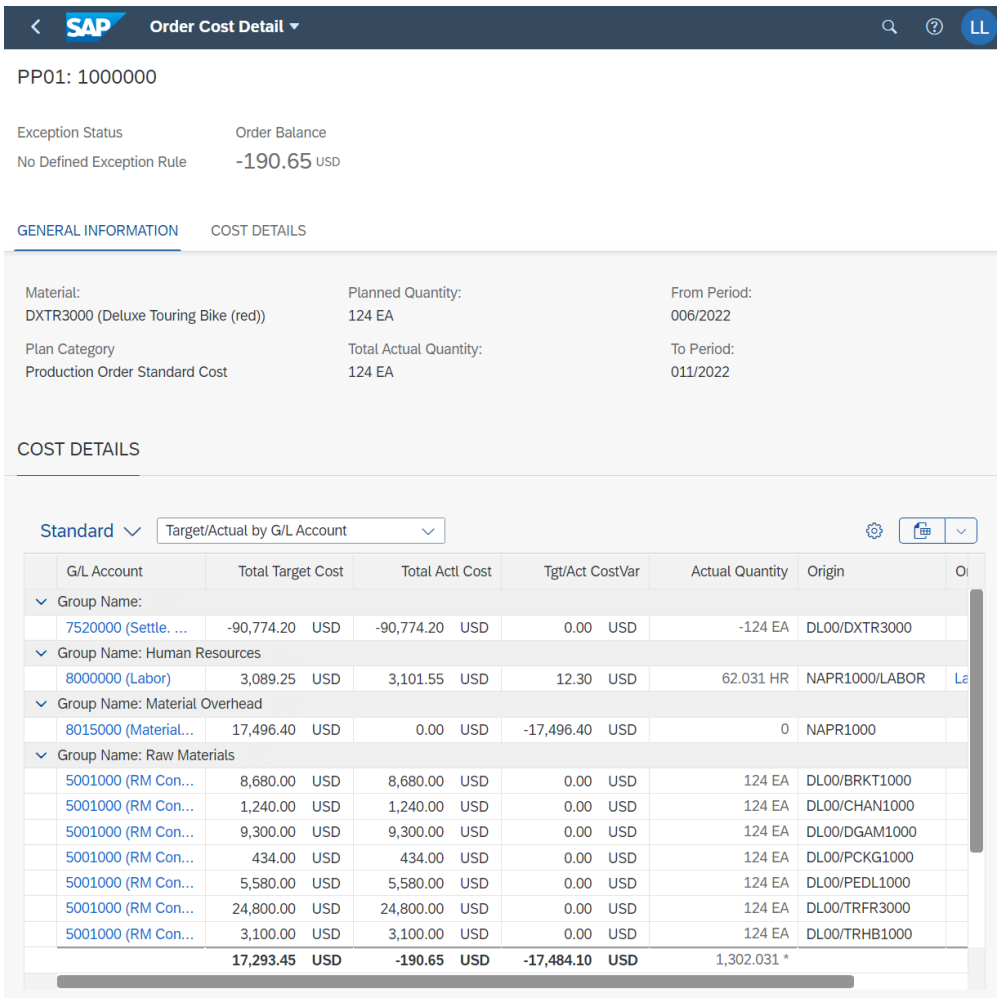
DXTR3###

Closed



Click on Go to start the search. Your recently completed production order will be displayed.

This overview lists the summed target and actual costs and shows any variances. Click on › at the end of the entry to open the cost details.



G/L Account	Total Target Cost	Total Actl Cost	Tgt/Act CostVar	Actual Quantity	Origin
Group Name:					
7520000 (Settle. ...)	-90,774.20 USD	-90,774.20 USD	0.00 USD	-124 EA	DL00/DXTR3000
Group Name: Human Resources					
8000000 (Labor)	3,089.25 USD	3,101.55 USD	12.30 USD	62.031 HR	NAPR1000/LABOR
Group Name: Material Overhead					
8015000 (Material...)	17,496.40 USD	0.00 USD	-17,496.40 USD	0	NAPR1000
Group Name: Raw Materials					
5001000 (RM Con...)	8,680.00 USD	8,680.00 USD	0.00 USD	124 EA	DL00/BRKT1000
5001000 (RM Con...)	1,240.00 USD	1,240.00 USD	0.00 USD	124 EA	DL00/CHAN1000
5001000 (RM Con...)	9,300.00 USD	9,300.00 USD	0.00 USD	124 EA	DL00/DGAM1000
5001000 (RM Con...)	434.00 USD	434.00 USD	0.00 USD	124 EA	DL00/PCKG1000
5001000 (RM Con...)	5,580.00 USD	5,580.00 USD	0.00 USD	124 EA	DL00/PEDL1000
5001000 (RM Con...)	24,800.00 USD	24,800.00 USD	0.00 USD	124 EA	DL00/TRFR3000
5001000 (RM Con...)	3,100.00 USD	3,100.00 USD	0.00 USD	124 EA	DL00/TRHB1000
	17,293.45 USD	**-190.65 USD**	**-17,484.10 USD**	1,302.031 *	

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 SAP to return to the SAP Fiori Launchpad.

Step 17: Settle Costs of Production Order

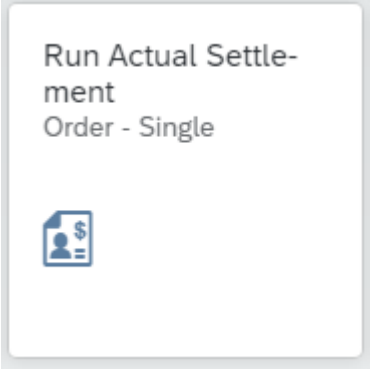
Task Settle costs of your production order. **Time** 20 min

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, use the app *Run Actual Settlement - Order - Single* in the *Production Planning and Execution* area.

Run Actual Settlement - Order - Single



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

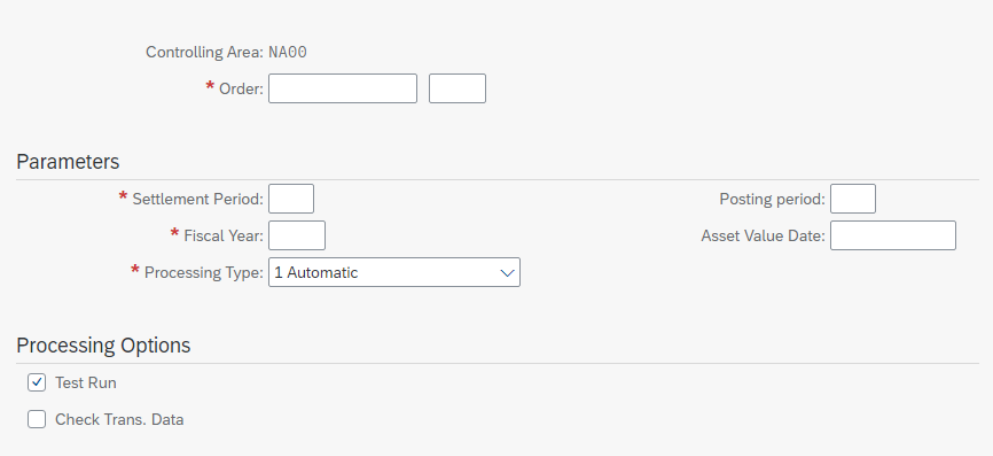
NA00

Enter your **production order number**, alternatively search for it with your material DXTR3### in the Input-Help. In the *Parameters* section enter *Settlement- and posting period* as **current month** (e.g., 006 for June). Enter as *Fiscal Year* the **current year**. Make Sure that **Test Run** is checked in the *Processing Options* section.

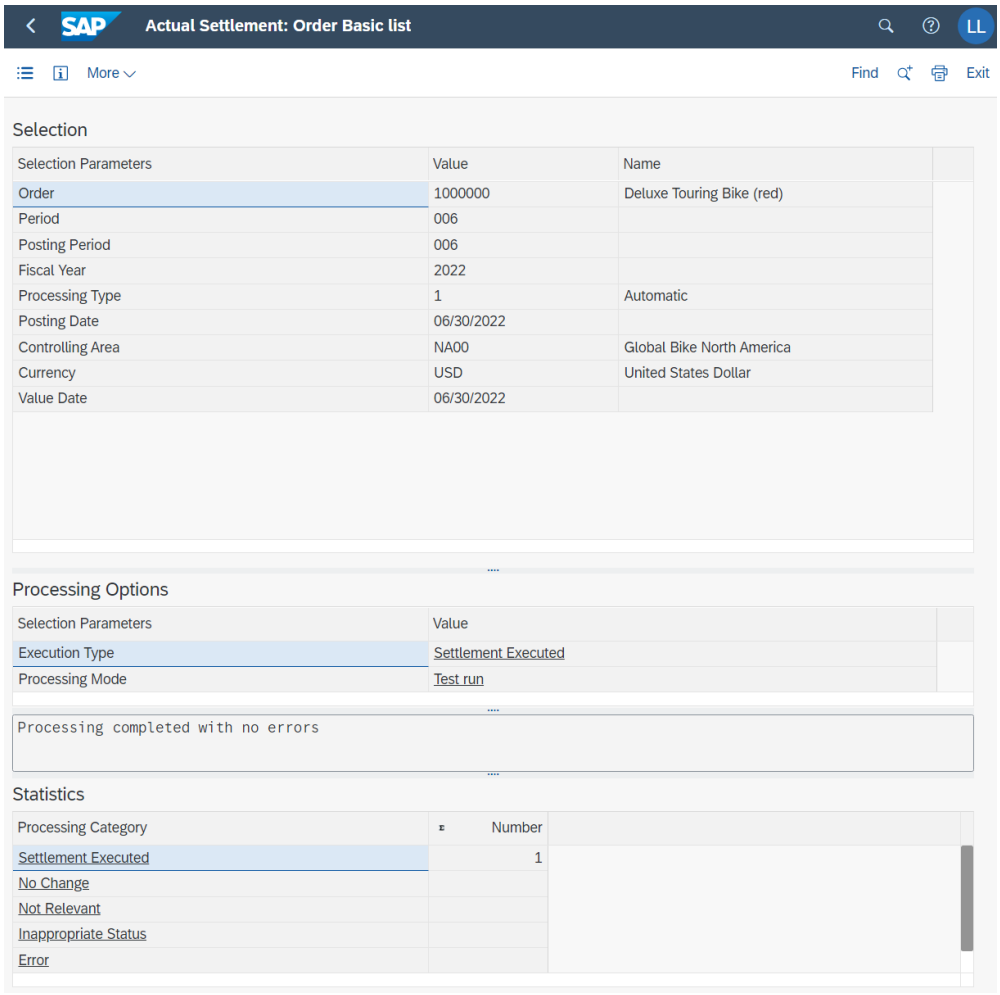
Order number

current month
current year

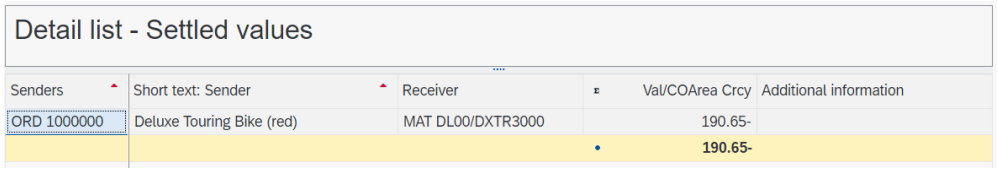
Test Run



Click on Execute to proceed. Confirm any occurring pop-ups with enter. You enter the screen *Actual Settlement: Oder Basic list*.



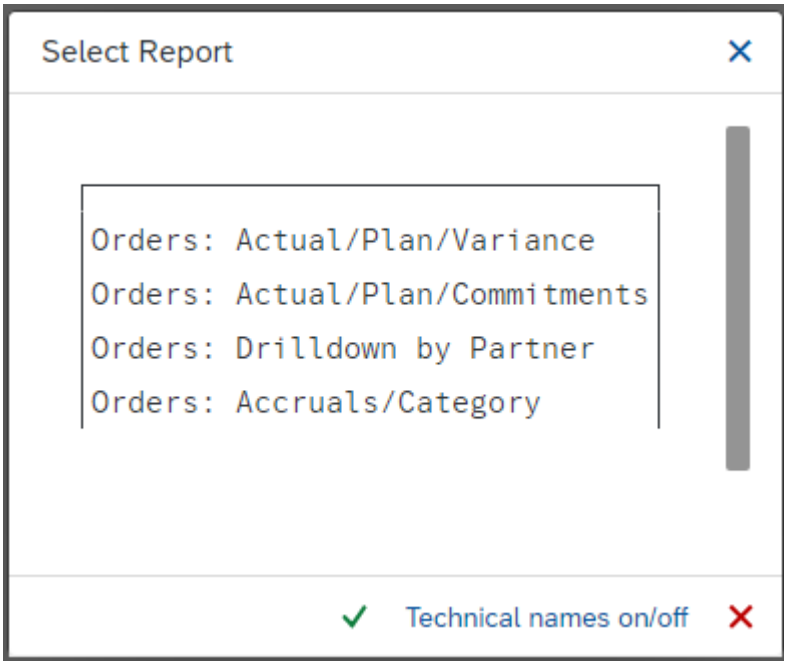
Click on to open the detail lists.



From the Menu bar choose: Menu Bar

More ► Environment ► Report

The *Select Report* pop-up will appear.



Actual/Plan/Variance

Click on **Actual/Plan/Variance** and confirm your selection with . A corresponding report group is generated and displayed.

Orders: Actual/Plan/Variance	Date: 06/26/2022 16:41:43	Page: 2 / 2
Order/Group	1000000	000001000000
Fiscal year	2022	
Period	1 - 6	

Cost Elements	Actual	Plan	Var.(Abs.)	Var.(%)
5001000 RM Consumpt Expense	59,458.00		59,458.00	
5004000 SF Consmpt Expense	28,024.00		28,024.00	
8000000 Labor	3,101.55		3,101.55	
8015000 Material Overhead				
* Costs	90,583.55		90,583.55	
7520000 Settle. Manuf Output	90,774.20-		90,774.20-	
* Deliveries to Stock	90,774.20-		90,774.20-	
** Balance	190.65-		190.65-	

The test run is now complete and the *actual settlement* should now be performed.

Click on to go back. Confirm the Message to leave the report with Yes. Afterwards press two times to get back to the entry screen.

~~Testlauf~~

Deselect Test Run and again click on Execute. In contrast to the previous run, you can now see in the *Processing Options* area that this was an update run that was *completed with no errors*.

Processing Options

Selection Parameters	Value
Execution Type	Settlement Executed
Processing Mode	Update run

Processing completed with no errors

Open the report **Actual/Plan/Variance** again by clicking on first and then use the menu bar path **More** ► **Environment** ► **Report** and select the option **Actual/Plan/Variance**.

Actual/Plan/Variance

Orders: Actual/Plan/Variance Date: 06/26/2022 16:42:52 Page: 2 / 2

Order/Group	1000000	000001000000
Fiscal year	2022	
Period	1 - 6	

Cost Elements	Actual	Plan	Var.(Abs.)	Var.(%)
5001000 RM Consumpt Expense	59,458.00		59,458.00	
5004000 SF Consmpt Expense	28,024.00		28,024.00	
8000000 Labor	3,101.55		3,101.55	
8015000 Material Overhead				
* Costs	90,583.55		90,583.55	
7520000 Settle. Manuf Output	190.65		190.65	
* Settled Costs	190.65		190.65	
7520000 Settle. Manuf Output	90,774.20-		90,774.20-	
* Deliveries to Stock	90,774.20-		90,774.20-	
** Balance				

You can see that the costs have now been settled.

Click SAP to return to the SAP Fiori Launchpad.

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) Mountain bikes. 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.