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Material Requirement Planning

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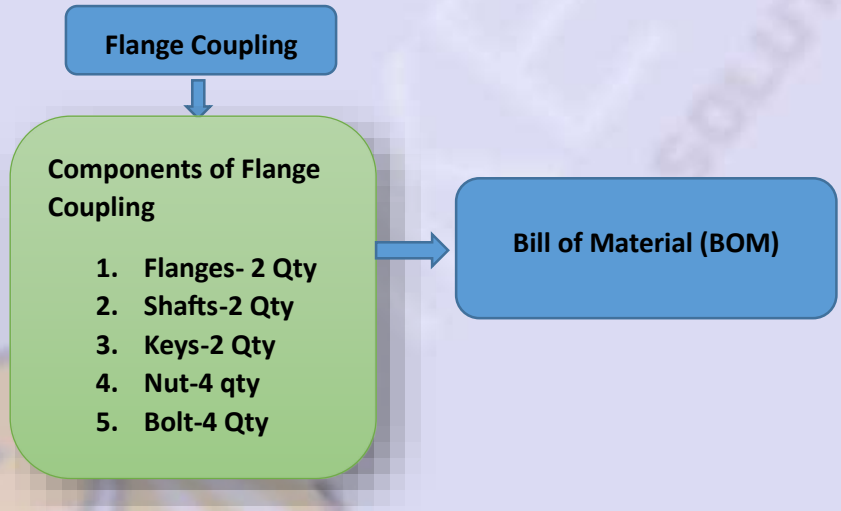
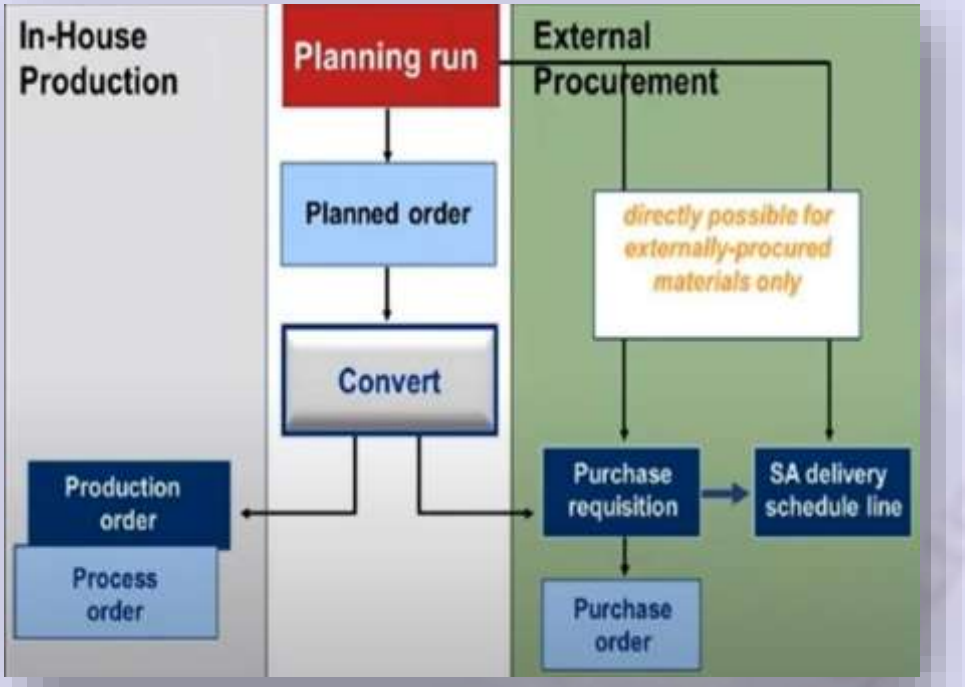
Material Requirement Planning

- MRP stands for Material Requirement Planning
- Main Purpose of MRP is to guarantee Material Availability
- MRP determines mainly; what material is needed? What Quantity of the material is needed? And when it is required?
- MRP Basically uses BOM in PP.BOM Stands for Bill of Material. for example let say you want to manufacture finished product as flange coupling now the components of Flange coupling as shown in figure will be entered in Bill of Material.



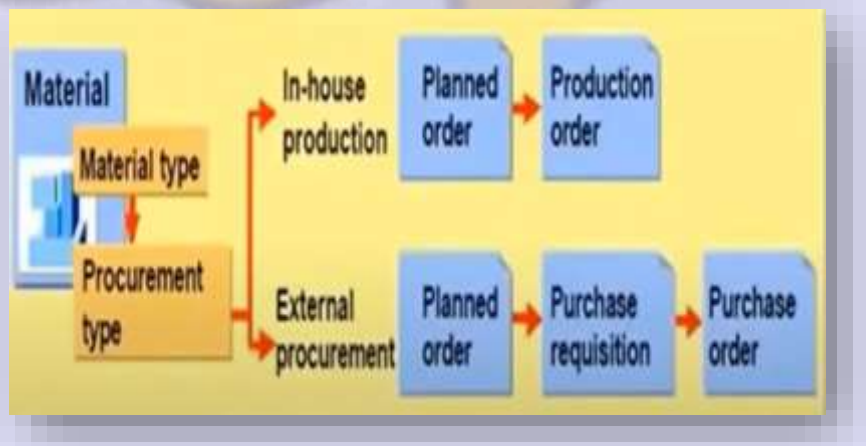
Now let us say you want to manufacture 1000 flange coupling, what system will do in this case if we run MRP for 1000 Flange coupling ?, system will calculate total quantity of components needed for manufacturing and will send information to the purchase department in the form of PR.

- Now when you run MRP there are generally two types of Materials in the organizations Inhouse Production (FERT ETC) and Externally Procured (ROH, ERSA etc.).



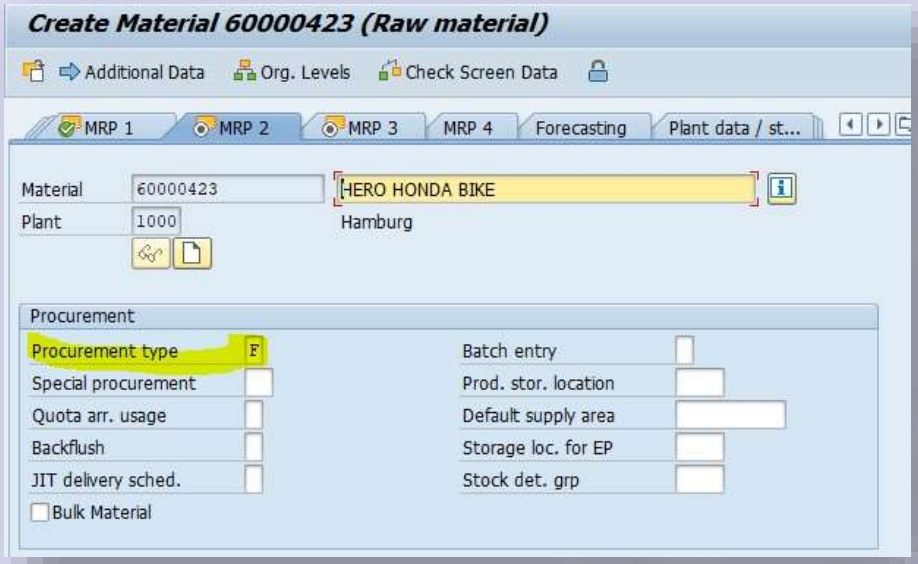
For the In-house material if you run MRP then system will generate planned order then that planned order can be converted into production order. This process comes under the scope of PP Module.

In case of externally procured material if you run MRP system will directly create PR and that PR can be converted to Purchase order. OR sometimes system will generates schedule lines. OR Sometimes it may possible to create planned order and that planned order can then be converted to PR and the PO as shown in figure below



Now where this procurement type (E or F) is maintained?

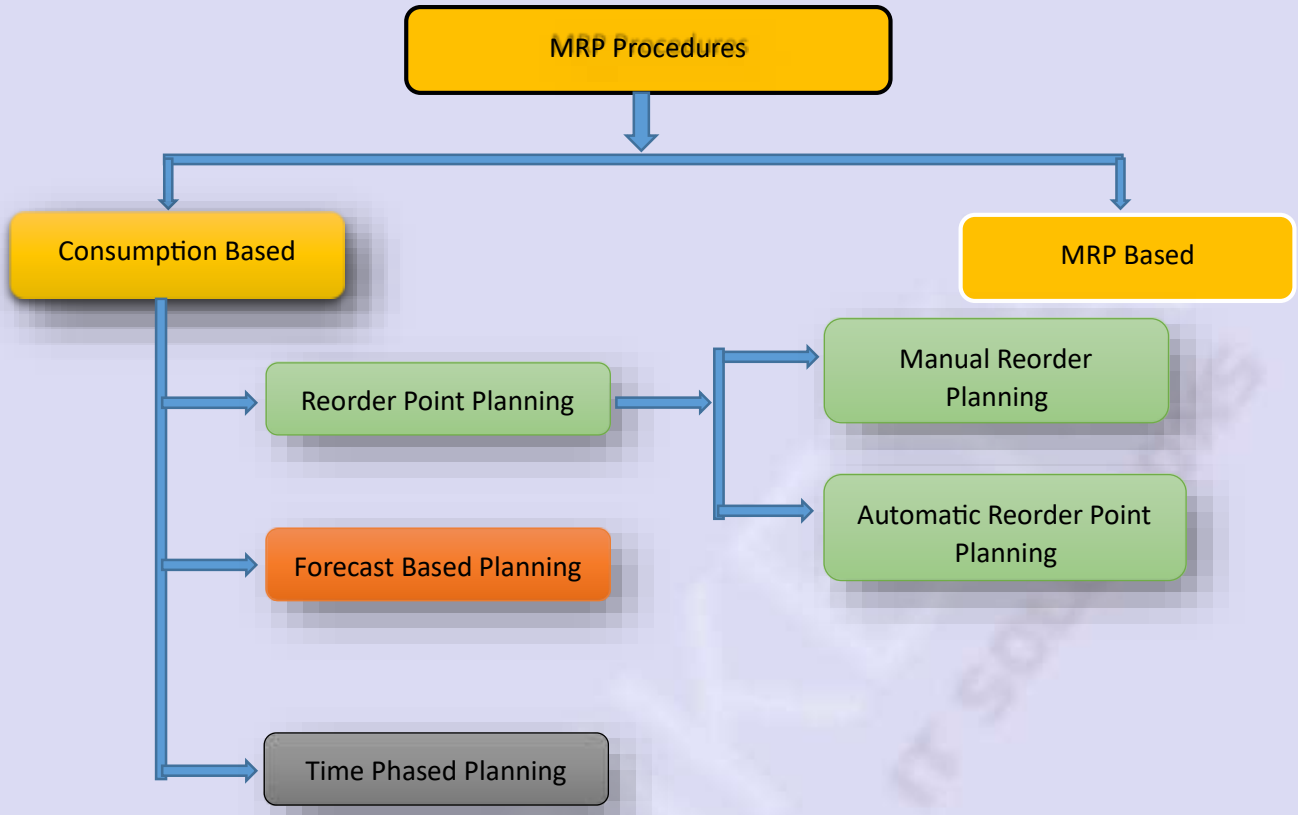
It is maintained in material master. It is maintained in MRP 2 view.



MRP Procedures

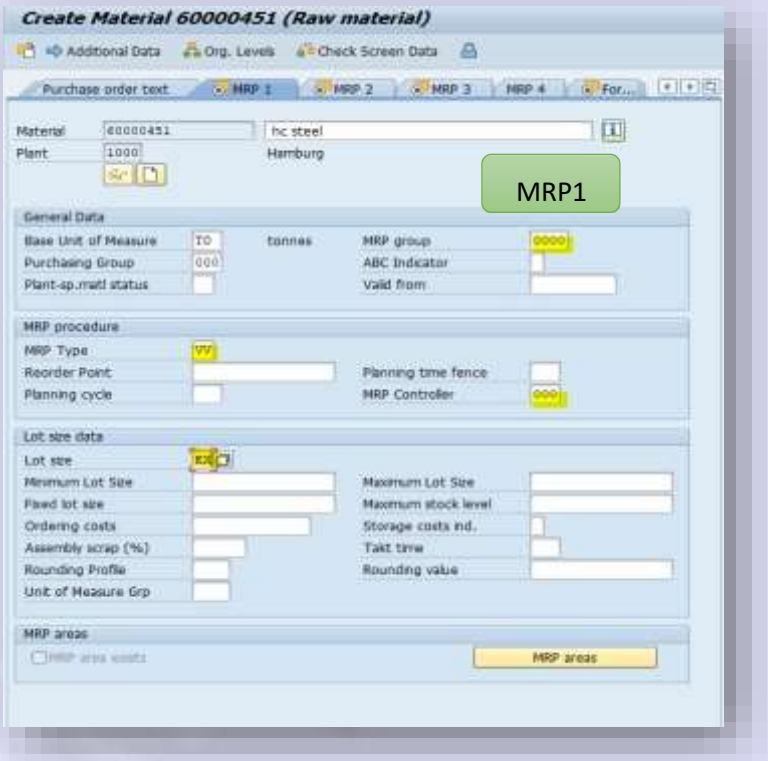
Basically there are two types of MRP Procedures;

1. MRP Based Planning
2. Consumption based planning


MRP Procedures
Consumption Based
MRP Based
Reorder Point Planning
Manual Reorder Planning
Automatic Reorder Point Planning
Forecast Based Planning
Time Phased Planning

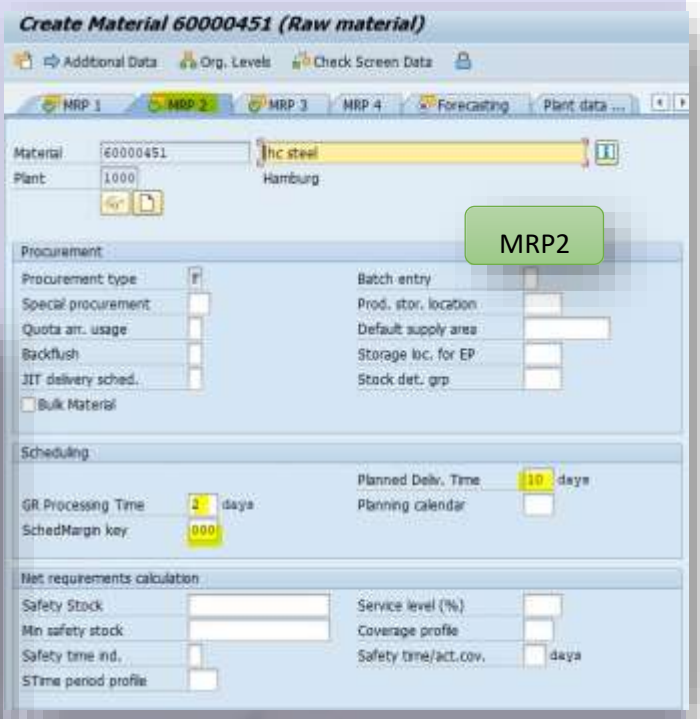
Forecast Based Planning

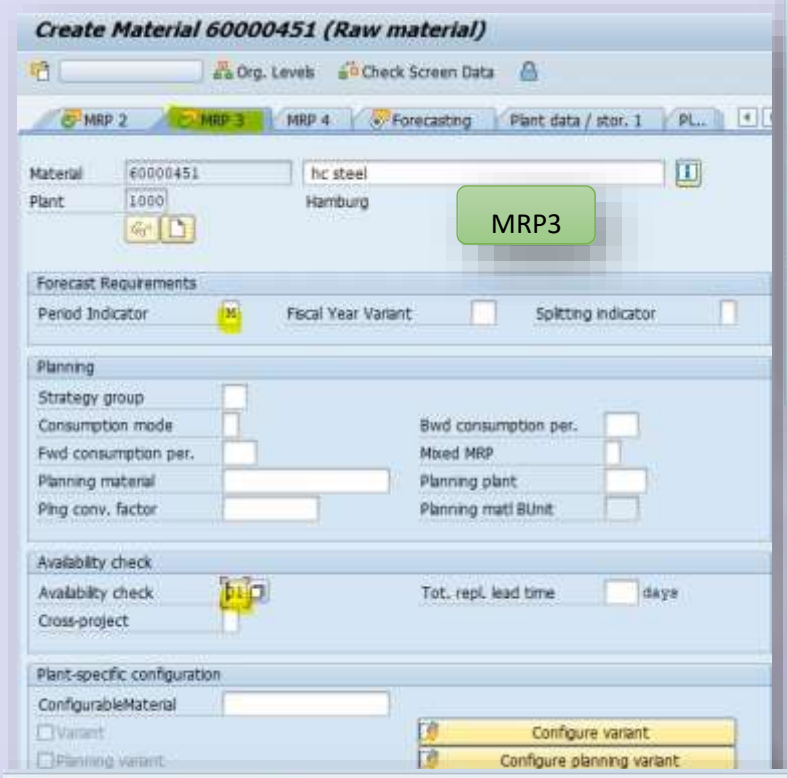
Based on the values of previous consumption of the material we plan for the future planning.

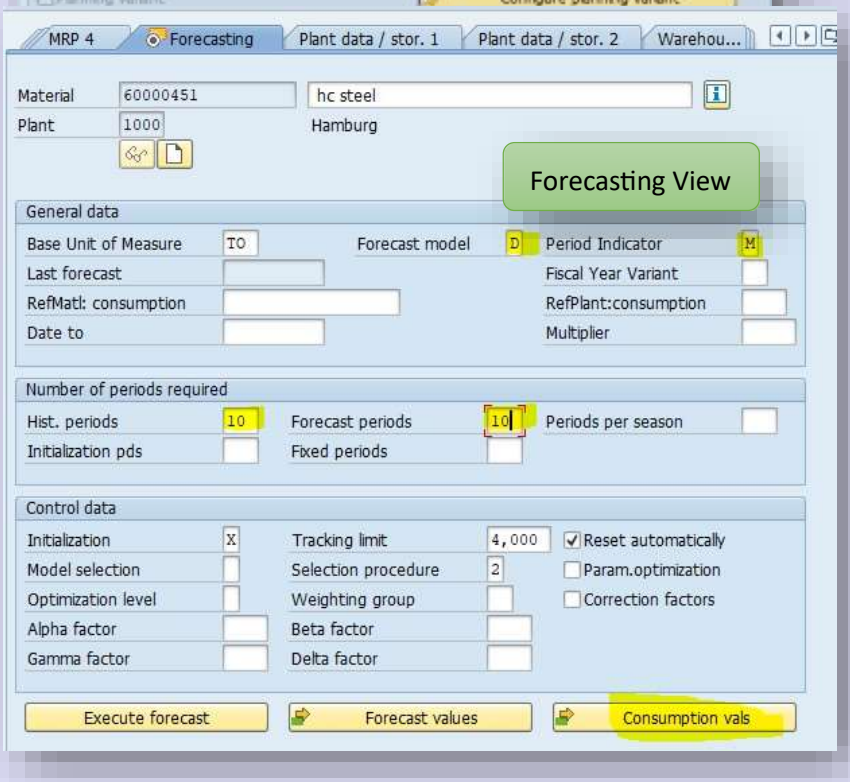


1. Create a material Master MM01
    - Maintain Views basic data, purchasing, MRP1, MRP2, MRP3 and forecast based planning.
    - IN MRP1 maintain basic details as shown in figure
    - IN MRP2 Maintain GR Processing Time, Planned Delivery time and Scheduled Margin

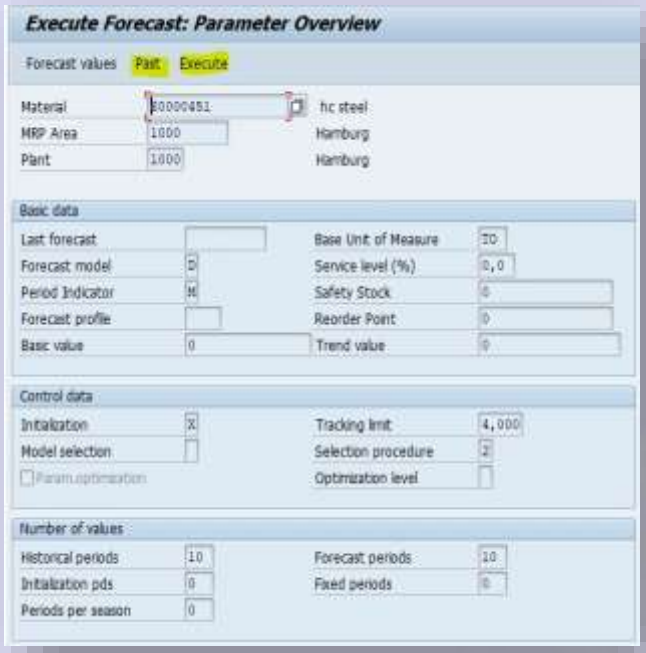
- In MRP 3 Maintain Period indicator and Availability Check as shown in figure





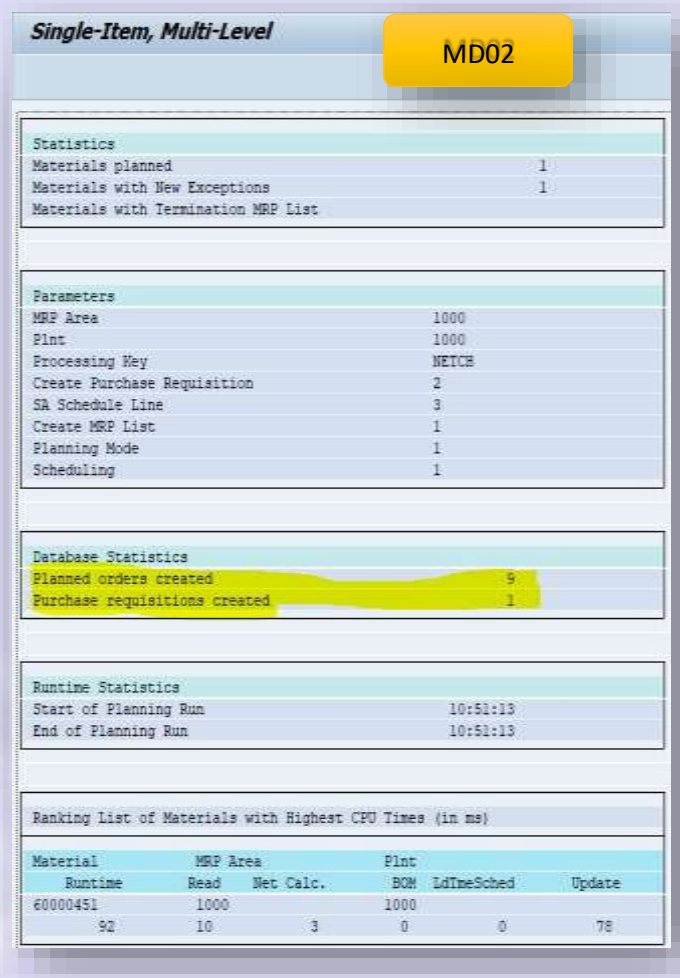


- Next go to forecasting view Maintain Forecast model as Historical period (Previous consumption period), Forecast Periods (Next Coming periods) click on consumption values.
- Enter the Previous usage values of the Material.
- Go to Main Data
- Enter and maintain next views
- 60000451 Material is created

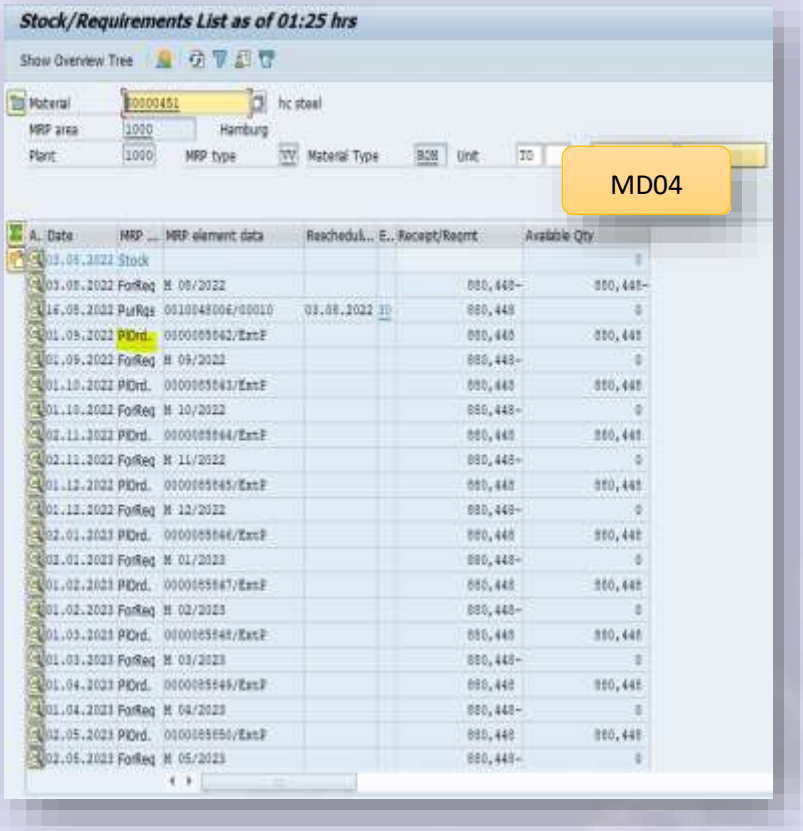


- If You click on past it will give you history of previous consumption. Click on Execute, select the forecast date after that you can see forecast values for future period

3. Convert Forecast values into Planned Order (MD02) OR MRP RUN
    - Enter here Material, MRP Area and plant and select options as per requirement.
    - You can click on display results before they are saved. It means it will show you how many orders are generated.



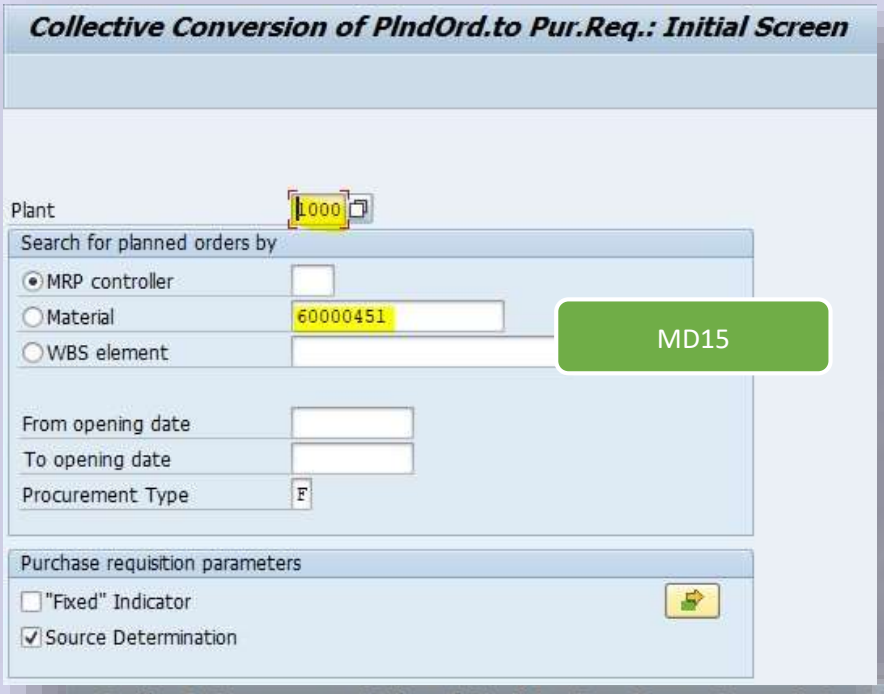
4. Convert Planned Orders to Purchase requisition (T Code : MD04)

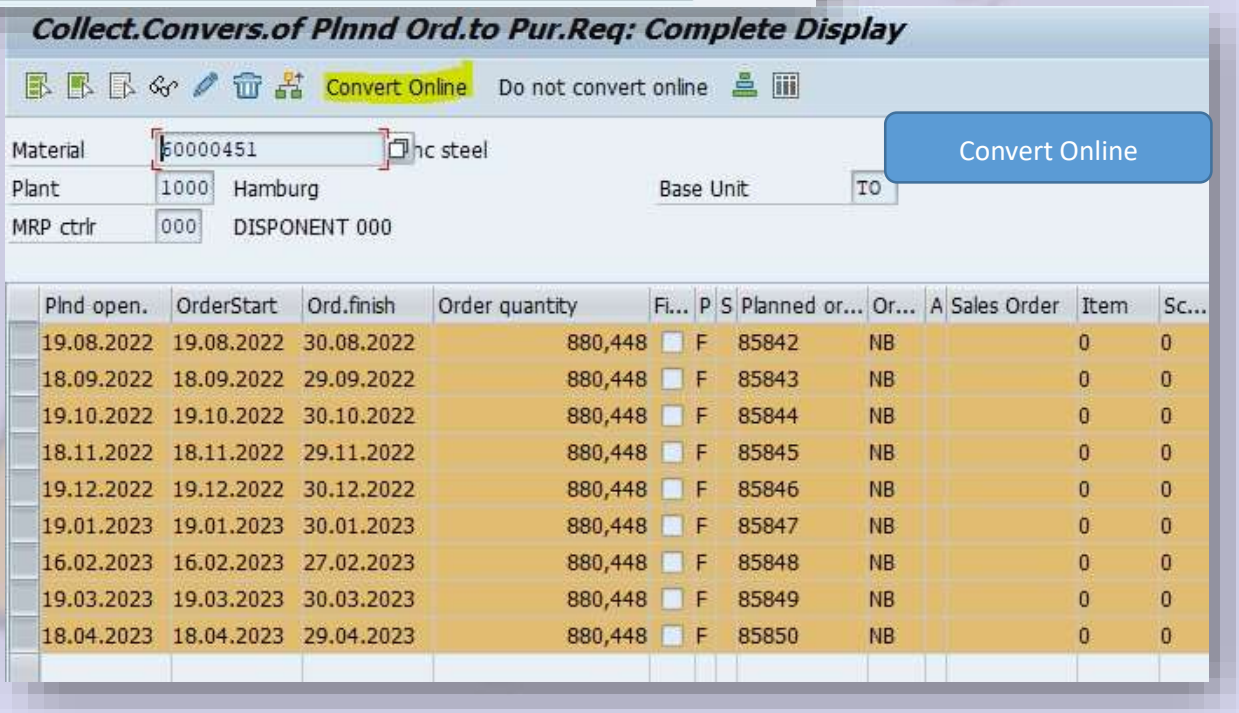


- Maintain Material, Plant and MRP area Enter
- Double click on planned order and convert it to purchase requsition.

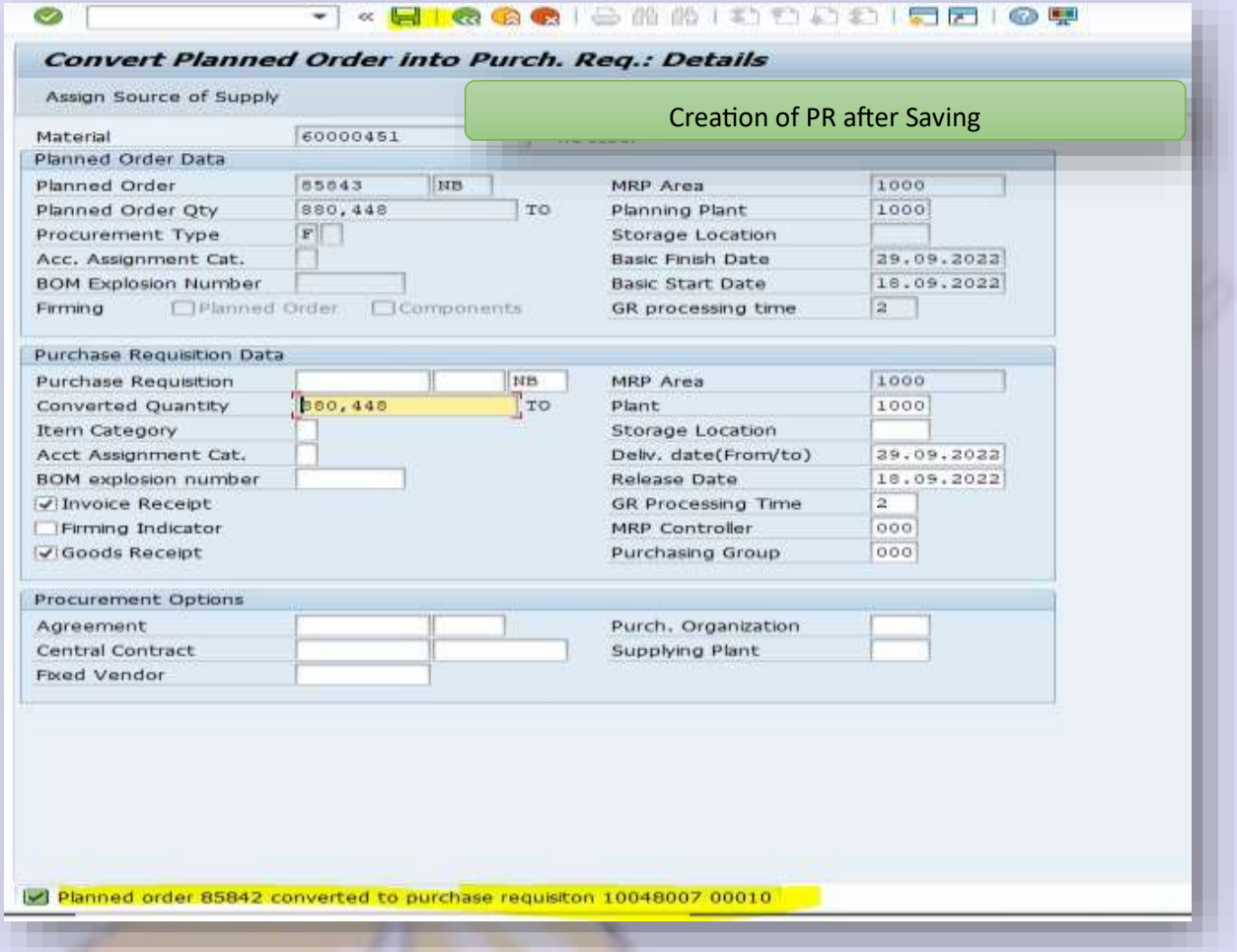
Now this is for one planned order, where you can convert planned order to PR and after refreshing MD04 you can convert PR to PO

- Now collective conversion of Planned order to PR (T code MD15) Enter Plant select material enter material
- Then in next screen select all rows and click on convert online
- Keep goin on save button you will observe on by one planned order is getting converted into PR





Plnd open.	OrderStart	Ord.finish	Order quantity	Fi...	P	S	Planned or...	Or...	A	Sales Order	Item	Sc...
19.08.2022	19.08.2022	30.08.2022	880,448		F		85842	NB			0	0
18.09.2022	18.09.2022	29.09.2022	880,448		F		85843	NB			0	0
19.10.2022	19.10.2022	30.10.2022	880,448		F		85844	NB			0	0
18.11.2022	18.11.2022	29.11.2022	880,448		F		85845	NB			0	0
19.12.2022	19.12.2022	30.12.2022	880,448		F		85846	NB			0	0
19.01.2023	19.01.2023	30.01.2023	880,448		F		85847	NB			0	0
16.02.2023	16.02.2023	27.02.2023	880,448		F		85848	NB			0	0
19.03.2023	19.03.2023	30.03.2023	880,448		F		85849	NB			0	0
18.04.2023	18.04.2023	29.04.2023	880,448		F		85850	NB			0	0



Now again go to MD04 and check there all planned orders are converted to PR. You can convert these PR to PO one by one by double clicking on the PR.

But you can create single PO for All PR also

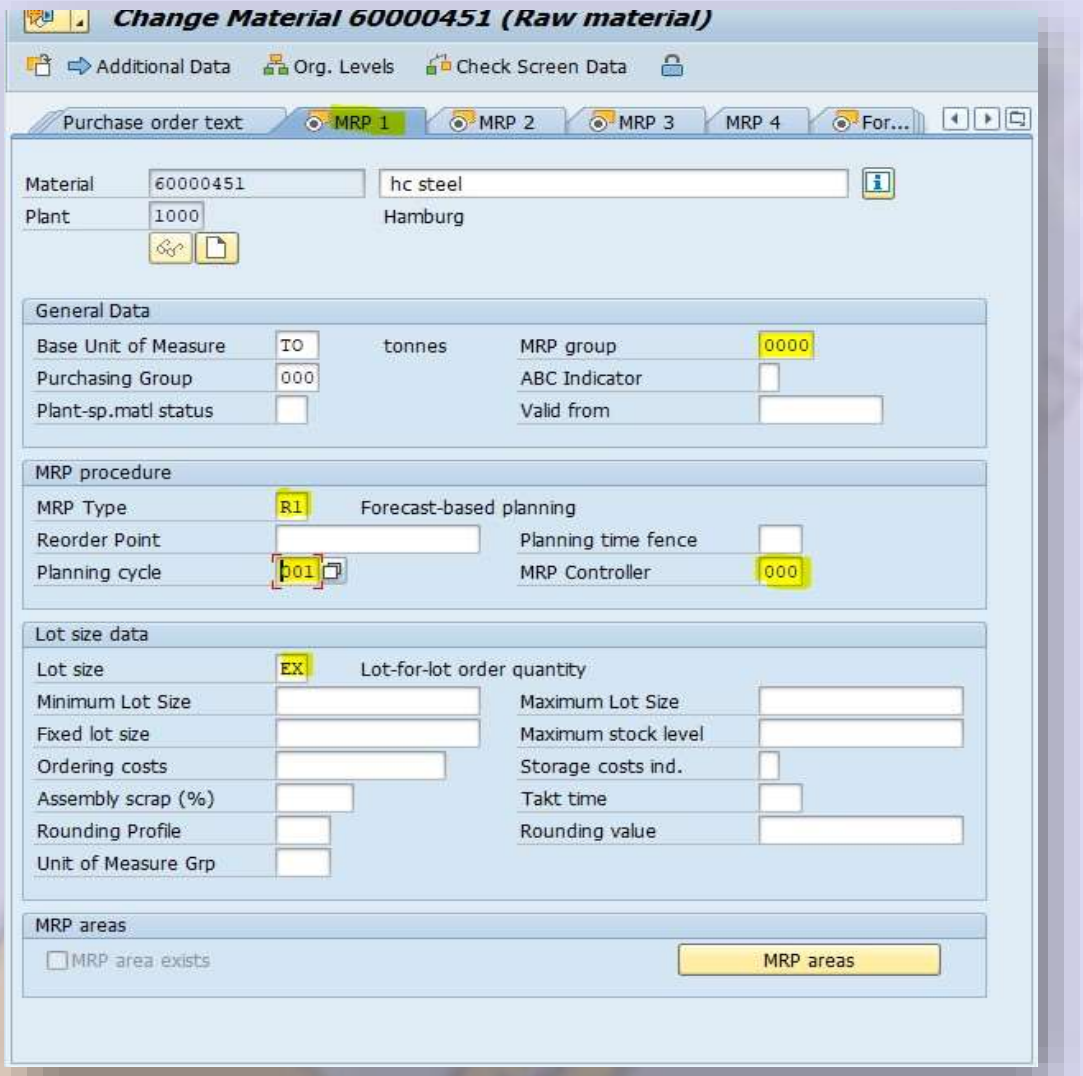
Now How to convert all PR into Single PO?

You can go to ME21N and in document overview go to selection variant then put only plant and material you will get list of all PR just select now PR and click on adopt so that it will be added in line items of single PO.

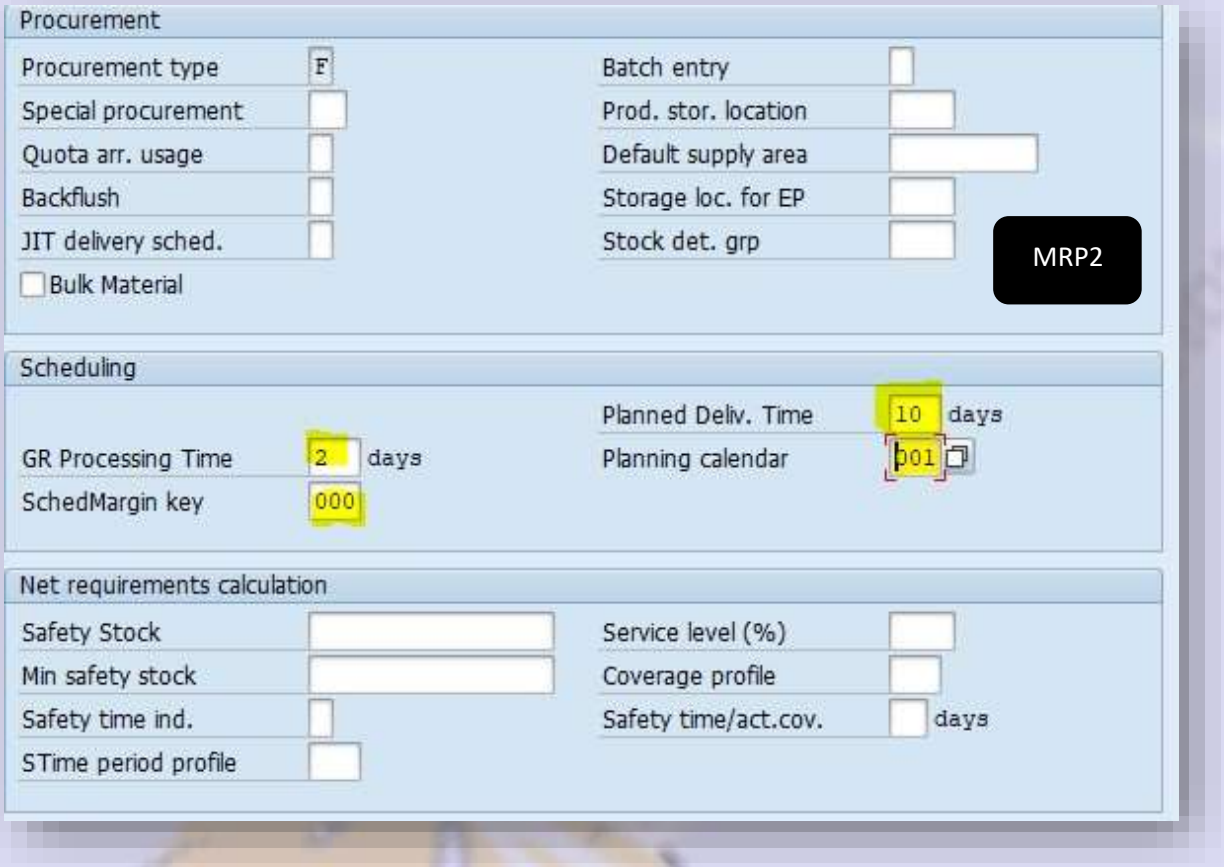
After this you can go for Good receipt and Monitor again in MMBE

Time phased Planning

It is also known as seasonal Planning. It is rarely used in industry, for time phased planning a ll the steps are same; only you need to change MRP views in Material Master.



MRP1



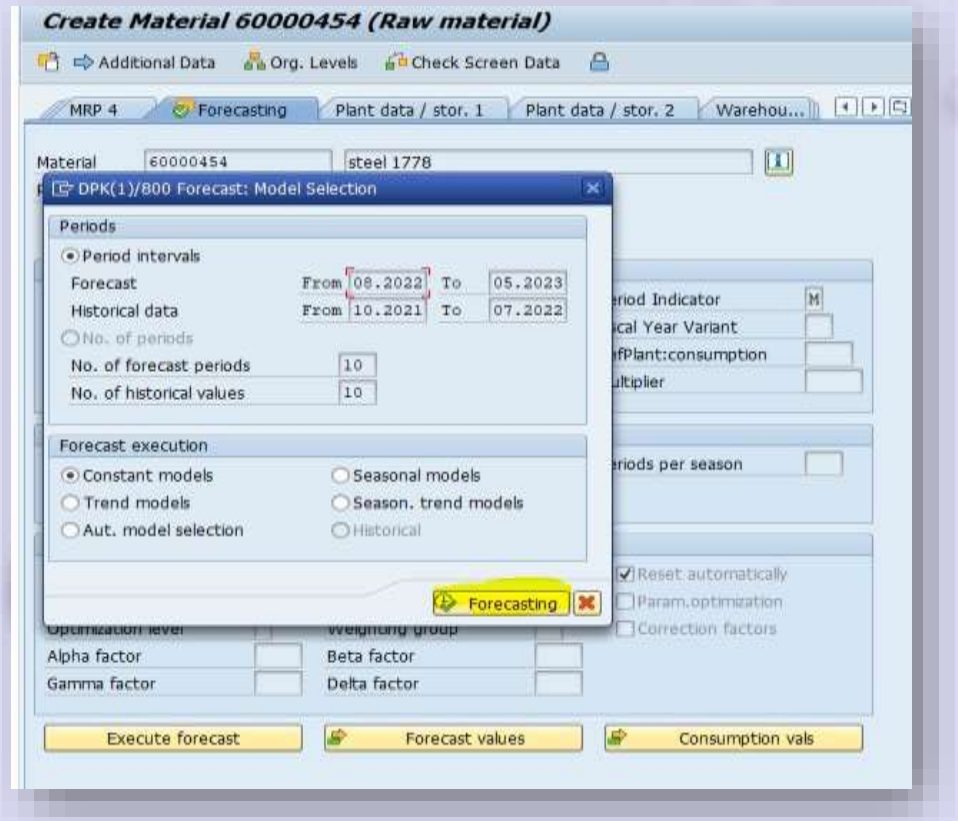
Remaining MRP3, Forecasting Parameters remains the same .Only the planning will take place as per your planning calendar.

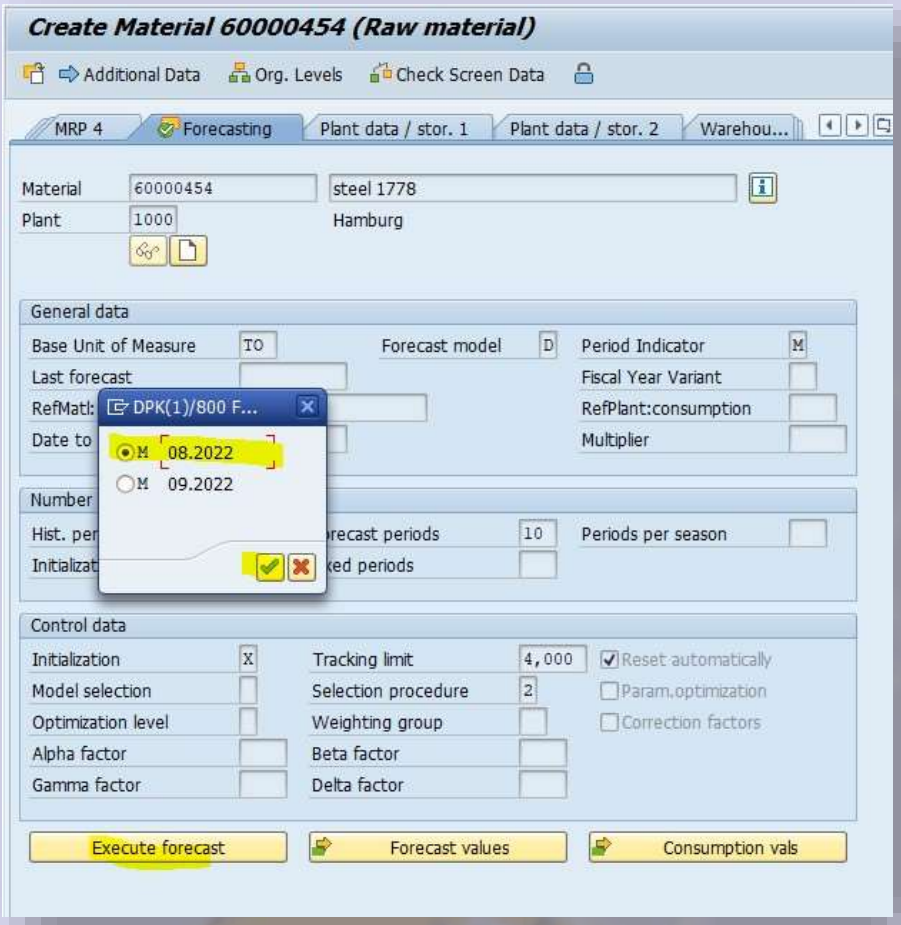
Reorder Point Planning

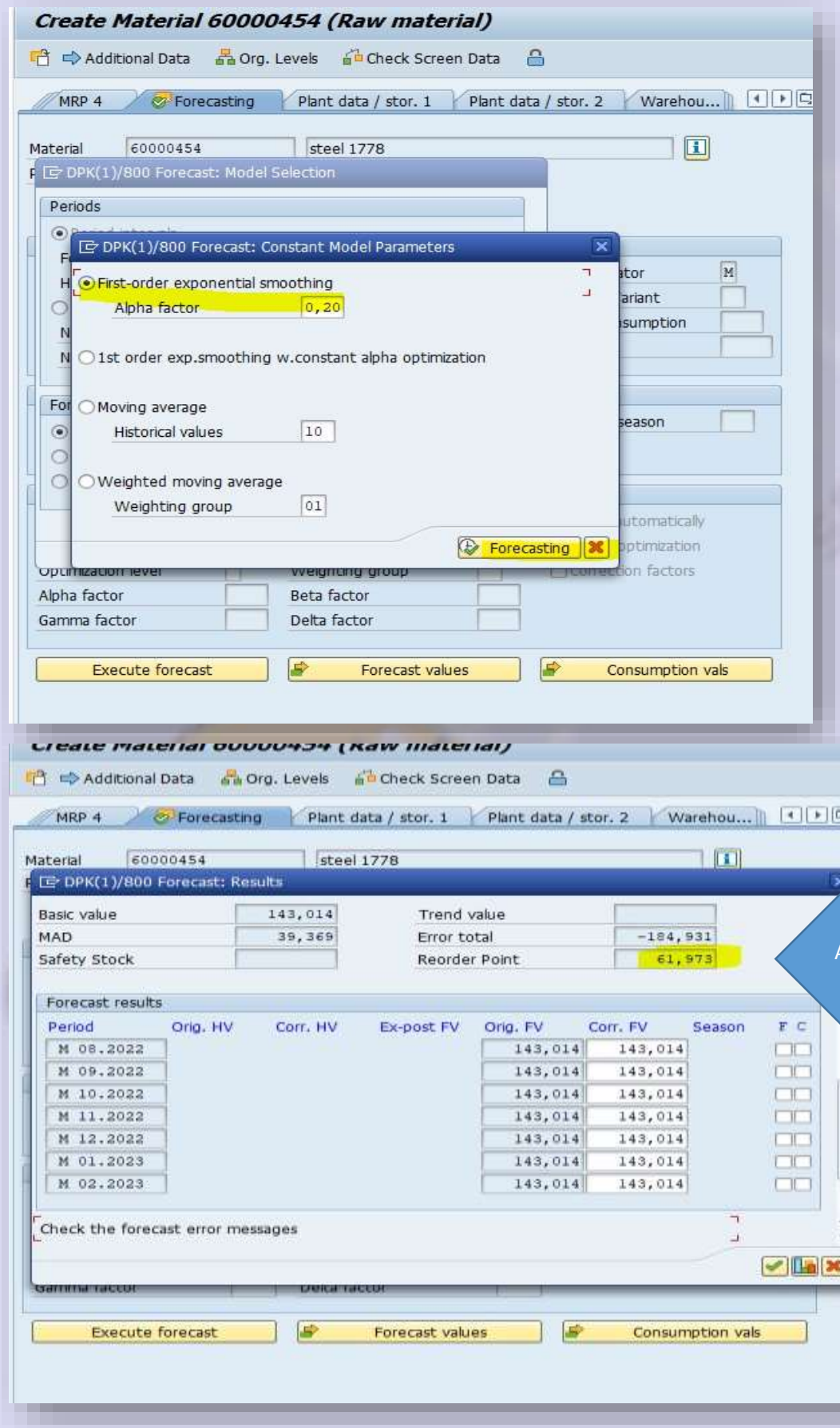
Reordering point planning involves calculating when stock levels hit a point at which it's the right time to reorder. This often involves taking into account demand forecasts, current stock levels and lead times.

1. Create Material Master (MM01)
    - Maintain MRP1, MRP2, MRP 3 and forecasting view.

- IN MRP 1 Maintain MRP View AS VB(For Manual Reorder Point) and VM (Automatic reorder Point),MRP Controller and lots
- In MRP 2 view, you can maintain Procurement type, GR Processing time, Lead time and safety stock.
- MRP 3 Maintain Availability check
- In forecasting maintain forecast model as D, Define history period AND FORCAST PERIOD and go to consumption values. Maintain all consumptions of previous period's com to main data and click on execute forecast. Select forecast month and enter.
- Click on forecasting and enter.
- Again select and click on forecasting



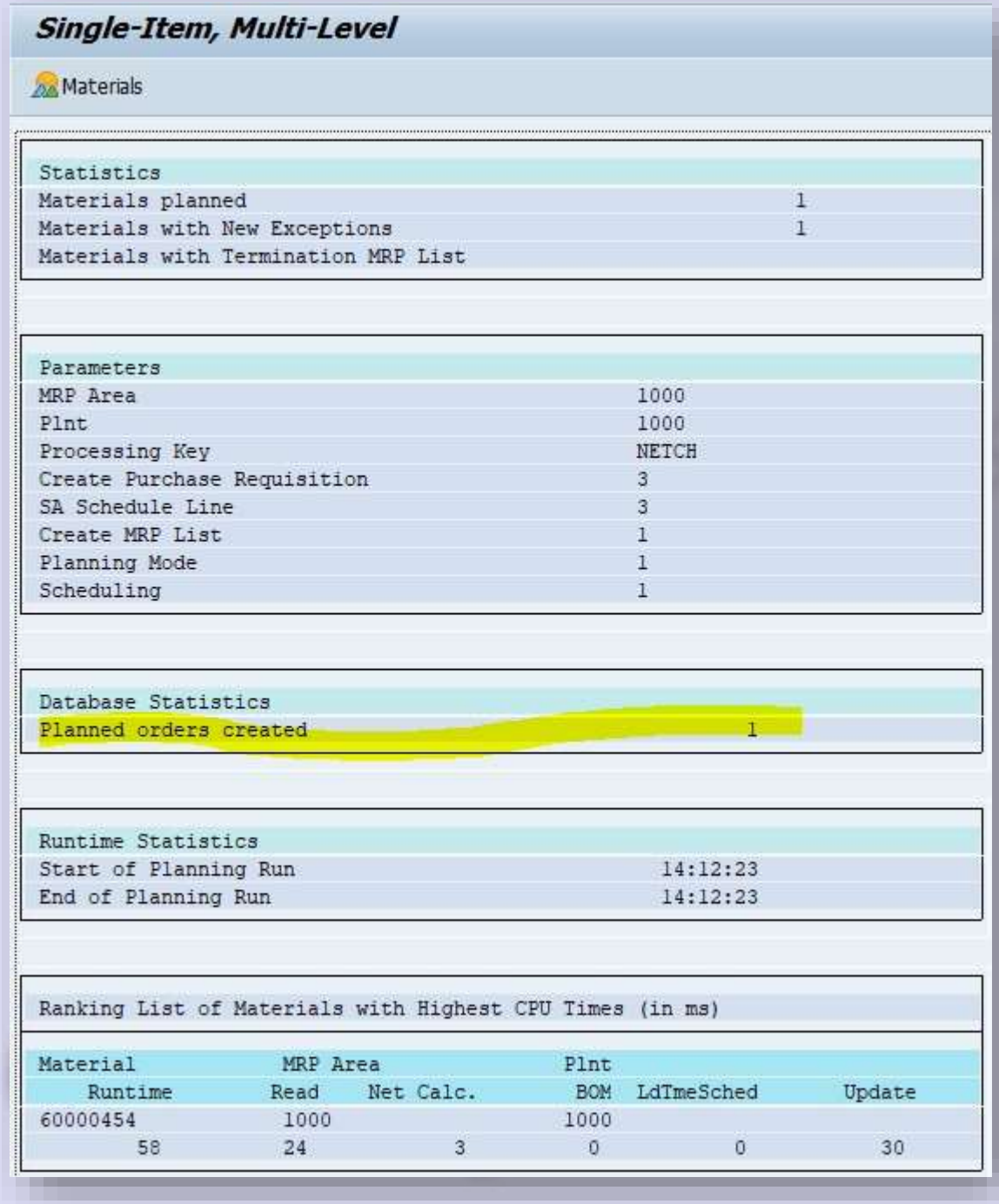

Create Material 60000454 (Raw material)
Additional Data
Org. Levels
Check Screen Data
MRP 4
Forecasting
Plant data / stor. 1
Plant data / stor. 2
Warehou...
Material
60000454
steel 1778
Plant
1000
Hamburg
General data
Base Unit of Measure
TO
Forecast model
D
Period Indicator
M
Last forecast
Fiscal Year Variant
RefMatl:
RefPlant:consumption
Date to
Multiplier
DPK(1)/800 F...
M 08.2022
M 09.2022
Number
Hist. per
recast periods
10
Periods per season
Initializat
ked periods
Control data
Initialization
X
Tracking limit
4,000
Reset automatically
Model selection
Selection procedure
2
Param.optimization
Optimization level
Weighting group
Correction factors
Alpha factor
Beta factor
Gamma factor
Delta factor
Execute forecast
Forecast values
Consumption vals


Create Material 60000454 (Raw material)
Additional Data
Org. Levels
Check Screen Data
MRP 4
Forecasting
Plant data / stor. 1
Plant data / stor. 2
Warehou...
Material
60000454
steel 1778
DPK(1)/800 Forecast: Model Selection
Periods
DPK(1)/800 Forecast: Constant Model Parameters
First-order exponential smoothing
Alpha factor
0,20
1st order exp.smoothing w.constant alpha optimization
Moving average
Historical values
10
Weighted moving average
Weighting group
01
Forecasting
Alpha factor
Beta factor
Gamma factor
Delta factor
Execute forecast
Forecast values
Consumption vals
DPK(1)/800 Forecast: Results
Basic value
143,014
MAD
39,369
Safety Stock
Trend value
Error total
-184,931
Reorder Point
61,973
Automatic Reorder Point
Forecast results
Period
Orig. HV
Corr. HV
Ex-post FV
Orig. FV
Corr. FV
Season
M 08.2022
M 09.2022
M 10.2022
M 11.2022
M 12.2022
M 01.2023
M 02.2023
143,014
Check the forecast error messages

Material 60000454 is created.You can again observe the same reorder point in MRP1 view of the material.

2. Maintain stock of the material by maintaining PO (ME21N)and GR.(MIGO)
3. Stock maintained is 100 monitor by mmbe
4. Create GI to cost centre (MB1A/201)
5. We created GI of 40 quantities
6. Monotor stock at mmbe now our reorder point is 61.973 and available stock is 60 means available stock is less than reorder point
7. MRP RUN MD02


Single-Item, Multi-Level
Material
60000454
MRP Area
Plant
1000
Scope of Planning
Product group
MRP Control Parameters
Processing Key
NETCH
Net change for total horizon
Create Purchase Req.
3
Purchase requisitions in opening period
SA Deliv. Sched. Lines
3
Schedule lines
Create MRP List
1
MRP list
Planning mode
1
Adapt planning data (normal mode)
Scheduling
1
Basic dates will be determined for plann
Process Control Parameters
Also plan unchanged components
Display results before they are saved
Display material list
Simulation mode



Single-Item, Multi-Level

Materials

Statistics	
Materials planned	1
Materials with New Exceptions	1
Materials with Termination MRP List	

Parameters	
MRP Area	1000
Plnt	1000
Processing Key	NETCH
Create Purchase Requisition	3
SA Schedule Line	3
Create MRP List	1
Planning Mode	1
Scheduling	1

Database Statistics	
Planned orders created	1

Runtime Statistics	
Start of Planning Run	14:12:23
End of Planning Run	14:12:23

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

Material	MRP Area		Plnt		
Runtime	Read	Net Calc.	BOM	LdTmeSched	Update
60000454	1000		1000		
58	24	3	0	0	30

8. Planned orders are created
9. Planned order can be converted into PR by using MD04
10. You can observe reorder point is 61.973
11. Convert Planned order into Purchase Requisition
12. Convert PR into PO
13. MIGO

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