



BEAS

MANUFACTURING

Beas Tutorials

boyumit

2019

Beas Manufacturing

Beas Manufacturing is the global solution for small to mid-sized discrete and process manufacturing businesses. Offering functionality from the planning phase through to control, implementation and fulfilment, Beas Manufacturing ensures efficiency and flexibility for manufactures.

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1 Analyze and execute pre-calculations

Product costing is a complex process used to value the internal cost of materials and production for profitability and management accounting. This tutorial gives an overview of product costing, its importance and practical uses in the business process.

Throughout a given period, actual expenses are recorded in SAP as purchases are made, payroll is processed, bills are paid, and production occurs. At month-end, Work in Process, Variance, and Settlement are calculated. The variance between actual costs and standard costs can result in changes to product costing for the next period or year. Costs are settled, and the posting period is closed at the end of the month.

Product cost planning is a concept where the business can plan costs for materials or finished goods, set prices for materials and other cost accounting objects without references to orders.

Analyzing product costs provides answers to questions such as:

- What is the added value of a particular step in the production process?
- What proportion of the added value can be attributed to a particular organization unit?
- What are the material, production, and overhead costs?
- How can production efficiency be improved?
- Can the product be sold at a competitive price?

Beas offers the Precalculation functionality where product cost is planned. This function simulates the planned cost based on the information from the item master data (BOM and routing). This function also allows to check the structure of an item based on its cost structure. This tutorial explains how to run the Precalculation functionality, explains the main fields at the Precalculation screen used for product cost planning. It details the master data affecting the Precalculation results, to understand material and operational cost calculation results and set material pricing parameter to calculate material cost.

1.1 Process interactions

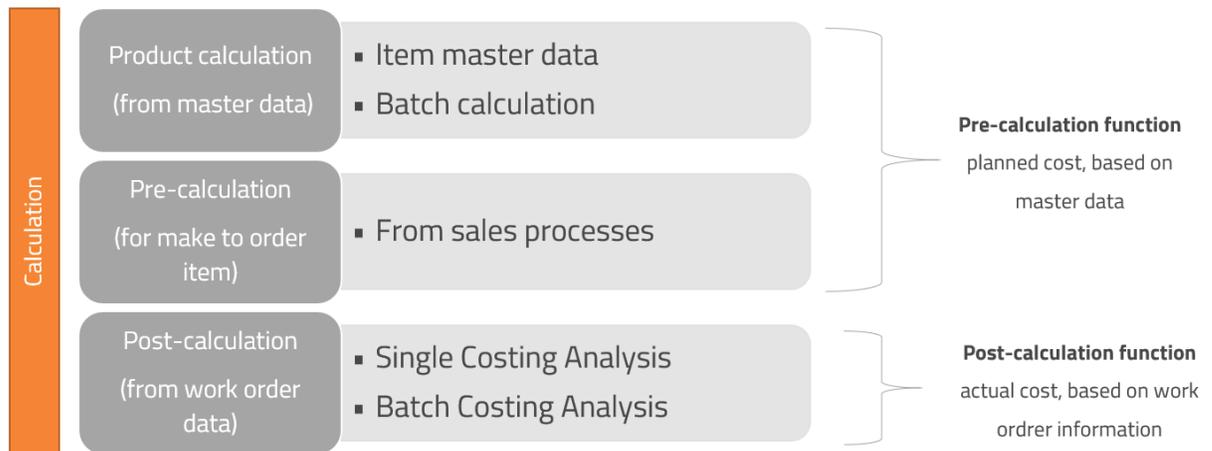
The Beas Precalculation function interacts with the following processes:

Process	Function
Engineering	Planned item cost
	Batch calculation
Production	Planned work order cost
Sales	Precalculation for sales order items

1.2 Process

In Beas, there are 3 cost calculation functionalities. Some of these estimates planned cost and others analyze actual costs.

Precalculation calculates planned cost and post-calculation calculates the actual cost of the item from a work order.



Pre-calculation gathers information from the item master data, material quantities required to produce from the bill of materials, and time required from the routing steps. An option allows to run the pre-calculation directly from the master data to view the planned cost of a produced item.

Post-calculation uses the information of the work order to calculate the actual cost. The system not only estimates the planned cost of the work order based on its BOM and routing defined, but also calculates the actual cost based on material consumption and time reporting.

The pre-calculation function might be used at a sales order to customize an *Order Related* item, or it can be run in bulk, using several items, to create an SAP price lists. This type of execution is performed by the *Batch Calculation* functionality. For more information, please refer to *Batch Calculation* tutorial.

While creating item structures, there is an option to run the pre-calculation functionality in the master data to review the cost of the item and to ensure that the structure is correct.

1.2.1 Assigning a Calculation Schema to an item

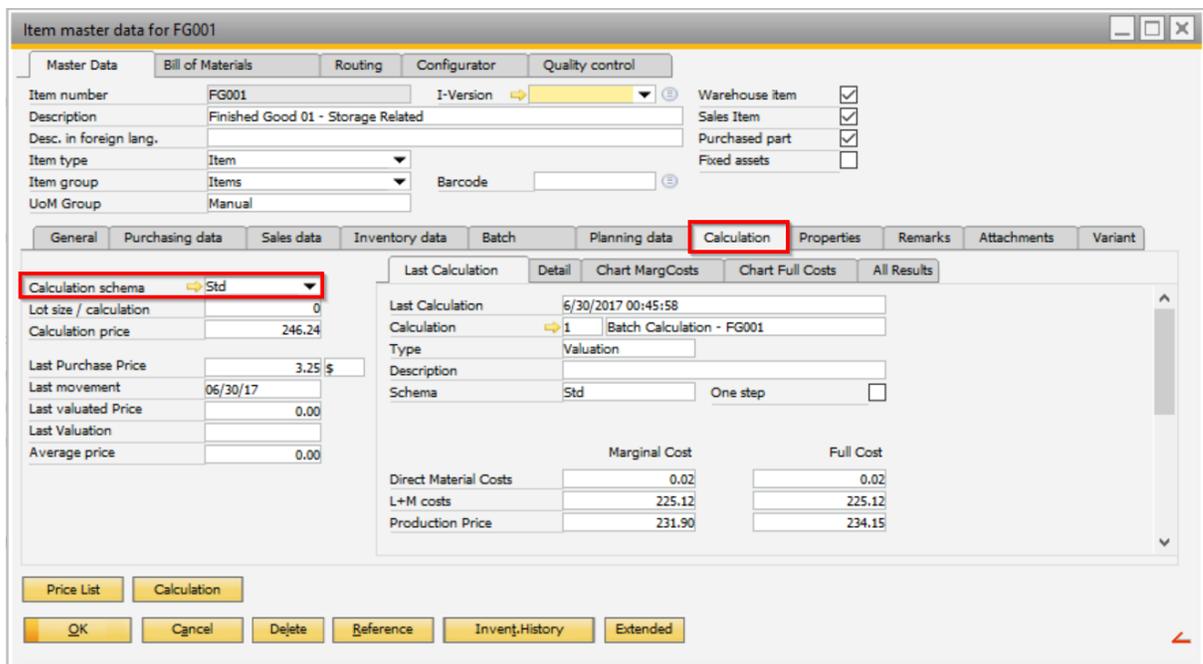
After some calculation schemas are defined in the database, they need to be assigned to the produced items. If an item has no assigned calculation schema assigned, Beas uses the default calculation schema defined in the Configuration Wizard.

The calculation schema can be assigned to an item in the item master data, the Calculation tab.

Inventory > Item Structure > Double Click an item > Calculation tab

The item structure screen of Beas displays a list of all items created.

Link the required calculation schema in the Calculation schema field. The drop-down displays all defined calculation schemas to chose from.

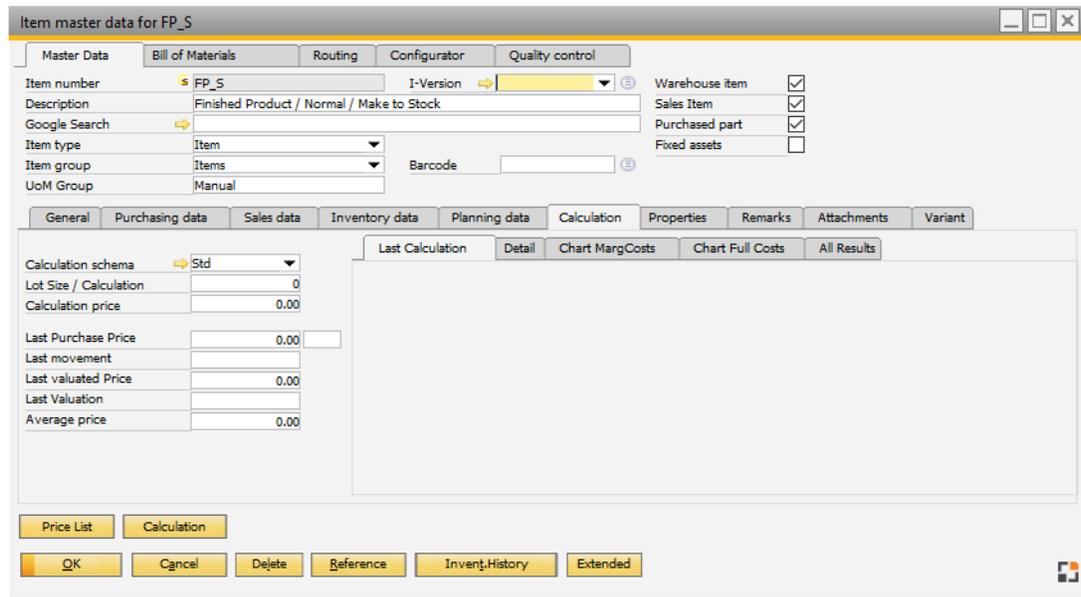


IMPORTANT: This tab only appears when the mode of procurement is set to Produce. For more information about mode of procurement, refer to the [Item Master Data](#) tutorial.

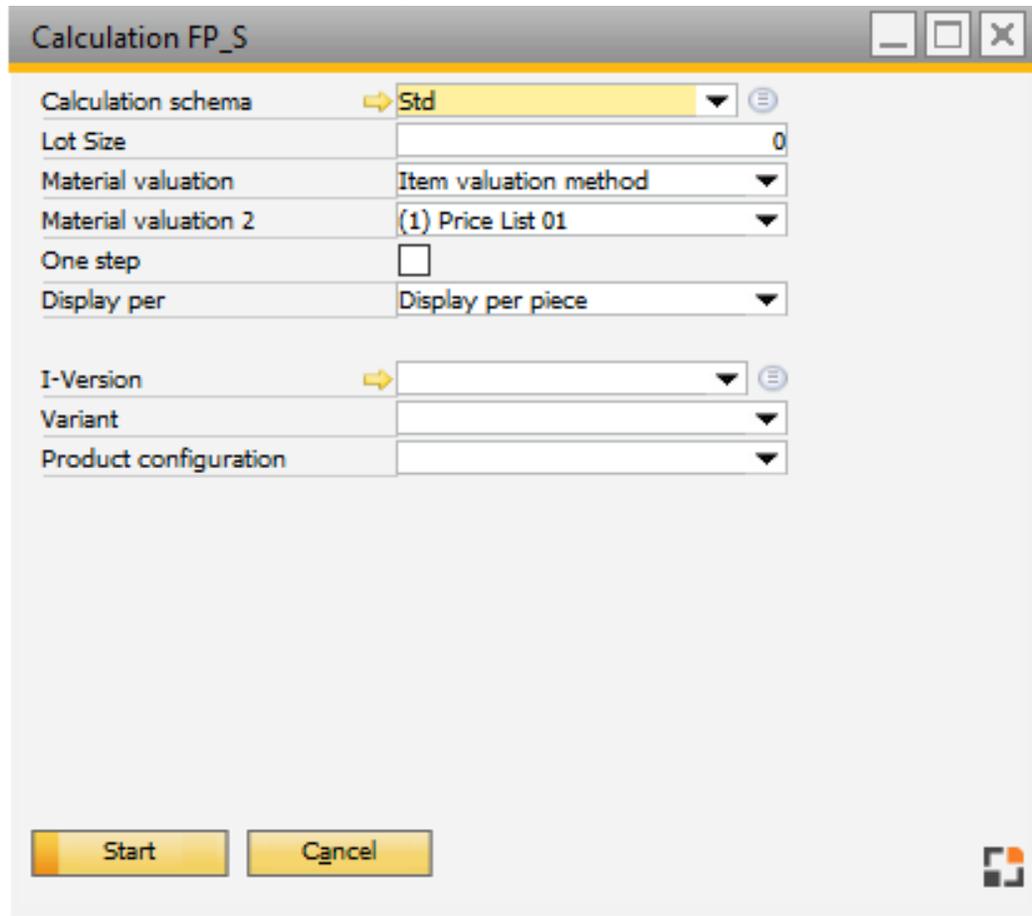
1.2.2 Executing a pre-calculation from the item master data

A pre-calculation can be run for a specific item from its item master data. This calculation only displays the results and cannot be saved.

1. Go to the item master data, Calculation tab.



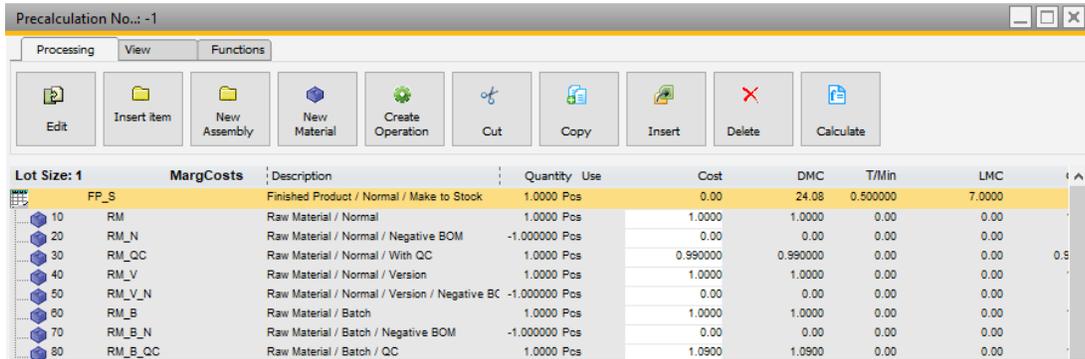
2. Link a calculation schema to the item, if it is not already done.
3. Click the **Calculation** button to open the attached calculation schema on the item.



4. Click **Start** to execute the calculation. For an explanation on the available fields, see

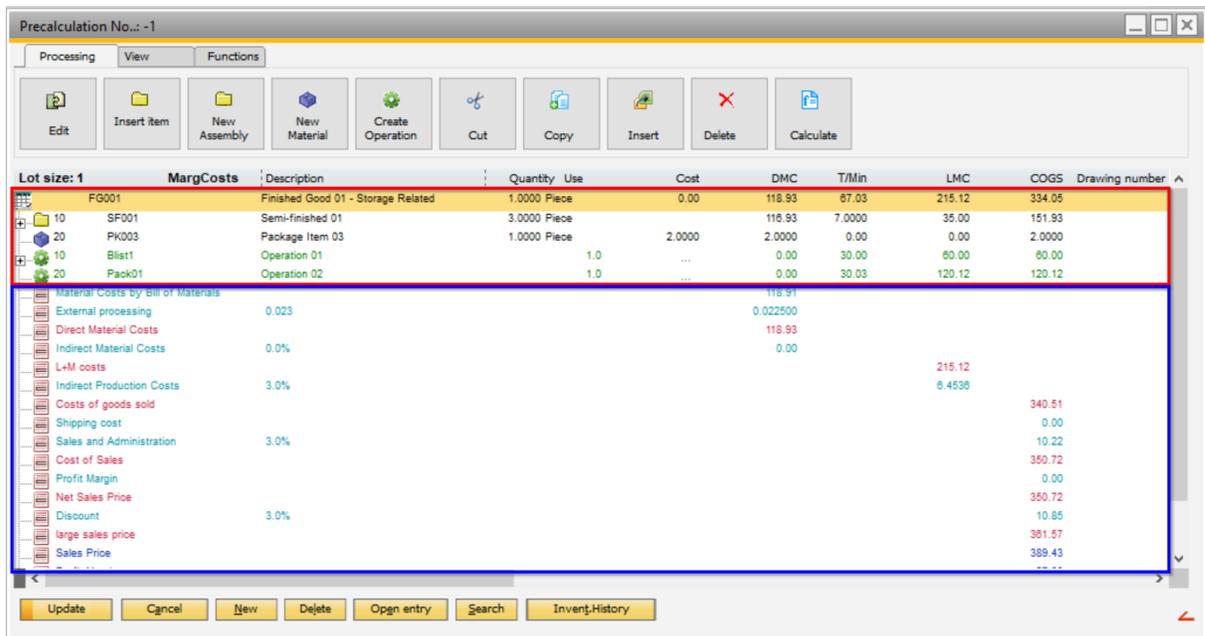
[Calculation field guide in the Beas online help.](#)

5. The result screen opens.



1.2.3 Analyzing a pre-calculation result

After the pre-calculation is executed, a new screen is opened. The results are displayed in the following structure:



The item structure can be expanded in the upper side of the screen, marked in red.

The calculation schema objects are displayed at the bottom of the screen, marked in blue. These can be hidden by setting the *Hide calculation schema* parameter in the calculation schema setup. For more information about this setting, refer to the [Calculation Schema](#) tutorial.

The user can hide selected objects from the calculation schema in the pre-calculation screen. For more information about this, refer to the *Default* field in the *Overhead Cost* objects in the [Calculation Schema](#) tutorial.

The columns display the input and results of the calculation.

Lot size: 1	MargCosts	Description	Quantity	Use	Cost	DMC	T/Min	LMC	COGS	Drawing number
FG001		Finished Good 01 - Storage Related	1.0000	Piece	0.00	118.93	67.03	215.12	334.05	
10	SF001	Semi-finished 01	3.0000	Piece		118.93	7.0000	35.00	151.93	
20	PK003	Package Item 03	1.0000	Piece	2.0000	2.0000	0.00	0.00	2.0000	
10	Blist1	Operation 01		1.0	...	0.00	30.00	60.00	60.00	
20	Pack01	Operation 02		1.0	...	0.00	30.03	120.12	120.12	
		Material Costs by Bill of Materials				118.91				
		External processing	0.023			0.022500				
		Direct Material Costs				118.93				
		Indirect Material Costs	0.0%			0.00				
		L+M costs						215.12		
		Indirect Production Costs	3.0%					6.4536		
		Costs of goods sold							340.51	
		Shipping cost							0.00	
		Sales and Administration	3.0%						10.22	
		Cost of Sales							350.72	
		Profit Margin							0.00	
		Net Sales Price							350.72	
		Discount	3.0%						10.85	
		Large sales price							361.57	
		Sales Price							388.43	

Description: The description of each item and routing from the item structure. This is used to display details of the surcharge from the calculation schema, like percentage or fixed value.

Quantity Use:

- For a bill of material positions (raw material and subassemblies): Quantity of the material required to produce
- For a finished good: Quantity to be produced
- For a routing position Time needed to perform the task from the routing

Quantities are summarized according to a specific unit of measure, which is defined in the Configuration Wizard.

Cost: The material price determined by Material Valuation or Material Valuation 2 defined for the pre-calculation execution.

DMC: Acronym for Direct Material Cost. The direct material cost per material (quantity * cost) in the item structure and, summarized in the Direct Material Costs calculation schema object and the finished good item (BOM material cost + external operation cost defined in the calculation schema). For more information about Calculation Schema, please refer to [Calculation Schema](#) tutorial.

Example: For the item FG001, there is a subassembly and a raw material as part of the bill of material. Beas calculates the DMC for each position which is the quantity * cost. For PK003 – Package Item 03 = 2€ * 1 piece = 2€

Lot size: 1	MargCosts	Description	Quantity Use	Cost	DMC	T/Min	LMC	COGS
	FG001	Finished Good 01 - Storage Related	1.0000 Piece	0.00	118.93	67.03	1,165.12	1,284.05
10	SF001	Semi-finished 01	3.0000 Piece		118.93	7.0000	35.00	151.93
10	RM001	Raw Material 01	9.0000 Gr	0.250000	2.2500	0.00	0.00	2.2500
20	RM002	Raw Material 02	18.00 ml	3.4500	62.10	0.00	0.00	62.10
30	RM003	Raw Material 03	3.0000 ml	1.7200	5.1600	0.00	0.00	5.1600
40	RM004	Raw Material 04	150.00 ml	0.150000	22.50	0.00	0.00	22.50
50	RM005	Raw Material 05	30.00 ml	0.830000	24.90	0.00	0.00	24.90
10	Mix	Operation 01		1.0	5.0000	0.00	7.0000	35.00
15	ENC1	Operation 02						
20	ENCAP	External Operation	Piece 1.0	0.022500	0.022500	0.00	0.00	0.022500
20	PK003	Package Item 03	1.0000 Piece	2.0000	2.0000	0.00	0.00	2.0000
10	Blist1	Operation 01	1.0	...	0.00	30.00	1,010.00	1,010.00
20	Pack01	Operation 02	1.0	...	0.00	30.03	120.12	120.12
Material Costs by Bill of Materials					118.91			
External processing					0.023	0.022500		
Direct Material Costs						118.93		
Indirect Material Costs					0.0%	0.00		

Beas calculates the DMC for the assembly SF001 by summing up all material costs and the external operation cost. This means: RM001 + RM002 + RM003 + RM004 + RM005 + ENCAP

$$\begin{aligned}
 \text{DMC for SF001} &= (9 * 0.25\text{€}) + (18 * 3.25\text{€}) + (3 * 1.72\text{€}) + (150 * 0.15\text{€}) + (20 * 0.83\text{€}) + \\
 &\quad (0.225\text{€}) \\
 &= 116.93\text{€}
 \end{aligned}$$

Lot size: 1	MargCosts	Description	Quantity Use	Cost	DMC	T/Min	LMC	COGS
	FG001	Finished Good 01 - Storage Related	1.0000 Piece	0.00	118.93	67.03	1,165.12	1,284.05
10	SF001	Semi-finished 01	3.0000 Piece		118.93	7.0000	35.00	151.93
10	RM001	Raw Material 01	9.0000 Gr	0.250000	2.2500	0.00	0.00	2.2500
20	RM002	Raw Material 02	18.00 ml	3.4500	62.10	0.00	0.00	62.10
30	RM003	Raw Material 03	3.0000 ml	1.7200	5.1600	0.00	0.00	5.1600
40	RM004	Raw Material 04	150.00 ml	0.150000	22.50	0.00	0.00	22.50
50	RM005	Raw Material 05	30.00 ml	0.830000	24.90	0.00	0.00	24.90
10	Mix	Operation 01		1.0	5.0000	0.00	7.0000	35.00
15	ENC1	Operation 02						
20	ENCAP	External Operation	Piece 1.0	0.022500	0.022500	0.00	0.00	0.022500
20	PK003	Package Item 03	1.0000 Piece	2.0000	2.0000	0.00	0.00	2.0000
10	Blist1	Operation 01	1.0	...	0.00	30.00	1,010.00	1,010.00
20	Pack01	Operation 02	1.0	...	0.00	30.03	120.12	120.12
Material Costs by Bill of Materials					118.91			
External processing					0.023	0.022500		
Direct Material Costs						118.93		
Indirect Material Costs					0.0%	0.00		

Beas then calculates the DMC for the finished good FG001 by summing the rest of the bill of material. This means: SF001 + PK003

$$\begin{aligned}
 \text{DMC for FG001} &= 116.93\text{€} + 2\text{€} \\
 &= 118.93\text{€}
 \end{aligned}$$

Lot size: 1	MargCosts	Description	Quantity Use	Cost	DMC	T/Min	LMC	COGS
FG001		Finished Good 01 - Storage Related	1.0000 Piece	0.00	118.93	67.03	1,165.12	1,284.05
10	SF001	Semi-finished 01	3.0000 Piece		118.93	7.0000	35.00	151.93
10	RM001	Raw Material 01	9.0000 Gr	0.250000	2.2500	0.00	0.00	2.2500
20	RM002	Raw Material 02	18.00 ml	3.4500	62.10	0.00	0.00	62.10
30	RM003	Raw Material 03	3.0000 ml	1.7200	5.1600	0.00	0.00	5.1600
40	RM004	Raw Material 04	150.00 ml	0.150000	22.50	0.00	0.00	22.50
50	RM005	Raw Material 05	30.00 ml	0.830000	24.90	0.00	0.00	24.90
10	Mix	Operation 01		1.0	5.0000	0.00	7.0000	35.00
15	ENC1	Operation 02						
20	ENCAP	External Operation	Piece 1.0	0.022500	0.022500	0.00	0.00	0.022500
20	PK003	Package Item 03	1.0000 Piece	2.0000	2.0000	0.00	0.00	2.0000
10	Blist1	Operation 01	1.0	...	0.00	30.00	1,010.00	1,010.00
20	Pack01	Operation 02	1.0	...	0.00	30.03	120.12	120.12
Material Costs by Bill of Materials					118.91			
External processing					0.023	0.022500		
Direct Material Costs					118.93			
Inherent Material Costs					0.000	0.000		

T/Min: The operation time duration, including setup time and processing time.

Times are summarized according to a specific unit of measure. This is defined in the Configuration Wizard.

LMC: Acronym for Labor and Machine Cost. Operation cost per routing position (Time * resource cost rate) in the item structure and, summarized in the calculation schema object L + M Cost and the finished good item.

COGS: Acronym for Cost Of Goods Sold. The first draft of the product cost which includes DMC + LMC and additional surcharges related to materials and operations included in the calculation schema. For more information about Calculation Schema, please refer to [Calculation Schema](#) tutorial.

1.2.4 Creating and executing a pre-calculation from the Precalculation screen

Sales – A/R > Precalculation

This screen lists all pre-calculations that are saved in the system. Any of them can be opened or edited or a new calculation can be created.

To create a new calculation:

1. Click the **New** button.

Precalculation								
#	Calculation	Reference n	Link orde	Link orde	Link order Name	Customer	Customer Name	Pre
1	⇒ 244							
2	⇒ 243	211				⇒ C4000	Earthshaker Corp.208 Holh	
3	⇒ 242	207				⇒ C4000	C40001	
4	⇒ 241							
5	⇒ 240							
6	⇒ 239	200				⇒ C4000	C40001	
7	⇒ 238					⇒ V6970	Atid Computers	PR
8	⇒ 236	199	⇒ 105	Closed	Earthshaker Corp.	⇒ C4000	Earthshaker Corp.208 Holh	
9	⇒ 235	197	⇒ 104	Open	Mashina Corp.	⇒ C4000	Mashina Corp.	
10	⇒ 234							
11	⇒ 233	195	⇒ 103	Open	Band & Lufel	⇒ C5000	C50008	
12	⇒ 232	192				⇒ C3000	Microchips908 Darby Rd19	
13	⇒ 231							
14	⇒ 230							
15	⇒ 229	173				⇒ C4000	Stone29 hillside38949 Wash	
16	⇒ 228	171	⇒ 90	Open	ADA Technologies	⇒ C5000	ADA Technologies	
17	⇒ 227					⇒ C4000	C40003	
18	⇒ 226	167				⇒ C4000	C40002	
19	⇒ 225					⇒ C4000	C40003	

<

Search Edit End New Delete Invent.History

- Provide the calculation details. For an explanation on the available fields, see [Pre-calculation field guide in the Beas online help](#).

Precalculation No.: -1

Master Data

Doc. no. 245 /

Item →

I-Version → Revision 0

Variant ×

Configuration →

Project Valuation

Bill of Materials →

Routing →

Description New Calculation

Drawing number

Project →

Task →

Customer →

Name, Address

Customer drawing no.

Customer Item No.

Change reason

Changed on

Changed by

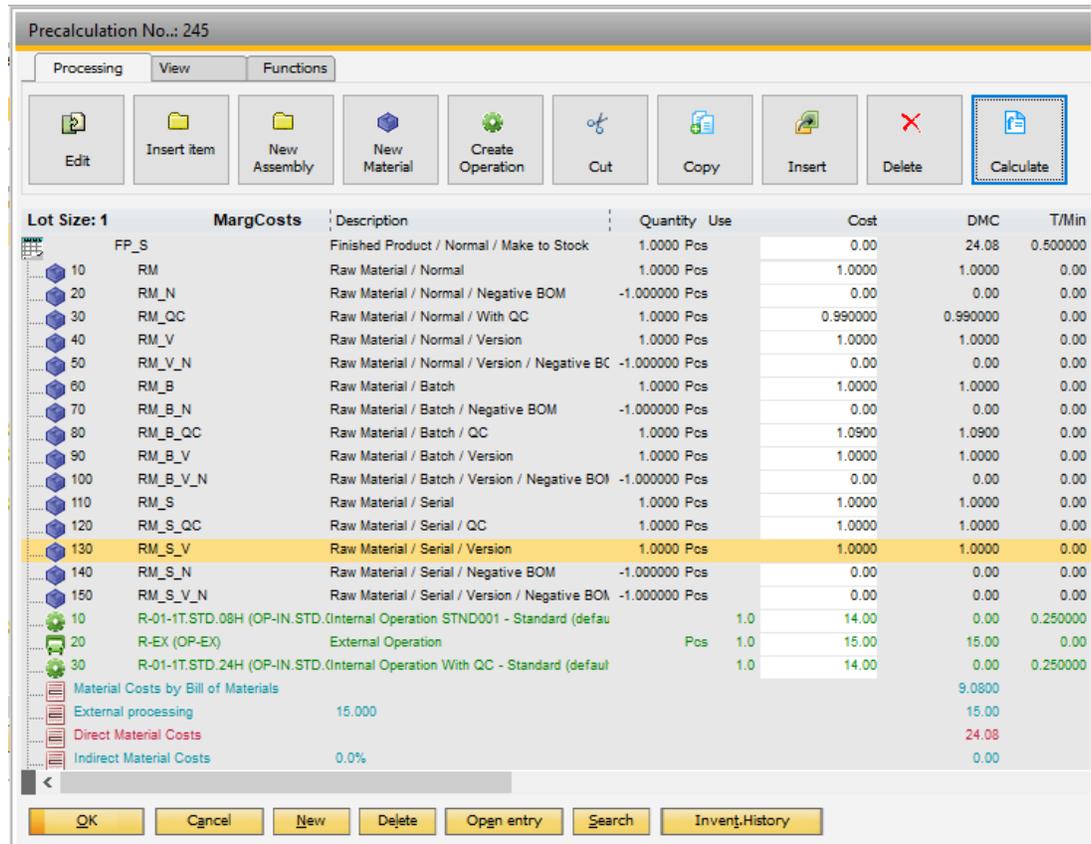
Additional Information

Planned Completion

Branch

Update Cancel Price List

3. Click the **Update** button to save the calculation under the document number provided in the Doc. no. field.
4. The pre-calculation result screen opens.



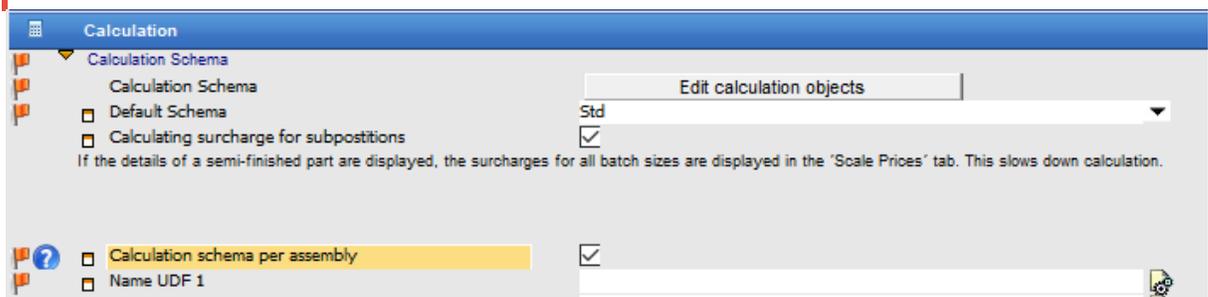
5. Click the **Update** button to save the calculation in the Precalculation list.

1.2.5 Configuring pre-calculation per assembly

Beas offers extensive functionality for cost calculation. This calculation configuration differentiates the way the calculation schemas are evaluated and displayed in the pre-calculation function.

1. Enable this functionality in the Configuration Wizard by marking the *Calculating surcharge for subpositions* and *Calculation schema per assembly* parameters.

Administration > System Initialization > Configuration Wizard > Calculation > Calculation Schema



See [Pre-calculation Configuration Wizard](#) for details.

2. Enable the options in the calculation schema.

This makes the new Display tab available.

Administration > Setup > Precalculation > Calculation Schema

Schema Tutorial

Master Data Overhead Costs Display

Schema: Tutorial

Description: Standard

Description:

View

Calculating surcharge for subpositions	<input checked="" type="checkbox"/>
Calculation schema per assembly	<input checked="" type="checkbox"/>
Automatically Calculate	<input checked="" type="checkbox"/>
Block changes	<input type="checkbox"/>
Hide calculation schema	<input type="checkbox"/>
No scale prices	<input type="checkbox"/>
Always Determine Current Material Prices	<input type="checkbox"/>

OK Cancel Delete

3. Define the cost elements and surcharges in the calculation schema.

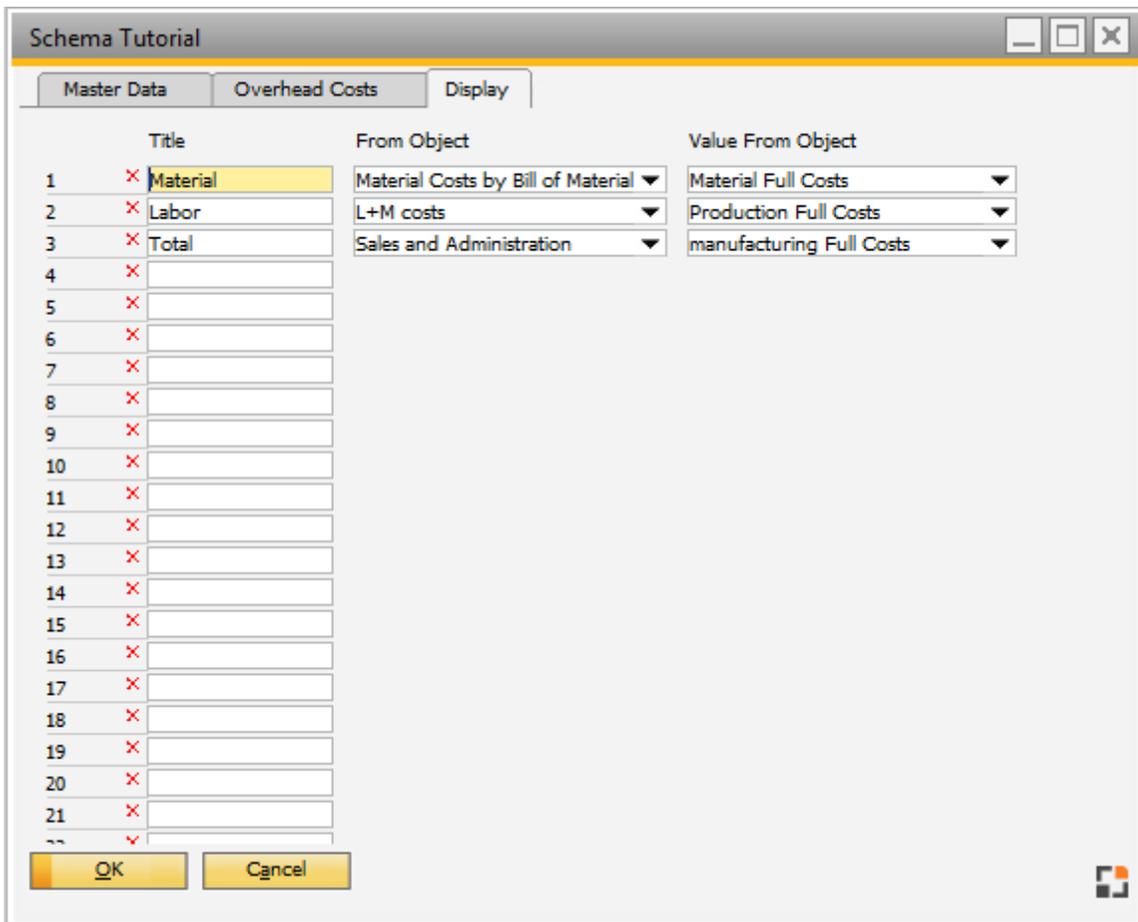
The screenshot shows a software window titled 'Schema Tutorial' with three tabs: 'Master Data', 'Overhead Costs', and 'Display'. The 'Display' tab is active, showing a table with the following columns: 'Type', 'Description', 'Material', 'Production', 'Manufacturing', and 'Default'. Each row represents a calculation element with a list icon on the left and checkboxes in the other columns. The 'Travel Expenses' row is highlighted in yellow.

Type	Description	Material	Production	Manufacturing	Default
	Travel Expenses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Material Costs by Bill of Materials	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	External processing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Direct Material Costs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Indirect Material Costs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	L+M costs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Indirect Production Costs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Costs of goods sold	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Shipping cost	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Sales and Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Cost of Sales	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Profit Margin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Net Sales Price	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Discount	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Gross sales price	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Sales Price	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Profit margin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Profit margin %	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Profit margin per hour	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

At the bottom of the window, there are three buttons: 'Edit', 'End', and 'New'. A small icon is visible in the bottom right corner.

4. In the Display tab the calculation elements can be assigned to be aggregated in a customized way.

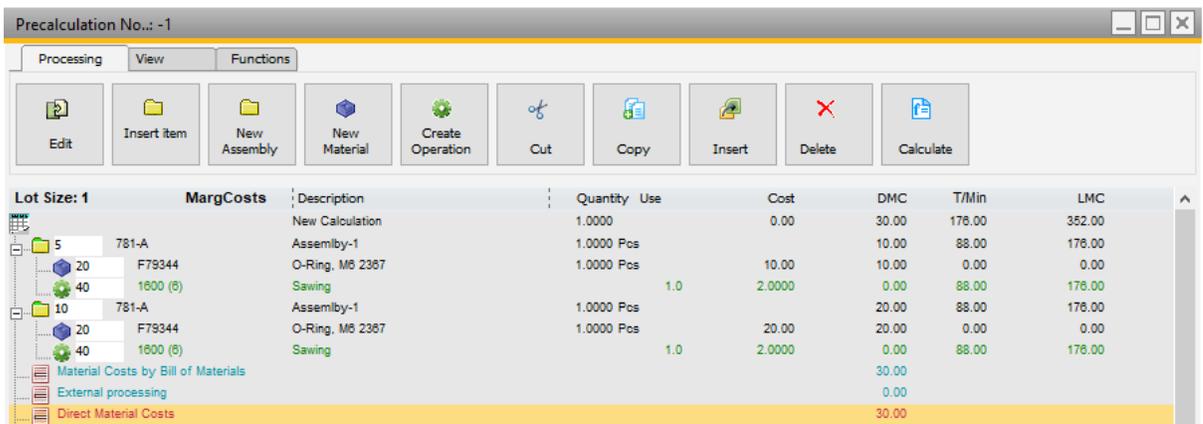
We use the values from the objects defined in the calculation schema.



5. Create a new pre-calculation with the schema that was set up and add sub-assemblies.

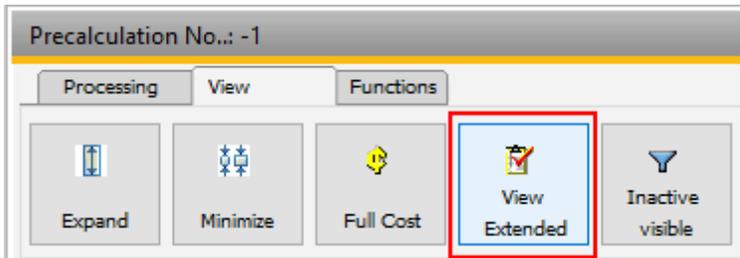
Sales – A/R > Precalculation

The standard pre-calculation screen is shown. In our example, two items are added, two variants of an item where the raw material is at different cost.



6. Open the View tab and click on the **View Extended** button.

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The breakdown is shown according to the setup in the schema Display tab.

The screenshot shows the 'View' tab in the 'Functions' section of the 'Precalculation No.: -1' window. The 'View Extended' button is highlighted with a red box. The table below shows the breakdown of costs for a lot size of 1.

Lot Size: 1	Description	Quantity	Material	Labor	Total
	New Calculation	1.0000	30.00	352.00	411.92
5	781-A Assembly-1	1.0000 Pcs	10.00	178.00	200.76
20	F79344 O-Ring, M6 2367	1.0000 Pcs			
40	1800 (6) Sawing				
10	781-A Assembly-1	1.0000 Pcs	20.00	178.00	211.16
20	F79344 O-Ring, M6 2367	1.0000 Pcs			
40	1800 (6) Sawing				

7. Double-click on a position to open a screen with the Schema and the Result tabs.

The full schema is displayed for the selected assembly. The schema can be edited and the results for the calculation for this assembly are shown in the Result tab.

The screenshot shows the 'Material' window with the 'Result' tab selected. The table below displays various cost elements and their values.

Description	Surcharge %	MargCost	Surcharge %	Full Cost	Surcharge %	Value	MargCost	Surcharge %	Value	Full Costs	Surcharge per Unit	MargC	Surcharge
Material Costs by Bill of Materials													
External processing													
Direct Material Costs													
Indirect Material Costs													
L+M costs													
Indirect Production Costs		3.00		4.00		0.00			0.00			0.00	
Costs of goods sold													
Shipping cost		0.00		0.00		0.00			0.00			0.00	
Sales and Administration		3.00		4.00		0.00			0.00			0.00	
Cost of Sales													
Profit Margin		0.00		6.00		0.00			0.00			0.00	
Net Sales Price													
Discount		3.00		3.00		0.00			0.00			0.00	
Gross sales price													
Sales Price													
Profit margin													
Profit margin %													
Profit margin per hour													

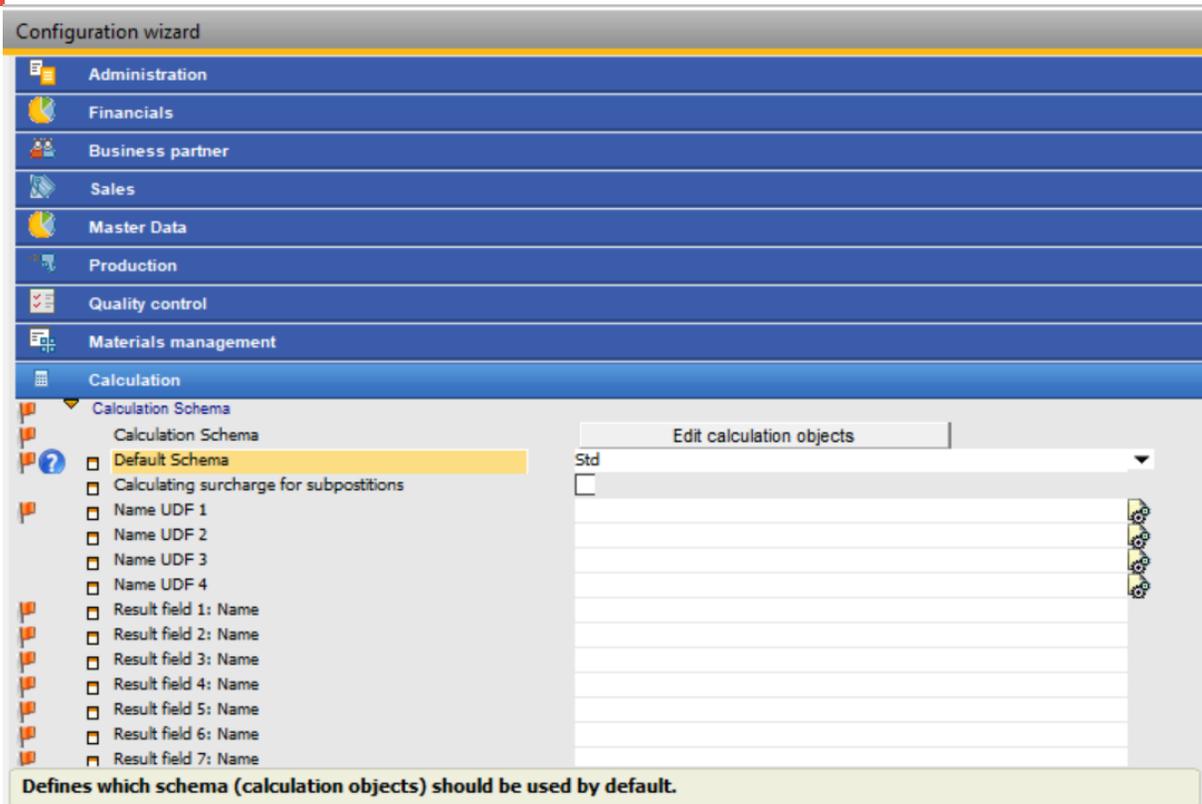
More tutorials are available on Calculation schema and Cost elements details.

1.3 Pre-calculation Configuration Wizard

Calculation Schema

A specific calculation schema can be set as default for pre-calculation runs.

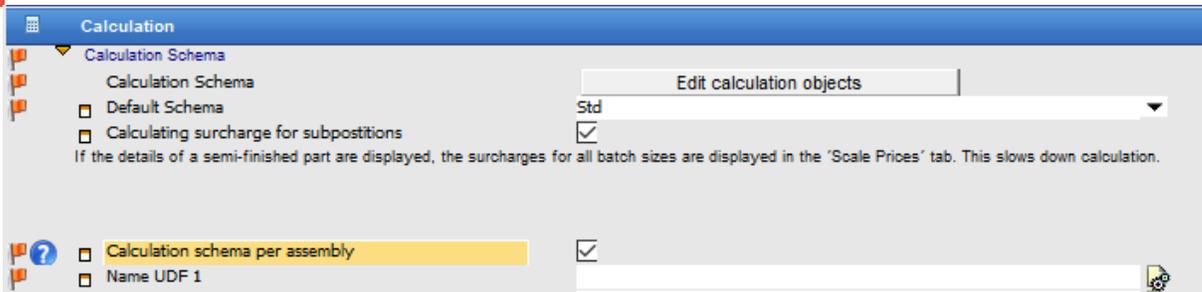
Administration > System Initialization > Configuration Wizard > Calculation > Calculation Schema



The default calculation schema can be set in the Default Schema field.

If there is nothing assigned as default, Beas to checks the item master data Calculation tab, Schema field.

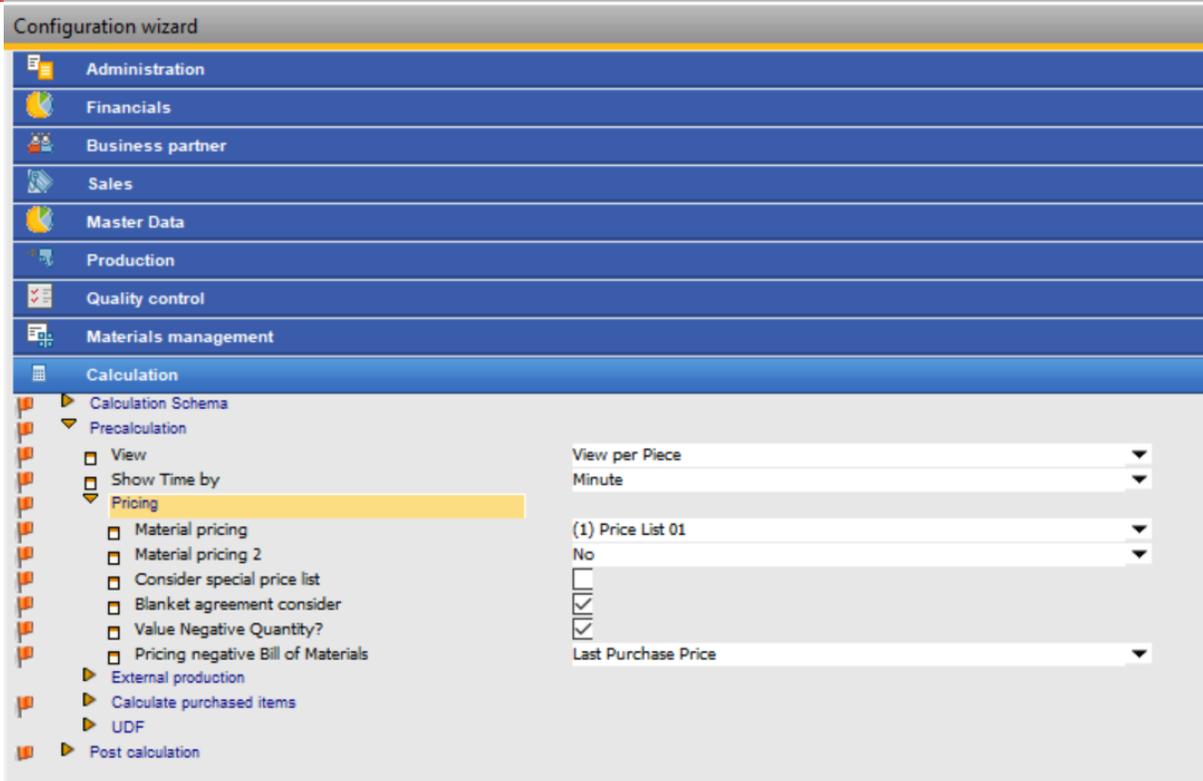
Administration > System Initialization > Configuration Wizard > Calculation > Calculation Schema



Calculating surcharge for subpositions: Determines the calculation method in the pre-calculation view.

Calculation schema per assembly:Administrates calculation schema for extended view.

Administration > System Initialization > Configuration Wizard > Calculation > Precalculation > Pricing



Material Pricing: Configuration attribute to specify the pricing of the materials when valuating assemblies.

Material Pricing 2: Configuration attribute used to specify the pricing of the materials when valuating assemblies, it is used if there is no value defined for the Material Pricing attribute.

Consider Special Price List: Configuration attribute used to set whether to take into account the special price defined of a preferred vendor when valuating assemblies. This attribute has higher priority than Material Pricing option and relates only to pre-calculation and batch calculation.

Blanket Agreement Consider: Configuration attribute used to set whether to take into account a blanket agreement. If enabled, blanket agreements of type Specific are considered at pricing. If disabled, only the default pricing is used.

Precalculation

Administration > System Initialization > Configuration Wizard > Calculation > Precalculation > View



View: This configuration attribute determines whether the values shown in the pre-calculation are:

- per unit
- per lot size
- per fixed amount

For a fixed amount, the amount (for example, 1000) can be specified in the next line. The view setting can be changed in the calculation.

Administration > System Initialization > Configuration Wizard > Calculation > Precalculation > Show Time by

Show Time by: This configuration attribute determines whether the times in the pre-calculation are displayed in hours or minutes.