

CALC4XL

Product Cost Calculation Modules

CALC4XL Super-BOM

Detailed calculation of any complex bill of material
with supply chain management

Super-BOM Quick Reference

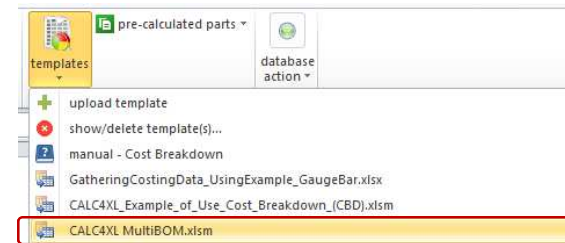
Detailed calculation with supply chain management

- same logic and structure as CALC4XL Cost Breakdown (CBD)
- vertical (↕) structure of the CBD was transferred to a horizontal (↔) structure
- each row is a cost element (assembly, manuf. parts, purchased parts, material, processes)
- any complex bill of materials including assembly levels, supply chain, variant calculation etc.

Module Level	Name	Part No.	Po/Assy	Comment / Supplier	Category	Type of Purchasing	Material Cost [EUR]	Total Production Cost [EUR]	Total Manufactured Cost [EUR]	Net Costs [EUR]	Final Price [EUR]
1	in rod complete	880	1	Distribution	Assembly	Distribution	6.777	7.382	14.859	16.483	16.774
2	locking ring	240	1		PurchasedPart	Process	0.021	0.223	0.223	0.075	0.275
3	locking ring	240	1		PurchasedPart	In house	3.786	5.812	9.310	10.974	10.974
4	locking ring	240	1		PurchasedPart	Process	0.044	0.044	0.044	0.044	0.044
5	locking ring	240	1		PurchasedPart	In house	0.392	0.392	0.392	0.420	0.420
6	locking ring	240	1		PurchasedPart	Process	0.223	0.223	0.223	0.228	0.228
7	locking ring	240	1		ManufacturedPart	In house	0.445	0.276	0.722	0.622	0.622
8	locking ring	240	1		Process	In house	0.076	0.076	0.076	0.084	0.084
9	locking ring	240	1		PurchasedPart	In house	0.445	0.445	0.445	0.476	0.476
10	locking ring	240	1		ManufacturedPart	In house	2.545	2.626	5.111	5.000	5.000
11	locking ring	240	1		Process	In house	0.047	2.365	2.201	0.974	0.974
12	locking ring	240	1		PurchasedPart	In house	0.047	0.047	0.047	0.052	0.052
13	locking ring	240	1		PurchasedPart	In house	1.624	1.624	1.624	1.624	1.624
14	locking ring	240	1		ManufacturedPart	In house	0.074	0.223	0.400	0.420	0.420
15	locking ring	240	1		PurchasedPart	In house	0.098	0.098	0.098	0.097	0.097
16	locking ring	240	1		Assembly	In house	2.756	1.550	4.306	4.678	4.678
17	locking ring	240	1		Process	In house	0.076	0.076	0.076	0.076	0.076
18	locking ring	240	1		ManufacturedPart	In house	0.526	0.622	1.077	1.041	1.041
19	locking ring	240	1		Process	In house	0.622	0.622	0.622	0.775	0.775
20	locking ring	240	1		PurchasedPart	In house	1.624	0.076	0.076	0.972	0.972
21	locking ring	240	1		ManufacturedPart	In house	0.098	0.296	0.098	0.098	0.098
22	locking ring	240	1		Process	In house	0.098	0.098	0.098	0.141	0.141
23	locking ring	240	1		Material	In house	0.050	0.050	0.050	0.050	0.050
24	locking ring	240	1		PurchasedPart	In house	0.050	0.050	0.050	0.051	0.051
25	locking ring	240	1		PurchasedPart	In house	0.200	0.200	0.200	0.203	0.203
26	locking ring	240	1		PurchasedPart	In house	0.098	0.098	0.098	0.097	0.097


Procedure in the CALC4XL system

1. Open the template from the CALC4XL menu:



2. Fill out the automatic pop-up project specification:

Show and Hide Cost Details



Product Cost Calculation Modules

Overhead Calculation MultiBOM

Multistückliste

Details Buyer Section				Supplier	
Quotation No. /Rev				Supplier	tie rod complete
Buyer	CALC4XL			Description	X 111 229 15
Location				Part No.	
Currency	EUR			Drawing	
Accuracy				Project/Customer	
Additional Information					

CALC4XL asks you security questions when inserting elements. You can suppress these questions for quick editing of bills of material.

Add row

Edit row

Un/hide

Material cost

Manufactured Cost

Scrap

OHs & Profits

Additional Costs

Header

Error notes

Warnings active
 Warnings inactive

Enable automatic activation of columns

Show/hide cost details
(related columns are shown/hidden)

If CALC4XL detects a logic error (e.g. assembly without a process), an error note is displayed in the "Category" column as an Excel comment. These errors can be shown/hidden.

Module Level				Purchasing			
			Active			Category	Type of Purchasing
1	2		1		1	Distribution	Assembly Process →

Purchased parts, material and (manufacturing) processes require detailed inputs. You are automatically guided to the corresponding columns if

- the respective cost details are shown (see red box)
- you have activated the Excel cell of such an element (e.g. process) and then click on the right arrow key on the keyboard →

Inserting Elements

Add row Assembly Manufactured Process Material Purchased

Edit row Copy Move Remove Pricing

Un/hide Material cost Manufactured Cost Scrap Ohs & Profits Additional Costs Header Error notes

Module Level

New Element

in house production Distribution

external/supplier production Enter supplier name.

OK

Inserting (manuf.) processes, material, purchased parts in an assembly / manufactured part **depending on the active Excel cell.**

Assembly level specifies structure: An element on level 3 always has a parent assembly / manufactured part on level 2 and so on.

Inserting assemblies and manufactured parts **depending on the active Excel cell.**

You can insert as in-house production or as external production:

[in-house]: The project specification of the directly parent assembly / manufactured part is used

[external]: CALC4XL opens a new project specification to define the external manufacturer.

Insertion depending on the active Excel cell:

- Option A: Active Excel cell belongs to a process, purchased part or material
=> New element is inserted on the same assembly level above the active element
- Option B: Active Excel cell belongs to an assembly or manufactured part
=> CALC4XL asks you whether you want to insert the new element as a "child" (i.e. as a dependent element / sub-element):
- [YES]: New element is inserted one assembly level lower at the end of the parts list of the assembly/manufactured part.
 - [NO]: New element is inserted on the same assembly level above the active element.
- On the topmost assembly, a new element is always inserted as a child.

Copy / Move / Delete Elements

Add row Assembly Manufactured Process Material Purchased Warnings Warnings inactive

Edit row Copy Move Remove Pricing

Un/hide Material cost Manufactured Cost Scrap OHS & Profits Additional Costs Header Error notes

List of Parts

Module Level	Name	Part No.	Pc/Assy	Comment /	Category	Type of Purchasing
						Distribution

Jumps to the area of the price overview.

The row(s) of the element of the active Excel cell is deleted. For composite elements (assemblies, manufactured parts), all sub-elements are also deleted.

Move/copy the row(s) of the element of the active Excel cell. Composite elements (assemblies, manufactured parts) are always copied/moved as an entire unit.

Procedure:

1. Activate an Excel cell in the element to be copied/moved. (Multiple selection possible.)
2. Click Copy or Move.
3. Click on an Excel cell in which you want to insert the elements. Note the insertion instructions.

Insertion depending on the active Excel cell:

Option A: Active Excel cell belongs to a process, purchased part or material
=> New element is inserted on the same assembly level above the active element

Option B: Active Excel cell belongs to an assembly or manufactured part
=> CALC4XL asks you whether you want to insert the new element as a "child" (i.e. as a dependent element / sub-element):
[YES]: New element is inserted one assembly level lower at the end of the parts list of the assembly/manufactured part.
[NO]: New element is inserted on the same assembly level above the active element.
On the topmost assembly, a new element is always inserted as a child.

Features of the Super-BOM

Module Level		Active								
1		1	tie rod outside	200	1	Assembly	In-house			10,976
2	2	1	Sechskantschraube M12x1,25x20		2	Purchased Part				0,337
3	3	1	clamping ring flat	240	1	Purchased Part				0,023
4	4	1	clamping ring round	250	1	Purchased Part				0,068
5	5	1	ball cup DN 25	260	1	Purchased Part				0,420
6	6	1	sealing bellows			Purchased Part				0,238
7	7	1	ball stud			Manufactured Part	In-house			0,822
8	8	1	blank workpiece ball stud	R225	1	Process				0,346
9	9	1	housing outside	215	1	Purchased Part				0,476
10	10	1	housing outside zinc coating	215	1	Assembly	In-house			6,008
11	11	1	blank workpiece housing outside			Material				2,879
12	12	1	cover plate	280	1	Process				0,692
13	13	1	grease Penolit (LX)			Purchased Part				1,951
14	14	1				Manufactured Part	In-house			0,486
15	15	1				Process				0,406
16	16	1				Material				0,079
17	17	1				Purchased Part				0,017

Assembly level specifies structure: An element on level 3 always has a parent assembly / manufactured part on level 2 and so on.

You can show and hide assembly levels using the arrow keys.

Tip: You can change the assembly levels (module level) by moving elements.

Percentage costs per assembly level

Change element via drop-down list.

Use the traffic light to mark elements, such as unresolved points.

Tip: Add an Excel comment to explain unresolved issued to your colleagues.

By deactivating elements (set value to 0 in the drop-down list of the "Active" column) you can remove elements from the calculation.

Tip: Copy elements and insert alternatives (e.g. "clamping ring flat" with different purchase prices or an assembly with external and in-house production. By means of deactivation/activation you can easily calculate different product variants.

Change classification to in-house and external production via dropdown list.

Tip: You can switch between two external manufacturers by clicking "New Company".

Modeling the Supply Chain

		List of Parts					Purchasing		Final Price
Module Level ◀ ▶		Active	Name	Part No.	Pcl/Assy	Comment / Supplier	Category	Type of Purchasing	[EUR]
31%	2	1	tie rod inside	300	1	External	Assembly	External	5,565
14%	3	1	housing inside	340	1		Process		0,796
25%	3	1	housing inside	340	1		Manufactured Part	In-house	1,396
60%	4	1					Process		0,840
40%	4	1					Purchased Part		0,555
20%	3	1	lock ring	320	1	External 2	Manufactured Part	External	1,130
8%	4	1					Process		0,971
14%	4	1					Material		0,159
33%	3	1	ball stud inside	310	1		Purchased Part		1,813
6%	3	1	ball cup	330	1		Purchased Part		0,313
0%	3	1	grease Renolit (LX)		1		Purchased Part		0,017

Modeling the supply chain using an example:

- tie rod inside (level 2) is manufactured externally and is composed of
 - housing inside (level 3), which is manufactured by the external manufacturer itself, i.e. in-house
 - lock ring (level 3), which is supplied externally to the external manufacturer, i.e. external production

CALC4XL calculates external assemblies and manufactured parts as purchased parts into the parent assembly. This results in the typical double allocation of overhead costs and profits due to external production.

Additional Guidance

purchased part: Pc/Assy versus Quantity

List of Parts				Purchasing		Purchased Parts & External Processes				
Active	Name	Part No.	Pc/Assy	Comment / Supplier	Category	Type of Purchasing	UoM	Qty (optional)	Unit Cost	Frei
									[EUR]	
1	label		2		Purchased Part		pc.	1	0,05	
1	adhesive strip		1		Purchased Part		g	4	0,02	

1 adhesive strip, which requires 4g adhesive.

Make sure that you do not accidentally insert purchased parts multiple times.
Here: 2 labels in the assembly.

Additional Costs

Purchasing		Additional Costs per Qty				
Category	Type of Purchasing	Packaging	Logistics	Additional Costs		SUM Additional Costs
		[EUR]	[EUR]	Description	[EUR]	[EUR]
Assembly	In-house					0,781
Process						
Process						
Process						
Process						
Purchased Part			0,406	DUTY	0,324	0,730
Purchased Part		0,051				0,051

Additional costs such as packaging, transport and extra costs (e.g. CNC programming, simulations, ...) are added at the end of the lines and automatically accumulated for each assembly.

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Successful Calculations

Your CALC4XL Team