

Unit Cost Spreadsheet

How-to guide: what the workbook does, how to use it and what every number means.

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Unit Cost Spreadsheet

Cost every part in a family from material, routing, setup, overhead and scrap, and see which parts miss your margin and where the money goes.

For: Cost and manufacturing engineers, estimators, plant controllers and owners of machine shops and fabricators.

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Quick start

1. On Setup, type your currency, loaded labour rate, overhead percentage and target margin, then list your work centres with their machine rates.
2. On Part Costs, add one row per part: material, bought-in items, batch size, scrap rate, annual volume and price.
3. On Operations, add one row per routing step: part, work centre, setup hours, cycle seconds and operators per machine.
4. Read unit cost, margin and status on Part Costs; the Check columns name any part or operation that does not add up.
5. Open the Dashboard: margin against target, the cost build-up of every part and the annual cost by element.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Currency, labour rate, overhead, target margin and the work-centre machine rates.
Part Costs	One row per part: material, batch, scrap, volume and price. Labour, machine and setup come from the Operations sheet.
Operations	One row per routing step of each part: work centre, setup hours, cycle time and operators per machine.
Dashboard	Margin against target, the cost build-up of every part, and where the annual cost goes.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
Labour per operation	Cycle seconds / 3600 x operators per machine x loaded labour rate (Setup).	currency/part

Quantity	How it is calculated	Units
Machine per operation	Cycle seconds / 3600 x the work centre's machine rate (Setup list, looked up by INDEX/MATCH).	currency/part
Setup cost per operation	Setup hours x (machine rate + labour rate): the machine is charged while one setter sets it up.	currency/batch
Labour, machine per part	SUMIFS of the part's operations. Excel: =SUMIFS(tblOps[Labour], tblOps[Part], [@Part])	currency/part
Setup per part	Sum of the part's setup costs / batch size.	currency/part
Overhead	(Labour + machine + setup) x overhead percentage (Setup).	currency/part
Cost per part started	Material + bought-in and packaging + labour + machine + setup + overhead.	currency/part
Unit cost	Cost per part started / (1 - scrap rate): every good part carries the cost of the scrapped ones.	currency/part
Scrap allowance	Unit cost - cost per part started.	currency/part
Margin and status	(Price - unit cost) / price. On target at or above the target margin, Near target within 5% of it, Below target otherwise.	%
Annual cost, revenue, margin, scrap cost	Unit cost, price, price - unit cost and scrap allowance, each x annual volume.	currency/yr
Weighted margin	Sum of annual margin / sum of annual revenue over the priced parts (not an average of percentages).	%
Annual cost by element	For each element (materials = material + bought-in and packaging; labour; machine; setup; overhead; scrap allowance), SUMPRODUCT of its per-part cost and the annual volume over all parts; share = element / total.	currency/yr

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Kessler Precision, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

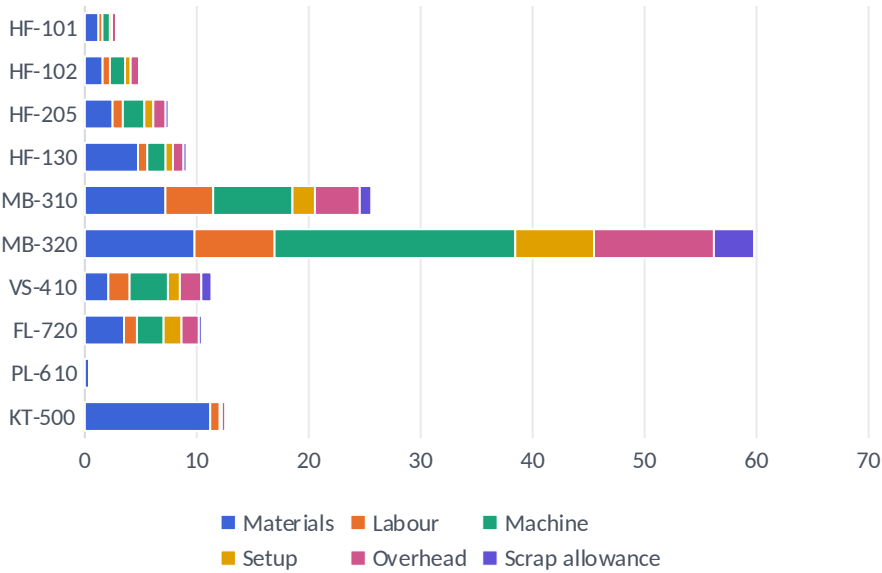
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WEIGHTED MARGIN ON PRICE	PARTS BELOW TARGET MARGIN	ANNUAL SCRAP COST (USD, EST.)	BIGGEST COST ELEMENT
25.8%	2	21,854	Materials 37%
Target 25.0%	Margin status on Part Costs	Scrap allowance x annual volume	Share of annual cost
On target			

Unit cost build-up by part (per good part)



Margin on price by part

