Making Cents of It: **Your Introduction to SOLIDWORKS Costing**

SOLID *Professor*

Dive into SOLIDWORKS Costing basics and learn how to effectively calculate how much your part, multi-body, or assembly will cost to manufacture during the design process.

Introduction

About the Author

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With more than 10 years of mechanical engineering experience, Justin Flett specializes in both advanced engineering design and manufacturing processes. Flett holds 13 certifications including CSWP, CSWP-DT, CSWP-MT, CSWP-SM, and CSDA. In addition to being a practicing engineer, he's a professor of Applied Science & Technology at Sheridan College in Ontario.

What is SOLIDWORKS Costing?

The SOLIDWORKS Costing tool estimates manufacturing costs and generates real-time quotes based on mechanical designs and costing inputs to help optimize and minimize unnecessary manufacturing costs.

Why You Should Be Using SOLIDWORKS Costing

Traditionally, once an engineer completes a mechanical design in SOLIDWORKS, the design is sent off to manufacturing. Manufacturing can be completed in-house, by a single third-party manufacturing vendor, or multiple vendors for quotes and pricing.

However, the timeline of these cost estimates could take days or even weeks. And if you're not happy with the quote that eventually gets sent back to you, you'll need to start the process over again. That may mean contacting additional vendors to search for better prices or redefining and redesigning your products to meet financial requirements. All of this back and forth between manufacturing vendors can generate quite a bit of downtime and potential rework.

To avoid missing deadlines — and potentially team KPIs — you should take advantage of the SOLIDWORKS Costing add-in tool. It allows you to generate cost estimates based on the specific SOLIDWORKS model you're designing. It gives you a real-time manufacturing quote based directly on the product design and cost inputs. With this tool, engineers and designers can track and optimize manufacturing costs to help increase final production profits during the design process.

The costing add-in is included in the SOLIDWORKS Professional and Premium packages and can be customized to fit your specific manufacturing needs.

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Everything You Can Analyze in the SOLIDWORKS Costing Tool

SOLIDWORKS Costing helps eliminate errors and provides accurate, repeatable quotes that can be updated whenever you need to estimate or revise labor costs, materials, or manufacturing processes. The following costing operations can be included and analyzed.

Sheet Metal Parts
- Sheet metal cutting operations
- Punches and forming tools
- Bend operations
- Machine and process setup operations
- Custom operations

Machined Parts
- Milling operations
- Drilling operations
- Turning operations
- Cutting operations
- Machine and process setup operations
- Custom operations

Casted Parts
- Part volume
- Estimated time required
- Material cost
- Manufacturing cost
- Molding cost

3D Printed Parts
- Part volume
- Estimated time required
- Material cost
- Manufacturing cost

Weldments
- Cost per length or per stock length
- Cost of welding beads

Assemblies
- Total individual parts cost
- Total hardware costs
- Any other associated cost

Pro Tip: Make sure to enter accurate data. The estimate will only be as good as the data you input into the tool. If you find yourself using the tool a lot, consider creating custom templates to further increase your accuracy.

Benefits of Using SOLIDWORKS Costing

The SOLIDWORKS Costing Tool will not only save you time, but it'll also help each team involved in the design process. Here's how.

Benefits for Engineering and Design Teams

- Helps optimize design costs and reduces redesign with real-time estimates
- Improves design decisions before they reach manufacturing
- Costs are more repeatable and much faster than traditional costing from external or internal manufacturing teams
- Provides flexibility to try multiple design scenarios to improve costs

Benefits for Manufacturing Teams

- Speeds up the time it takes to estimate costs
- More repeatable and accurate than traditional quoting methods
- Customizes costing template to fit your exact manufacturing processes and data for consistency

Benefits for Management

- Reduces overall costs
- More likely to hit targets and KPIs
- Improves time-to-market and overall profitability
- Streamlines communication between teams

How it Works

Once a product is designed, SOLIDWORKS Costing will interpret the geometry of the components and how they can be manufactured. The interpretation of how the design can be manufactured is based on specific user inputs within a costing template that associates manufacturing features with their costs.

Once costs have been defined for all the custom operations you have, SOLIDWORKS will recognize the manufacturing features within a part and apply a cost to each individual feature. Finally, the total cost is determined and the final unit cost is quoted.
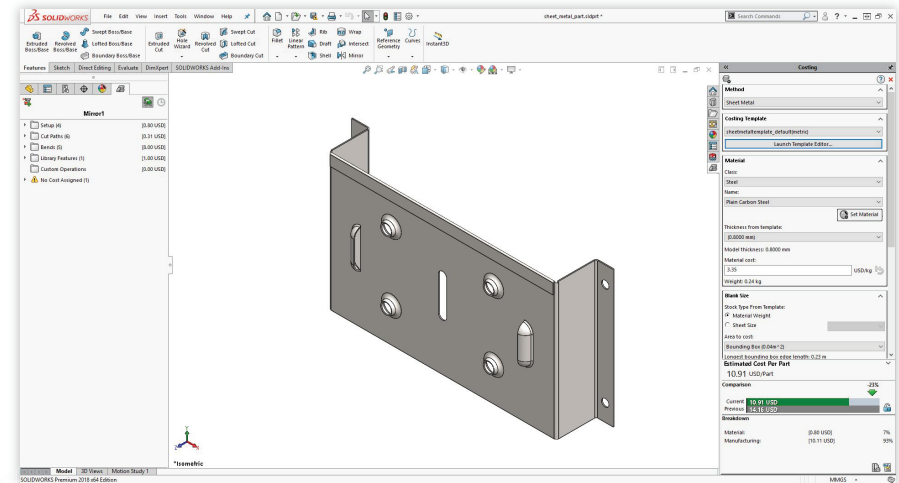
For Example

If a product design has a hole cut out, this can be interpreted in a number of ways based on the manufacturing process. A user-defined template would define if the part should be manufactured as a sheet metal component. In that case, the hole cut out could be cut with waterjet, laser, or plasma cutting.

If the product was instead defined as a machined part, the manufacturing process would be quite different and would be seen as a drilled hole using a cutting tool.

These costing templates can be completely customized and built to fit your specific needs. So if your company specializes in sheet metal parts, you should use the sheet metal template. This template not only specifies the manufacturing method but also contains parameters and costs that you can customize specifically for sheet metal.

How to Use SOLIDWORKS Costing Step-by-Step

1. Open the tool by selecting **Tools > SOLIDWORKS Applications > Costing**. See Fig. 2.

2. Once you activate the tool, you can choose your template by selecting the **Costing** tab **> Method** dropdown.
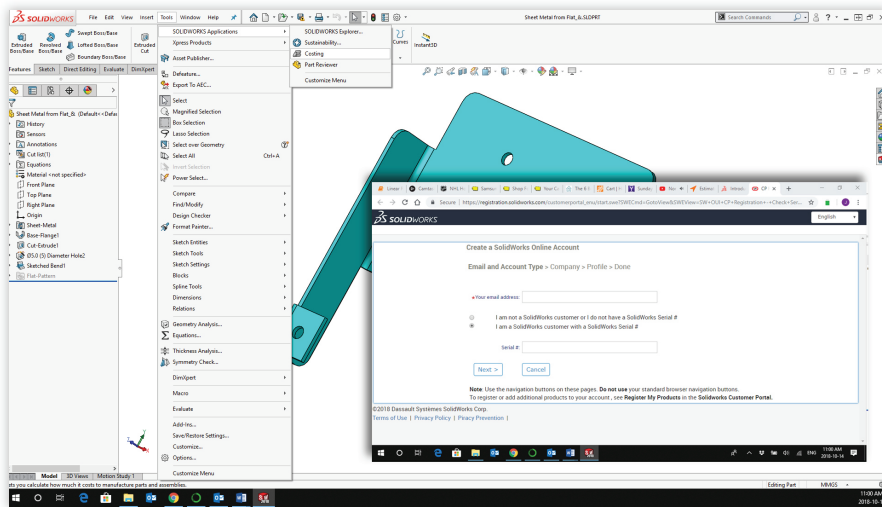
3. Select one of the pre-built methods that comes with the SOLIDWORKS defaults.

4. To create a custom template, select the **Launch Template Editor** to launch the **Costing Template Editor** window. See Fig. 3. Within the **Costing Template Editor**, you customize things like currency, materials, thicknesses, and operation pricing.
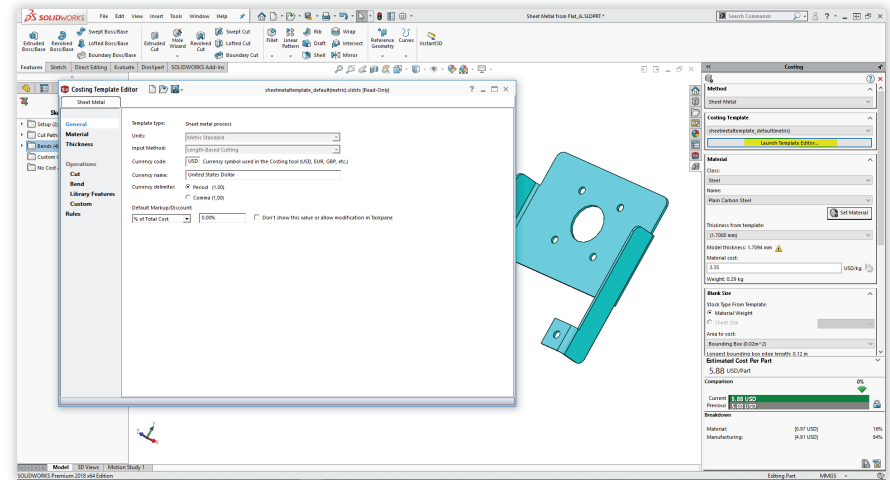
Note: In Fig. 3, notice that the sheet metal and machining cost templates are already generated. However, you can also create new, fully customized templates for other manufacturing methods (e.g., injection molding, casting, 3D printing, and welding).

5. Once you've created a custom costing template, select **Save**.

6. To access the new custom template, select the **Costing** tab **> Method** dropdown. Every time you select your template in the future, the estimated cost per part will automatically be calculated and shown near the bottom of the Costing Panel.

For Example

In this case, changing the type of steel from plain carbon steel to galvanized steel increased the cost per part from $5.88 (plain carbon steel) to $6.82 (galvanized steel). See Fig. 4.

This feature allows you to see real-time quotes for your SOLIDWORKS designs — and more importantly — use this information to make alterations to your designs, materials, or manufacturing methods to help reduce costs and optimize profits.

Fig. 4

Costing Reports Overview

Once SOLIDWORKS Costing has determined component pricing, professional costing reports can be automatically generated from this information with the click of a button. Costing reports can be customized and branded for your specific company. See Fig. 5.

Simple quotes or detailed costing reports can be generated within seconds. Costing reports can be generated as Word documents and as Excel spreadsheets. Final reports can be previewed directly within the SOLIDWORKS software prior to publishing the final draft.

Automated reports are not only a huge time saver but are also very helpful to increase professionalism, accuracy, and consistency across your costing and quotation process.
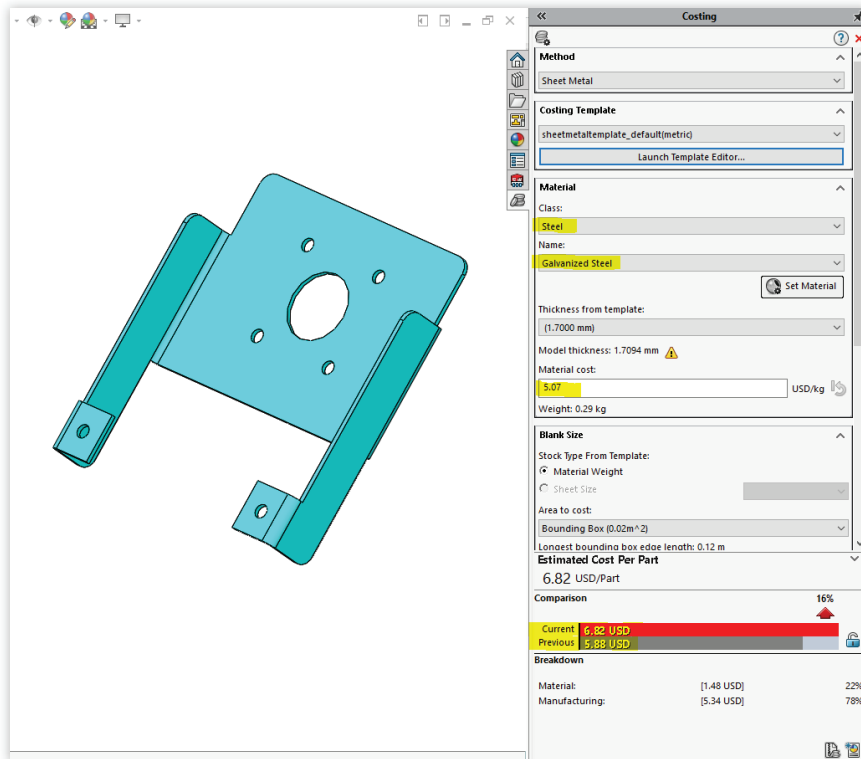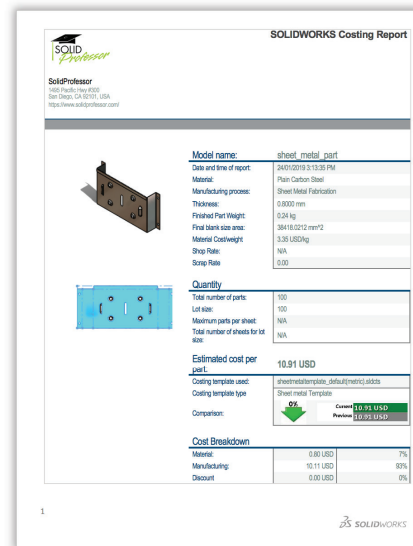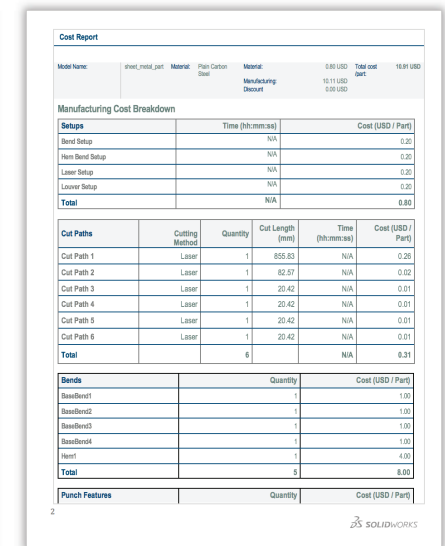
Fig. 5

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