

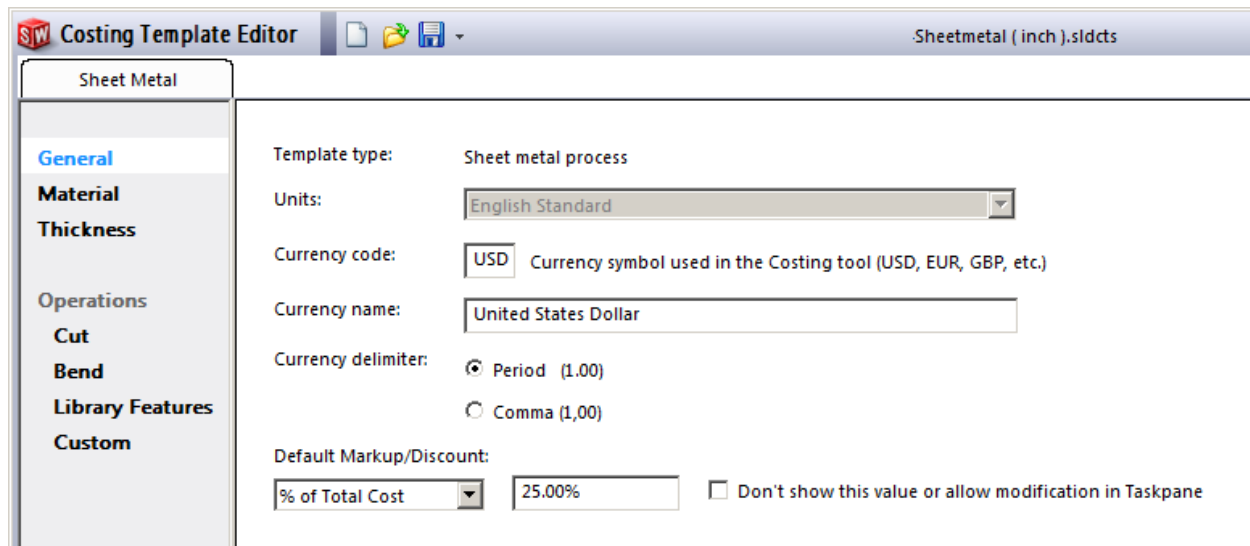
# SOLIDWORKS Costing an in depth Review Part 4 - Templates

I performed a day of consulting on SOLIDWORKS Costing, part of SOLIDWORKS Professional and higher. The customer builds equipment for their clients that have lots of sheet metal parts. They invited me in to see if I could help, being the SOLIDWORKS expert. Notice, I said SOLIDWORKS expert, not SOLIDWORKS Costing expert. I've been using SOLIDWORKS for fifteen years now and I'm still learning new stuff about the software. I went to the [SOLIDWORKS WORLD Presentation archive](#) to see what others had done in the past, so I don't repeat their mistakes. With that said, I'm going to break down how we started the proof of concept for SOLIDWORKS Costing for the customer. This article covers sheet metal; we will probably circle back and do one for prismatic, turned, injection molded, and 3d printed parts, check back to the article summery later for more PDFs.

## Planning

When it comes to planning we must understand the parts of the costing template. Without that bit of knowledge first you can dig a huge hole for yourself with very little effort. Pick a project you have already quoted out in the past to test your numbers. I prefer a range of sizes and number of bends for testing purposes.

## General information

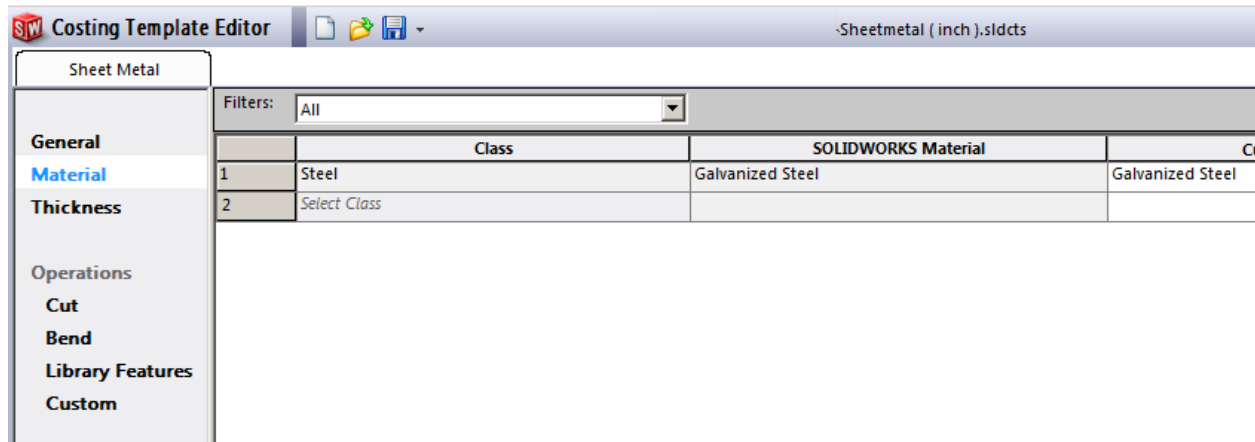


The screenshot shows the 'Costing Template Editor' window for a 'Sheet Metal' process. The left sidebar contains a tree view with categories: General, Material, Thickness, Operations, Cut, Bend, Library Features, and Custom. The main area displays the following settings:

- Template type: Sheet metal process
- Units: English Standard
- Currency code: USD (Currency symbol used in the Costing tool (USD, EUR, GBP, etc.))
- Currency name: United States Dollar
- Currency delimiter:  Period (1.00)  Comma (1,00)
- Default Markup/Discount: % of Total Cost (25.00%)  Don't show this value or allow modification in Taskpane

The General tab is all about money, what you are using and how much extra you want your client to pay by default, using the Default Markup/Discount

## Material

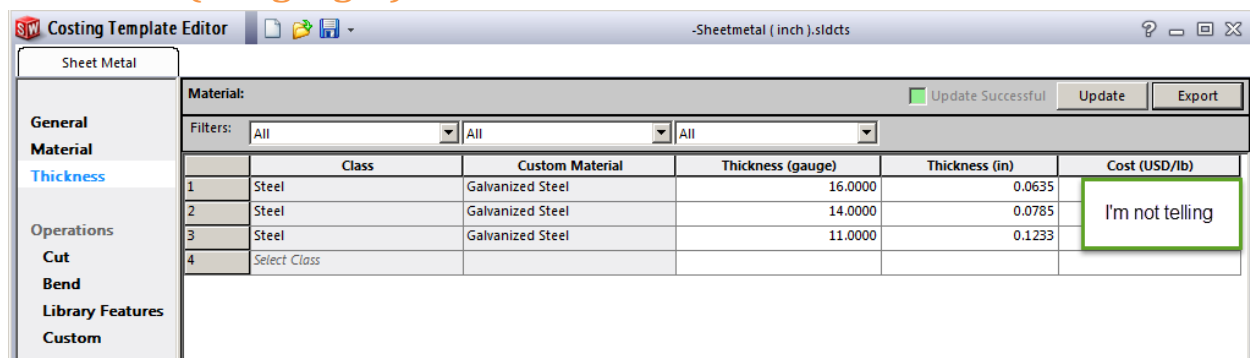


Sheet Metal			
Filters: All			
	Class	SOLIDWORKS Material	Cost
1	Steel	Galvanized Steel	Galvanized Steel
2	Select Class		

Learning from the mistakes of others and some great SOLIDWORKS World presentations from [Todd Blacksher](#) of TMCO Inc, I've learned a valuable lesson. *If you learn nothing else from this blog article learn this, **start small**.* As you will see with Operations section the number of materials and thicknesses are very important. If you have steel for example as a class, you might have 4-10 different material types of steel. When you start adding gauges the number of entries you have to manage and update later begin to go up.

**NOTE:**The Classes and SOLIDWORKS Materials come from the SOLIDWORKS Material database so if you don't have all your materials in there you want to create all your variants there. Also make sure you share the material database on the network if you are sharing the costing templates.

## Thickness (aka gauges)



Material: <span style="float: right;">Update Successful Update Export</span>					
Filters: All All All					
	Class	Custom Material	Thickness (gauge)	Thickness (in)	Cost (USD/lb)
1	Steel	Galvanized Steel	16.0000	0.0635	I'm not telling
2	Steel	Galvanized Steel	14.0000	0.0785	
3	Steel	Galvanized Steel	11.0000	0.1233	
4	Select Class				

For every Class you have Materials, for every Material you, for every Material you have Thicknesses, and for every Thickness you have cost. This is why in this situation we started with one class, one material, and three gauges. We picked galvanized in this situation because it was the most prolific in project and we had good information on it.

### *Cost of Thickness how did we get there?*

The unit of measure for the cost is Currency/Weight, in this situation it is dollars per pounds. The easiest way to figure out this value is to use the following equation.

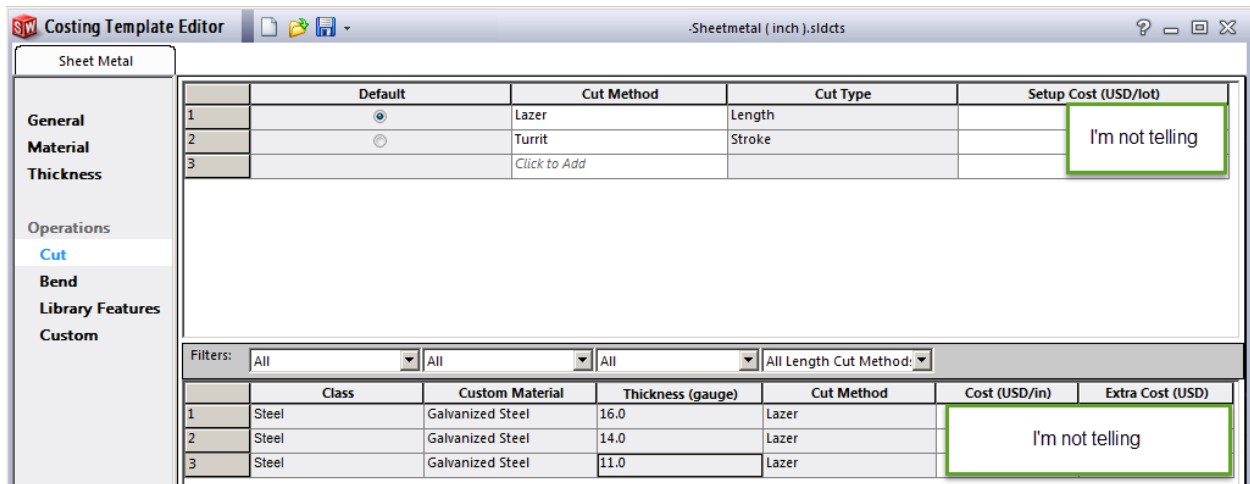
$$(\text{Cost STD}) / (\text{Weight STD}) = (\text{Cost per pound})$$

Cost STD : Cost of a standard sheet of material of that gauge.

Weight STD: Weight of same standard sheet of material of that gauge

This is pretty much easy, except you may have to do some upfront work to gather all your standard sheet sizes and pricing from purchasing. Now how much of this data you use is really up to; “how I plan on using costing?” Do you want to use this for quoting or a close estimate, those are very different things.

## Cut/Bend/Library Features



	Default	Cut Method	Cut Type	Setup Cost (USD/lot)
1	<input checked="" type="radio"/>	Lazer	Length	I'm not telling
2	<input type="radio"/>	Turrit	Stroke	
3		Click to Add		

Filters:	All	All	All	All Length Cut Method:	Cost (USD/in)	Extra Cost (USD)
1	Steel	Galvanized Steel	16.0	Lazer	I'm not telling	
2	Steel	Galvanized Steel	14.0	Lazer		
3	Steel	Galvanized Steel	11.0	Lazer		

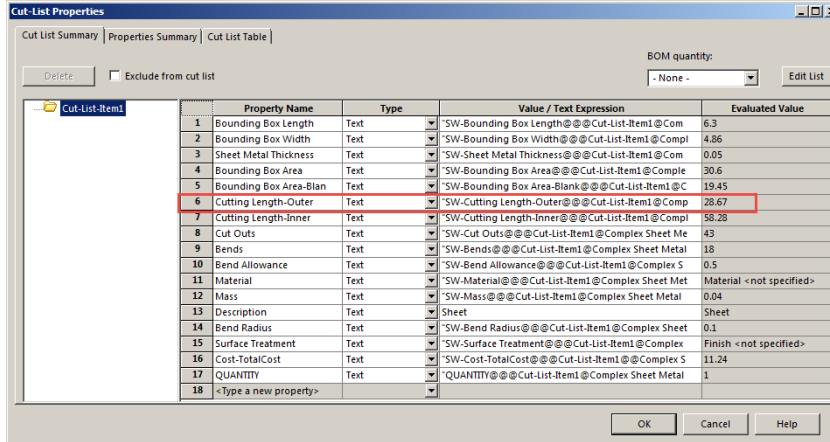
This next is all about your manufacturing process. Capture you machines for bending and cutting of your metal. You’ll notice a setup cost, many of us call this make ready cost, and it is usually a value divided among the lot of parts you are making. This is can get big very quickly, because you can have Material, Gauge, and Cut Method to cost out.

### Cost of Thickness how did we get there?

The easiest we did this was looking at the cost of manufacturing part from our project and using that to help back calculate everything.

### Cuts

Cut list properties in SOLIDWORKS are a great place to get all the info you may need about a sheet metal part, I love this tool. Right mouse button click on the Cust-List-Item for your sheet metal part and bring up properties.



Property Name	Type	Value / Text Expression	Evaluated Value
1 Bounding Box Length	Text	'SW-Bounding Box Length'@@@Cut-List-Item1@Com	6.3
2 Bounding Box Width	Text	'SW-Bounding Box Width'@@@Cut-List-Item1@Compl	4.86
3 Sheet Metal Thickness	Text	'SW-Sheet Metal Thickness'@@@Cut-List-Item1@Com	0.05
4 Bounding Box Area	Text	'SW-Bounding Box Area'@@@Cut-List-Item1@Comple	30.6
5 Bounding Box Area-Blan	Text	'SW-Bounding Box Area-Blank'@@@Cut-List-Item1@C	19.45
6 Cutting Length-Outer	Text	'SW-Cutting Length-Outer'@@@Cut-List-Item1@Comp	28.67
7 Cutting Length-Inner	Text	'SW-Cutting Length-Inner'@@@Cut-List-Item1@Compl	58.28
8 Cut Outs	Text	'SW-Cut Outs'@@@Cut-List-Item1@Complex Sheet Me	43
9 Bends	Text	'SW-Bends'@@@Cut-List-Item1@Complex Sheet Metal	18
10 Bend Allowance	Text	'SW-Bend Allowance'@@@Cut-List-Item1@Complex S	0.5
11 Material	Text	'SW-Material'@@@Cut-List-Item1@Complex Sheet Met	Material <not specified>
12 Mass	Text	'SW-Mass'@@@Cut-List-Item1@Complex Sheet Metal	0.04
13 Description	Text	Sheet	Sheet
14 Bend Radius	Text	'SW-Bend Radius'@@@Cut-List-Item1@Complex Sheet	0.1
15 Surface Treatment	Text	'SW-Surface Treatment'@@@Cut-List-Item1@Complex	Finish <not specified>
16 Cost-TotalCost	Text	'SW-Cost-TotalCost'@@@Cut-List-Item1@Complex S	11.24
17 QUANTITY	Text	'QUANTITY'@@@Cut-List-Item1@Complex Sheet Metal	1
18 <Type a new property>			

The cut list properties window gave me and the custom lots of great info included outer length for the sheet metal flat pattern. So this is what we did your recipe can and will be different.

**(Cost to run cutting machine per hour) /**

**{ (number of parts cut in an hour)\*(cut length of the part)}=(Cost per unit length of cut)**

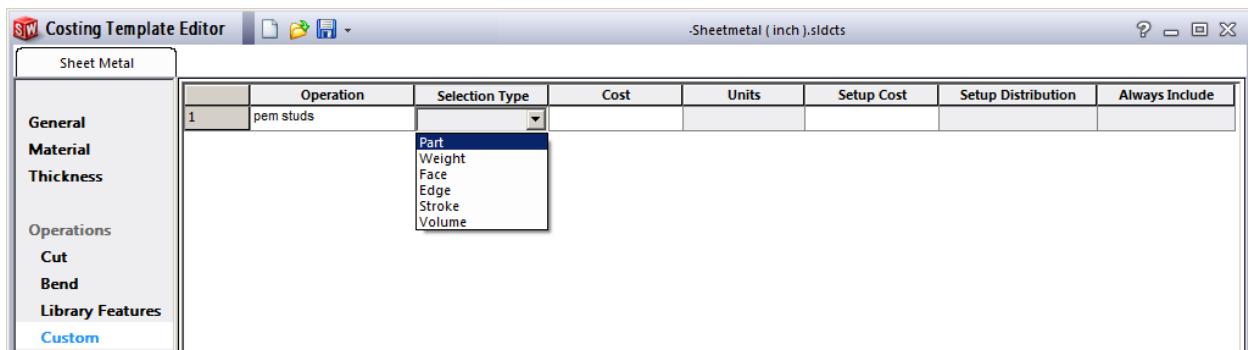
We used this similar methodology on bending as well.

**{{(Cost to bend the part)-(make ready cost per part)}/**

**(Number of bends in the part)= (Cost per Bend)**

**NOTE:** Make sure that the total number of bends SOLIDWORKS sees jives with what you would do in a manufacturing process. Due to features or design styles you will probably have more bends then you need for quoting. Example an jog command in SOLIDWDORKS creates two bends as far as the modeler is concern but manufacturing would use an offset tool and hit it with a single op. You can RMB click on any extra bends in the costing property manager and assign a No Cost Assignment to them, just something I found to work around it.

## Custom



Operation	Selection Type	Cost	Units	Setup Cost	Setup Distribution	Always Include
1 pem studs	Part					

Custom is a catch all for the operations you don't see the solid model. You can add ops based on the following selection types.

**Part:** Applies the operation cost per part. For example, serial number entry is applied per part

**Weight:** Applies the operation cost per unit weight. For example, shipping cost is applied per unit weight

**Face:** Applies the operation cost per square area of the selected faces. For example, painting cost is applied per square area

**Edge:** Applies the operation cost per unit length of the selected edges. For example, deburring is applied per unit length

**Stroke:** Applies the operation cost per stroke operation. For example, a punch cost is applied per stroke.

Have a great day,

Bob McGaughey, CSWE

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Computer Aided Technology, LLC.

We hope this series gives you some good insight to the SOLIDWORKS COSTING product. Please check back to the [CATI Blog](#) as the Dedicated Support Team will continue posting new articles to this series as we continue to dive deep into this topic. All of these articles will be stored in the category of [Daily Dose....of SolidWorks Support](#) and links to each article with their release date are listed below:

- [SOLIDWORKS Costing an in depth Review Part 1 - Overview \(Bryan Pawlak 6/23/15\)](#)
- [SOLIDWORKS Costing an in depth Review Part 2 - How Costing Works \(John Van Engen 6/24/15\)](#)
- [SOLIDWORKS Costing an in depth Review Part 3 - Options \(Blake Cokinis 6/25/15\)](#)
- [SOLIDWORKS Costing an in depth Review Part 4 - Templates \(Bob McGaughey 6/26/15\)](#)
- [SOLIDWORKS Costing an in depth Review Part 5 - Task Pane, Manager, & Sensors \(Neil Bucalo 6/29/15\)](#)