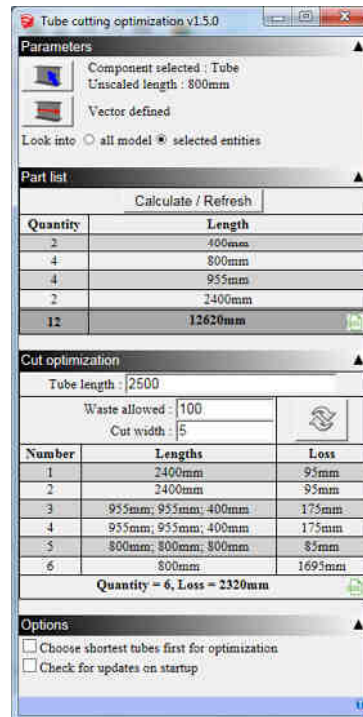


TUBE CUTTING OPTIMIZATION

-- Help file --

Created by BGSketchup, on August, 2014. Based on plugin version 1.5.0



Why to use it ?

This plugin will allow you to list and optimize cutting of tube like components you used in your model.

Main functions:

- Lists all instance of your component in your model.
- Calculates a solution to optimize cutting.
- Allow export the list and optimization in CSV files.

How to install:

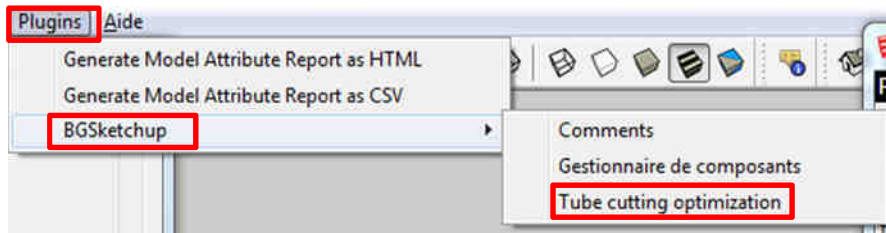
- SketchUp 8 or earlier : rename “.rbz” file in “.zip” file, uncompress and save file in SU install folder / Plugins
- SketchUp 2013 or later : click on window/preference, then “extension”, then “install extension” and choose “.rbz” file

Note : you may need to restart SketchUp to make it works.

To access to the plugin :

To access the main interface window, click, in SketchUp menus, on Plugins/BGSketchup/Tube cutting optimization.

Note that menu names may change according selected language (English by default).



Main interface :

Plugin main window :

Button to select the component to list/cut

Button to select the vector which follow the tube scale axis

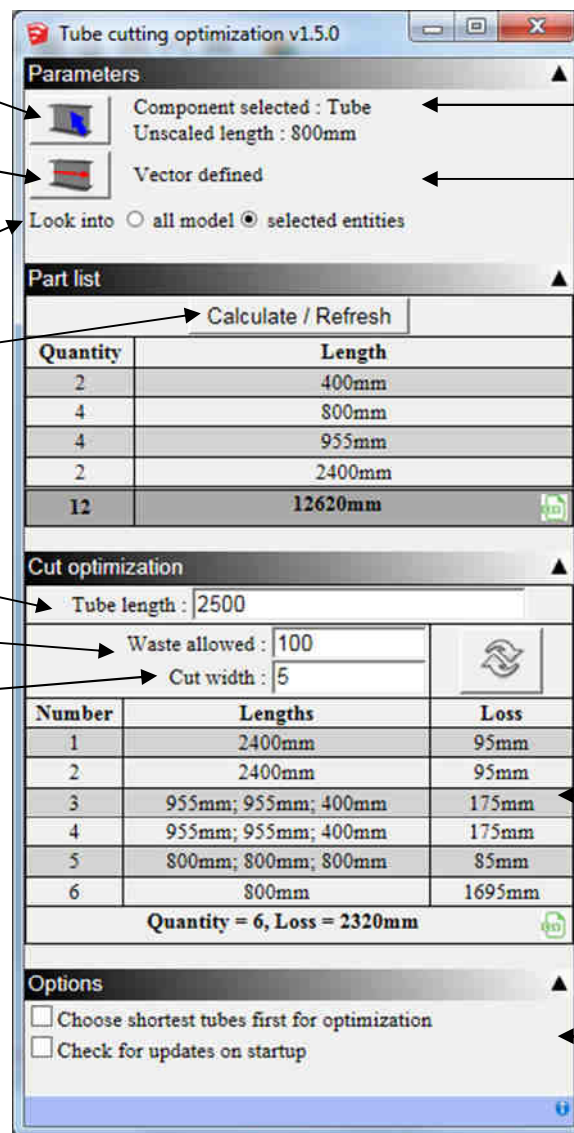
Region where to look for in the model.

Button to refresh the part list

Length of uncut tubes

Allowed wasted for each tube

Size of the cut (saw width)



Selected component info

Vector definition info

Button to refresh the optimization

Optimization result matrix

Options area

How to use it ?


1- Create you model using component

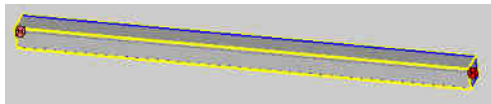
a. Create the initial component

Draw your component as usual. The best is the use the model axis system to create it. The length (that you will change) should be an axis of the model axis (blue, green, red). This will helps the plugin to define automatically the vector.

b. Duplicate it if necessary your component in your model

c. Scale it using Sketchup scale tool


Use sketchup tool  to change the length of your component in your model




2- Launch the plugin : Plugin => BGSketchup => Tube cutting optimization

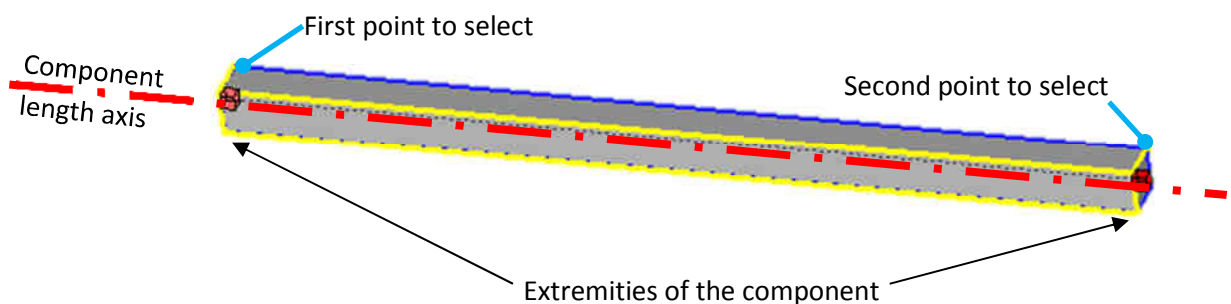
3- Enter parameters

a. Select the component you want to list

Click on button  and click on the component directly in your model

b. Check if vector is defined (message “vector defined” appears)

If not, click on button  and choose, by clicking on model, two points at each extremity of the component you just select before, in the axis of the length of the tube.
Here is an example :



c. Select on which area you want the plugin to list the component :

All model : looks into all model component instance

Selected entities : only in the objects you selected in your model

4- Edit part list :

a. Show the list :

Just click on button “Calculate/Refresh” to show the list of components used with their dimensions.

Calculate / Refresh	
Quantity	Length
2	400mm
4	800mm
4	955mm
2	2400mm
12	12620mm

b. Export the list in CSV file by clicking on icon at right bottom of the list.

5- Cutting optimization

a. Enter parameters

The plugin will calculate a solution to optimize cut of the component. Note that solution given is not the best solution in any case.

You have the possibility to tell the plugin that you have tubes all the same length or different length in case you have some “waste” you want to reuse.

i. For uncut tube of the same dimensions

Just enter the dimension in the field “tube length”. You can add your unit (mm, in, “, etc) if it’s necessary)

For example :

Tube length :	2500
Tube length :	2.5m

ii. For uncut tubes with different dimensions

Enter the different tube length in the field “tube length”, with a slash “/” between each of them. For example :

Tube length :	2500/2400/300/500/600
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iii. Other parameters


“Waste allowed” : the waste you can accept. If nothing is entered, the plugin will look at the best solution, which will take longer (very longer). Usually, 10% of uncut length is a good figure.

“Cut width” : size of the loss when cutting the component (due to saw width for example). Then plugin will take this into account to calculate the optimization and in the loss shown in the result matrix.


Waste allowed :	100
Cut width :	5

b. Edit cutting list

When clicking on refresh button , after calculation, the following matrix will appear:

Number	Lengths	Loss
1	2400mm	95mm
2	2400mm	95mm
3	955mm; 955mm; 400mm	175mm
4	955mm; 955mm; 400mm	175mm
5	800mm; 800mm; 800mm	85mm
6	800mm	1695mm
Quantity = 6, Loss = 2320mm		

In case you entered different uncut tube length, the following list will appear :

Number	Lengths	Loss
1	Tube of 2500mm divided in : 2400mm	95mm
2	Tube of 2400mm divided in : 2400mm	0mm
3	Tube of 2400mm divided in : 955mm; 955mm; 400mm	75mm
4	Tube of 2300mm divided in : 955mm; 955mm; 400mm	0mm
5	Tube of 2300mm divided in : 800mm; 800mm	690mm
6	Tube of 2200mm divided in : 800mm; 800mm	590mm
Quantity = 6, Loss = 1450mm		

Each line represents a tube cut, with cuts written in second column.

Loss is the waste you have for each tube.

At bottom, a summary of necessary tubes and total loss.

c. Export the list in CSV file by clicking on icon  at right bottom of the list.

Options

“Choose shortest tubes first for optimization”

When calculating the cut optimization, in case different tube lengths are entered, the plugin can choose to start with the shortest or the longest tubes.

“Check for updates on startup”

Allow the plugin to look at internet and check if you have the latest version of the plugin

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Help file history :

29/08/2014 Creation of the document