**PYPELINE AND PYPEBRANCH**

This tutorial is intended to describe in deeper detail the "meta-objects" defined in flamingo pipe-toolbar.

Pypeline has been already used in previous tutorials: just to recall the main points, it defines a collection of pype-parts that can be also layed down on a common path and collect into a Group.

The python class defines some methods to redraw, select profiles, select routes, change color etc. which can be executed from a common dialog.

The main point is that pype parts are actually independent from the path of the PypeLine, so they can be moved, modified or even deleted. They will be re-created only when the PypeLine will be redrawn.
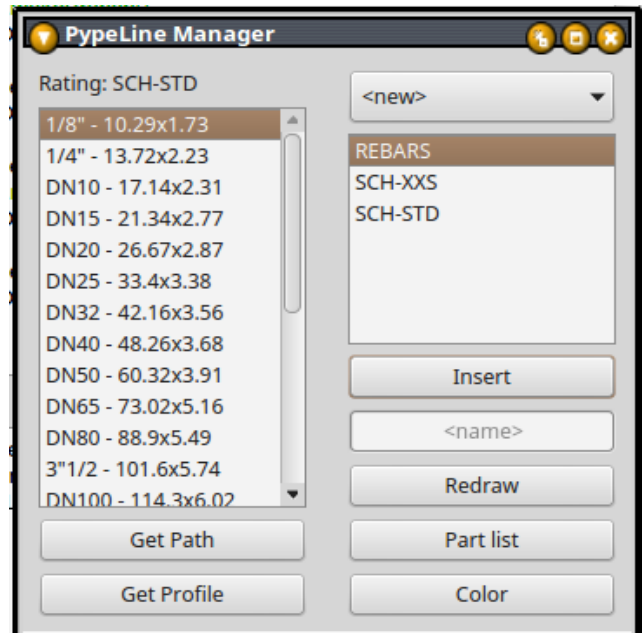
This may be annoying for long and complex routes of pyping. For this reason a new meta-object (i.e. collection of parts) is now available: the PypeBranch.

The Insert... dialog is similar to the others, with the two lists of sizes and ratings of pipe, the combo for the PypeLines, a line-edit for the name and an [Insert] pushbutton.

The difference with PypeLine is that this object has a mandatory Base attribute and that must be a DWire (or a Sketch) with a continuous path.

The pype parts (only tubes and curves) are automatically updated as soon as the Base is changed but they can not be modified individually after the object is created.
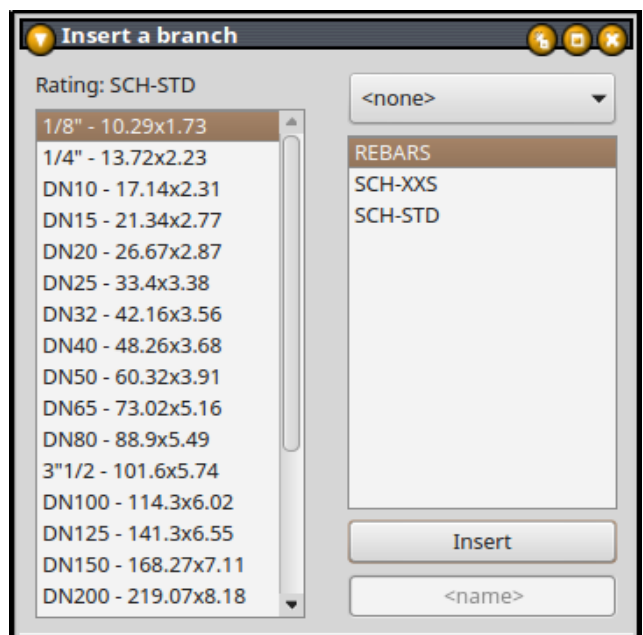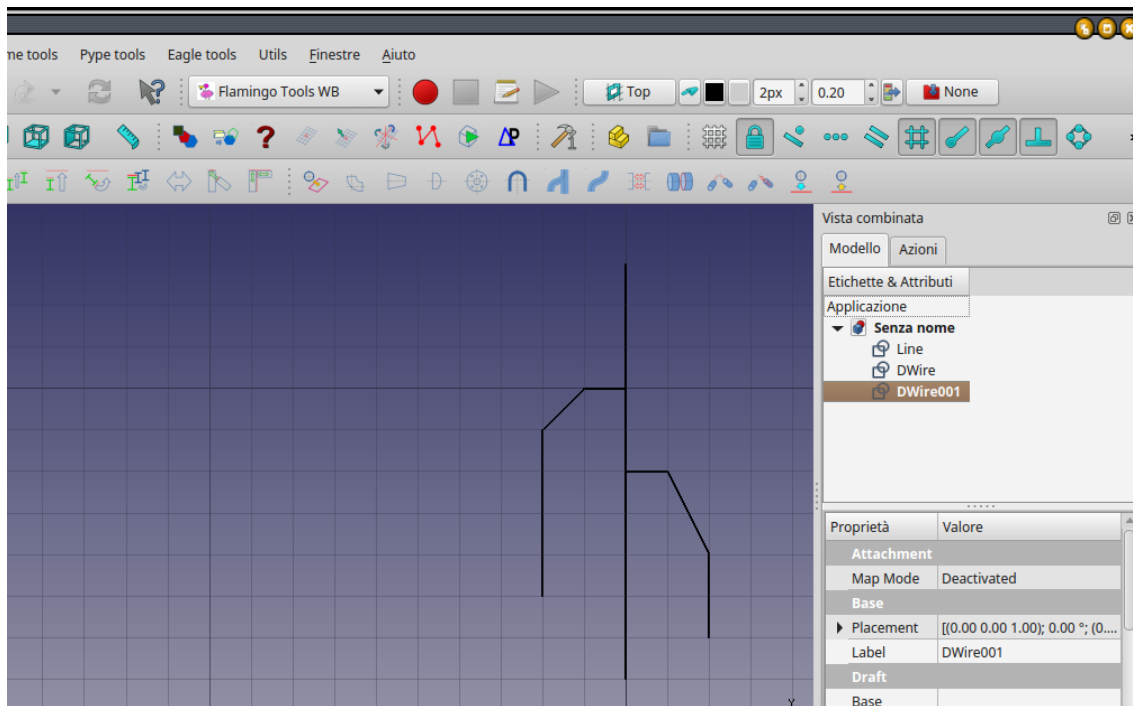
So in some way PypeBranches are easier to handle but less flexible than PypeLines. So they are perfect to be inserted in a PypeLine to organize it.
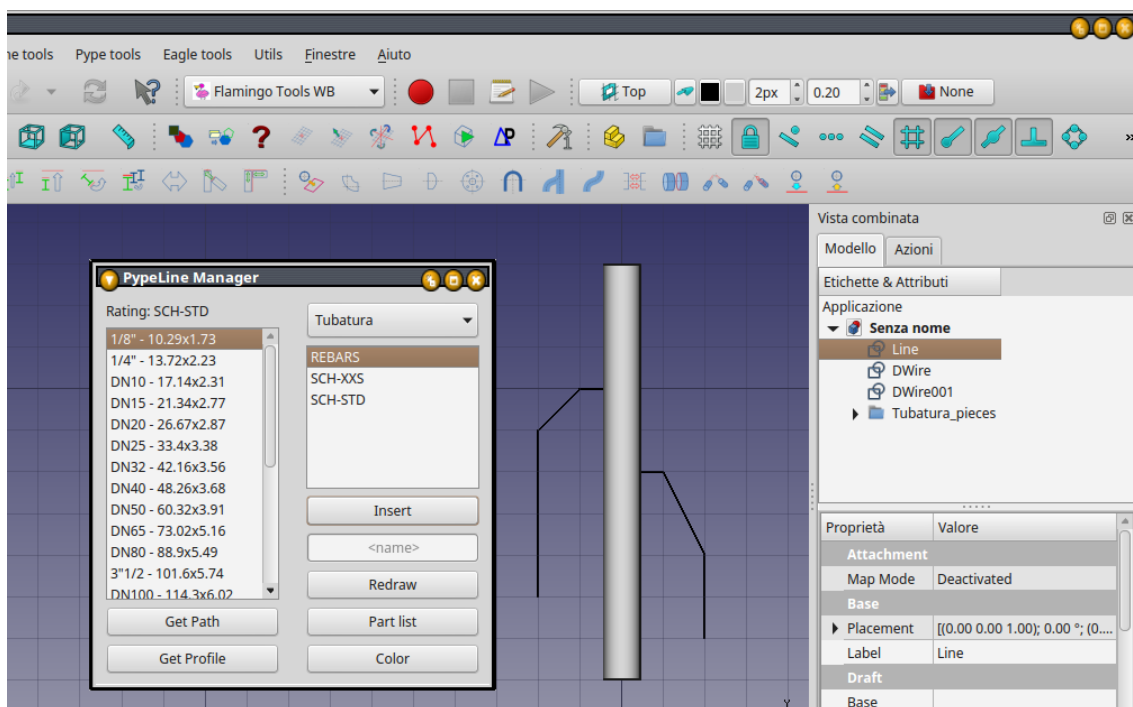
Let's see an example.

To start with, just sketch down a route with one Line (the main header) and two DWires (the branches)
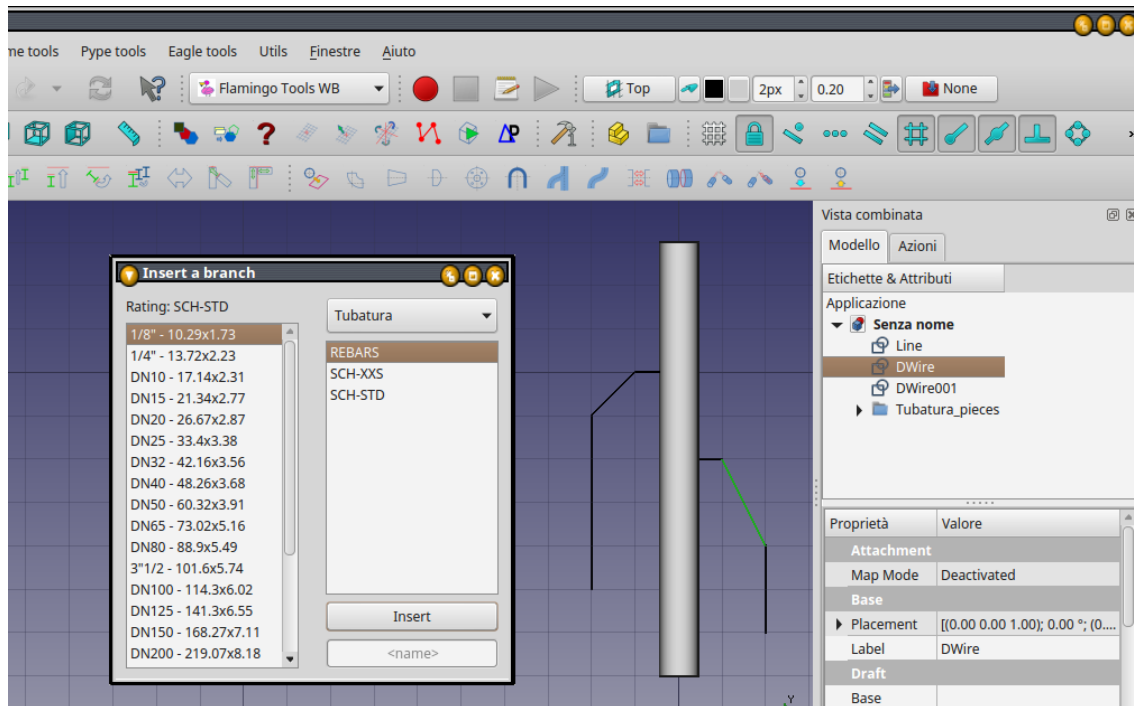

Select the center Line and over it insert one PypeLine DN80. The PypeLine's group will be added in the model's tree.
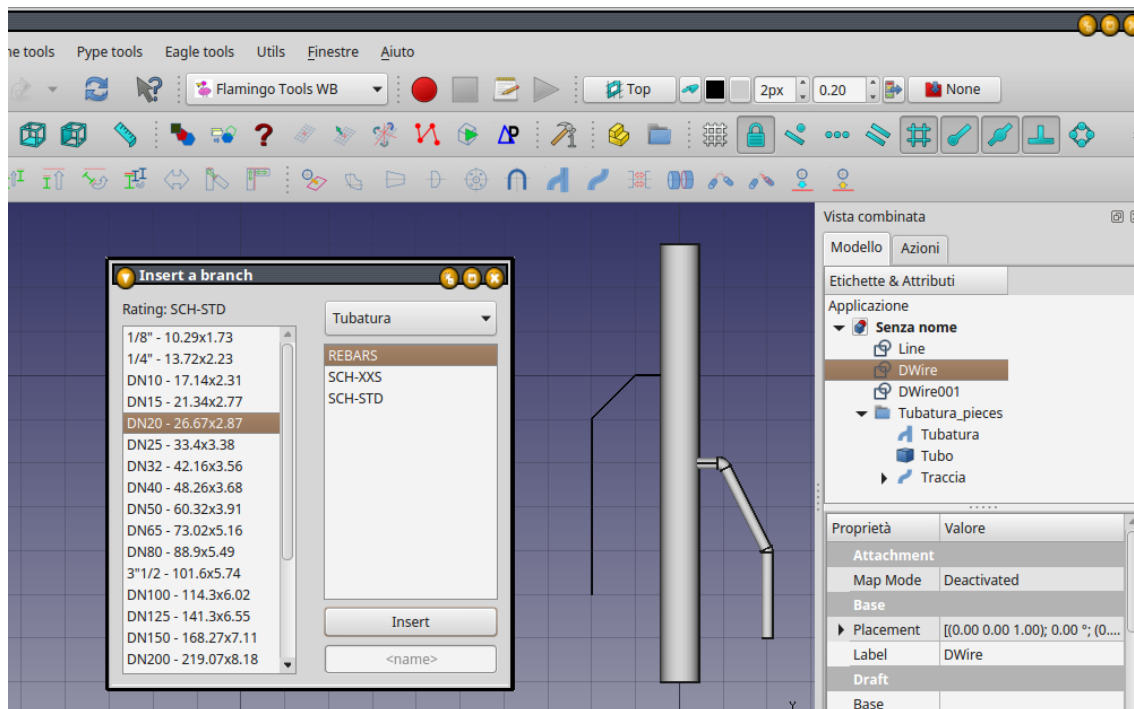

Now insert the branches by selecting in the viewport the DWire, in the dialog the PypeLine to attach (optionally) and finally the size and the rating (which can be different from the PypeLine).
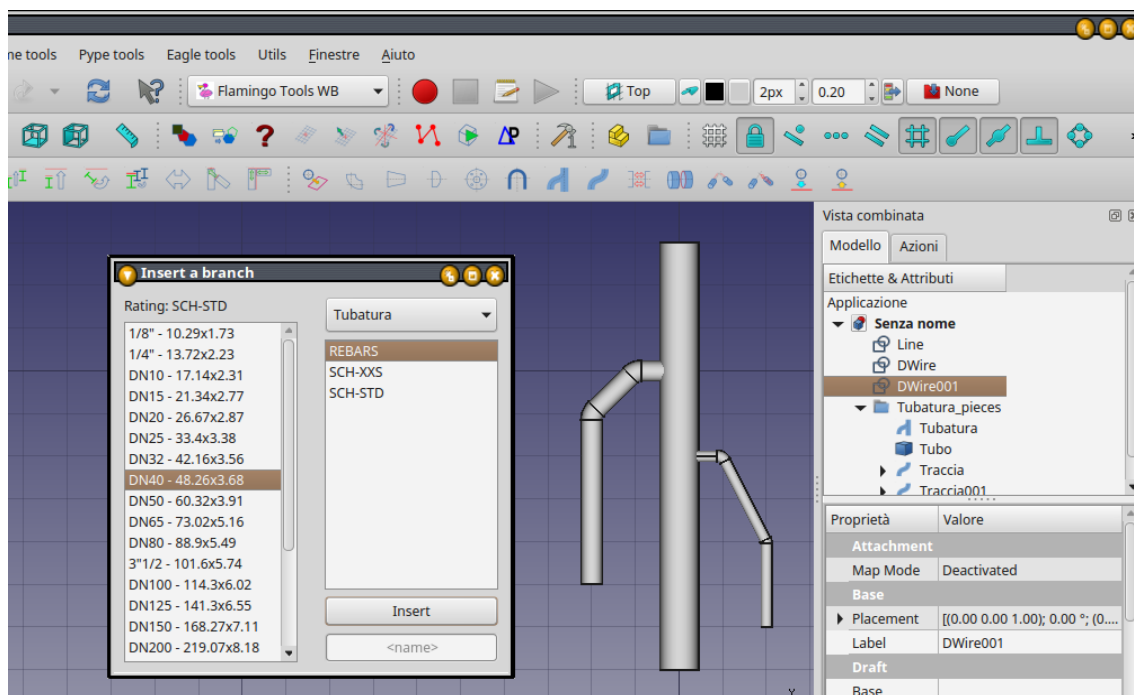
Let's insert the first branch DN20.
In the model tree you see the new branch with all its components under it.

Similarly you add the second branch, of a different size for instance (DN40).

In this way is possible to organize better the pipes of a pype-line: for example if you move "DWire001" or change the length of its segments, the pipes of the branch will update automatically.

PRESSURE LOSS CALCULATOR

Somehow linked to the introduction of branches there is one little tool in the "Utils" menu. This allow to calculate the pressure losses over the elements (curves and tubes) selected in the viewport or directly by selecting one PypeBranch from the drop-down box.

The dialog, depicted here at right, is very simple and self explaining.

At the moment the only fluid foreseen is (liquid) water but it can be updated soon with other common liquids or customized fluids.

A special thank to Mr. Caleb Bell (https://github.com/CalebBell) who wrote the python libraries used for this feature.
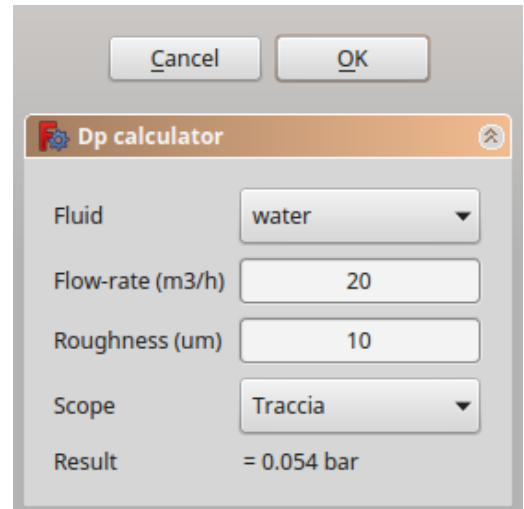
QUICK PYPEs JOIN

Also I'd like to thank Mr. Krenzler (https://github.com/rkrenzler) who started a new workbench to create pipe fittings in FreeCAD.

This workbench has the ability to create piping parts that are compatible with those used in flamingo; therefore any tool that apply in flamingo can be used also for the parts of OSE-piping-workbench.

To test this, in flamingo you can find a new tool to join quickly piping parts created with both workbenches. In the example shown at side, the OSE parts are linked with flamingo's pypes using this tool:
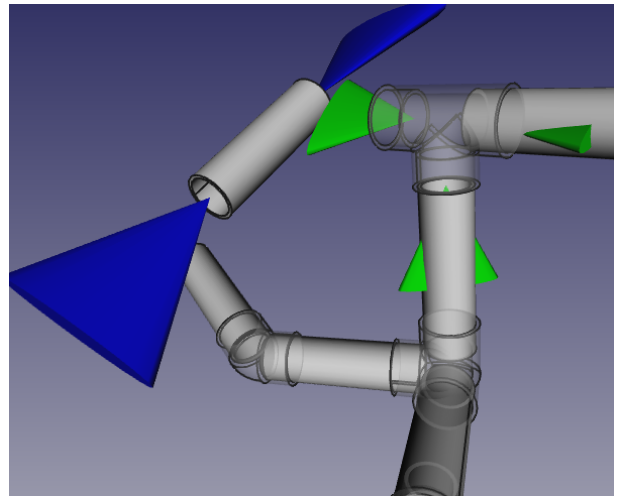
1) Select the target object
2) select the target port (green arrows)
3) select the part to move
4) select the port to join (blue arrows)
5) return to point 2) and select a new part and ports or press 'ESC'

BTW: in this folder ther is a little cheat-sheet that explains how to create new FeaturePython that can be compatible with the tools of flamingo.