

MultiPipe GH component

Usage notes

Inputs:

Curves -

The centre curves the pipes will be built around. These can be lines, polylines and smooth curves. Smooth curves get discretized according to the *KinkAngle* setting. Any duplicate segments are automatically removed.

NodeSize-

This is the main way of controlling the approximate radius of the resulting pipes.

If a single value is provided here, it is used for the whole shape.

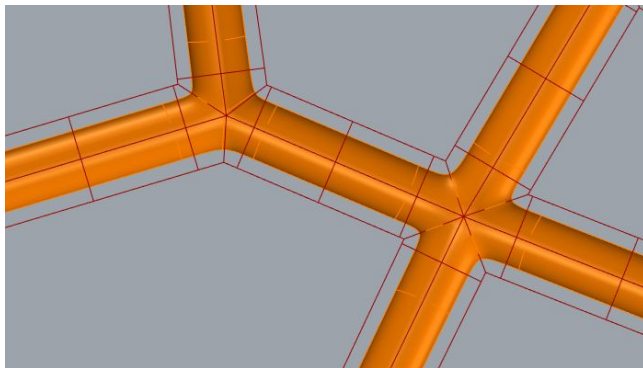
SizePoints-

If you want to make a pipe which varies in thickness according to location, you can set sizes at a few points and these will be interpolated across the shape. Each SizePoint location should correspond to a value in NodeSize.

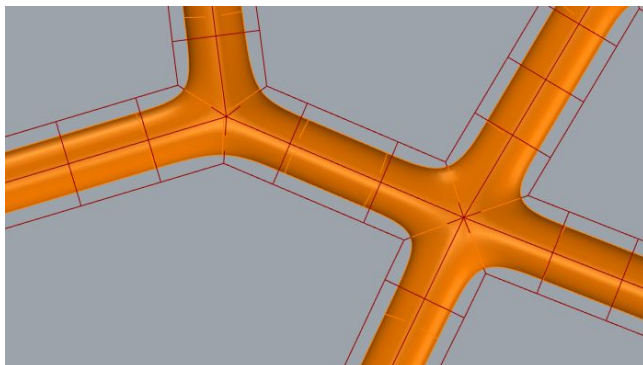
EndOffset -

This controls the distance of the first edge loop away from each node. Lower values result in a tighter shape, closer to a union of cylinders while higher values give the nodes a more smoothed out shape.

EndOffset=0.1

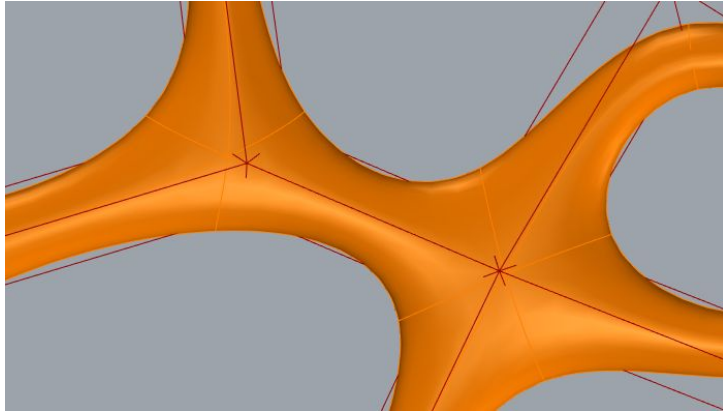


EndOffset=1.5



This setting acts as a multiplier of the local node size.

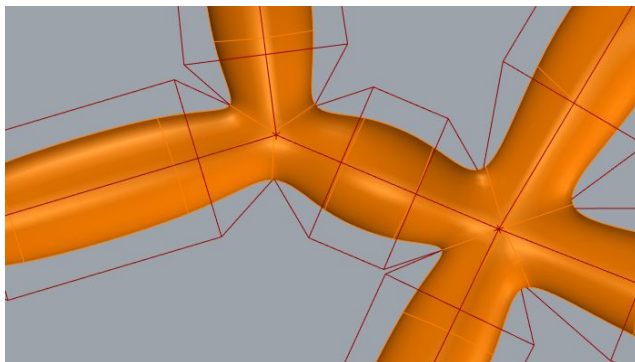
Setting EndOffset to 0 gives the special behaviour of connecting the nodes directly, without any intermediate edge loops at all, for smooth organic shapes.



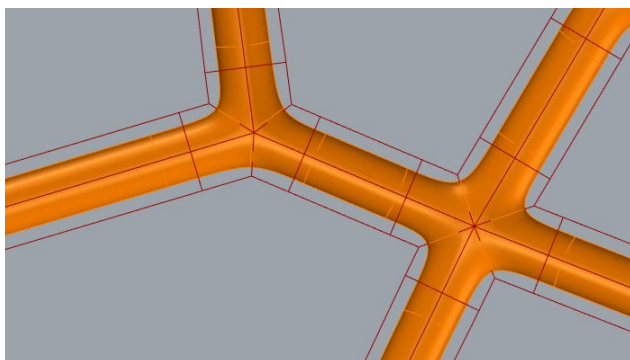
StrutSize -

This controls the size of the struts between the nodes. It is not an absolute value, but a multiplier for the node size. A value of less than 1 will give struts which taper between nodes, while values above 1 give struts which bulge.

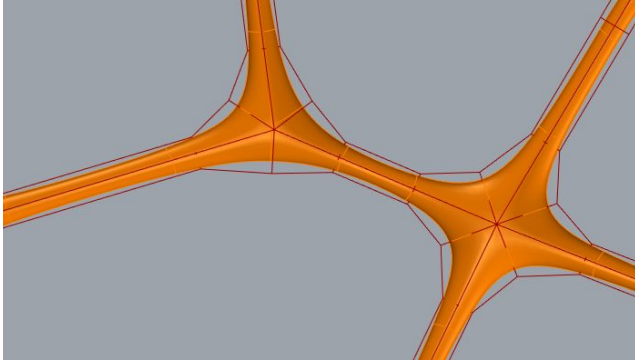
StrutSize=2



StrutSize=1(default)



StrutSize=0.4



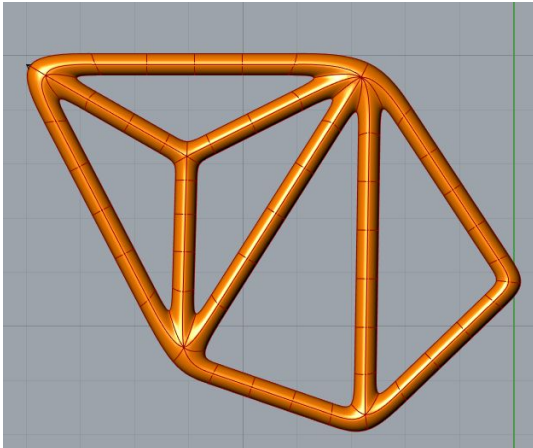
Segment -

The approximate spacing of edge loops dividing each strut along its length.

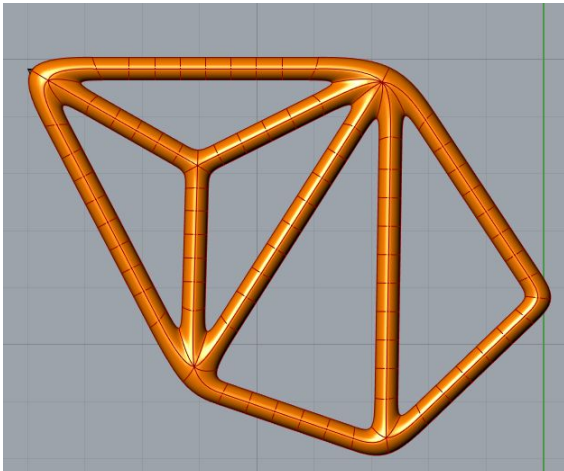
These edge loops do not significantly affect the shape of the surface, but can be useful for further editing of the result.

If this is set to 0 (the default), no additional edge loops are added between the start and end offset loop.

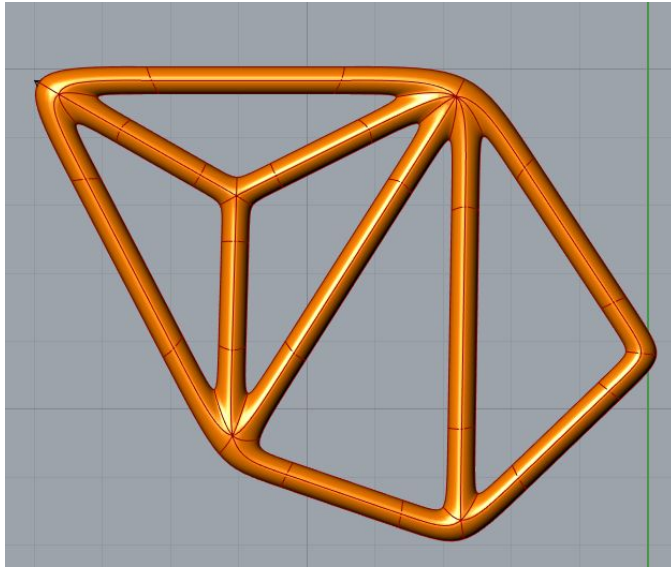
segment=1:



segment=0.5:

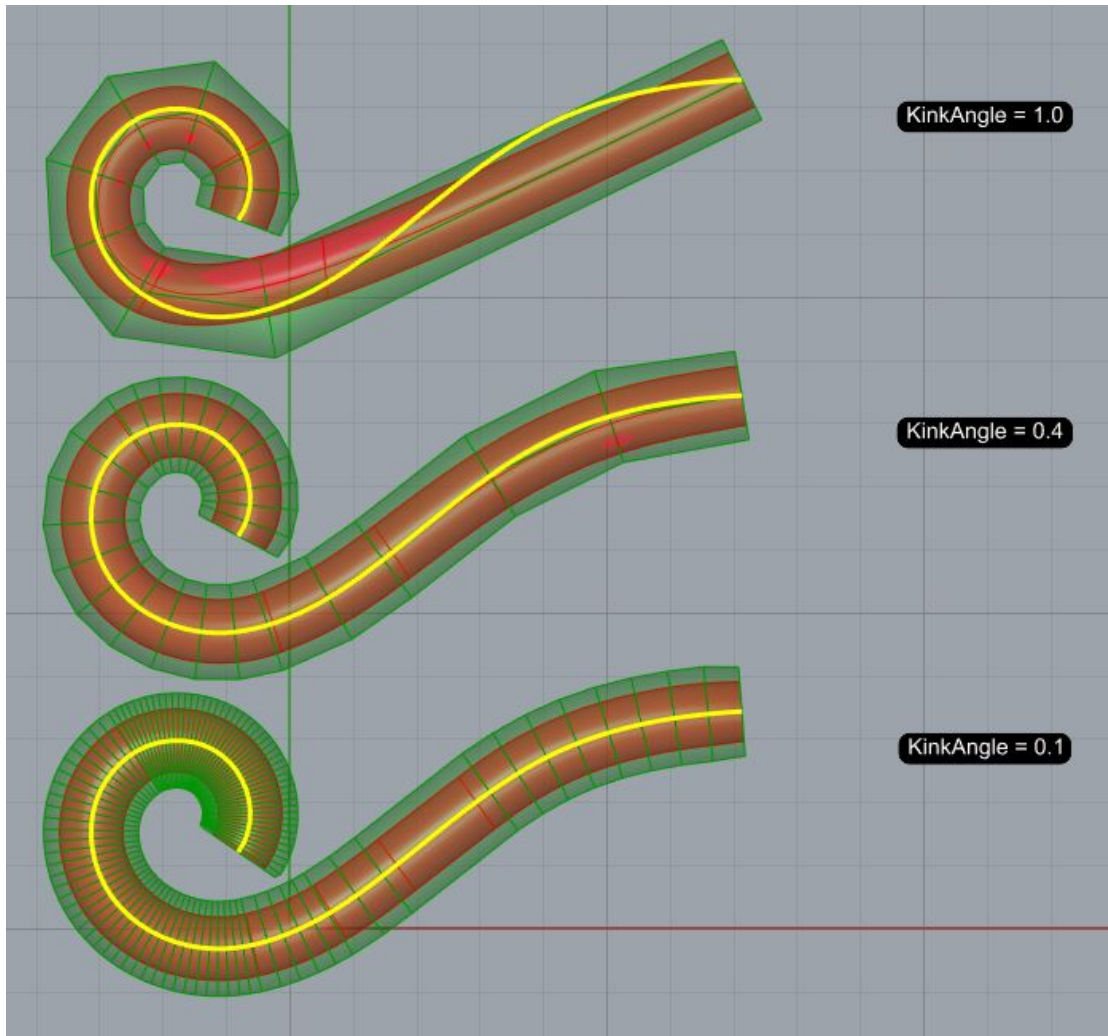


segment=0 (default):



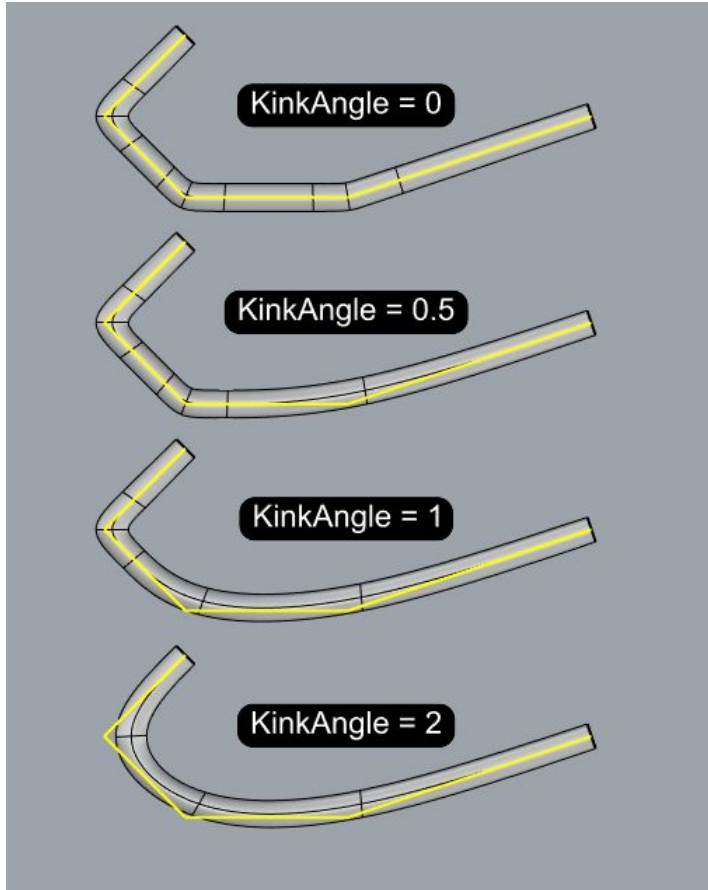
(note that each strut still has one edge loop at the start and end, its distance from the node controlled by the Offset setting, but when segment=0, no additional loops are added between these)

KinkAngle -



When the input includes smooth curves, they are discretized into straight segments. KinkAngle controls the maximum angle in radians between consecutive segments (smaller values result in more segments and a closer fit).

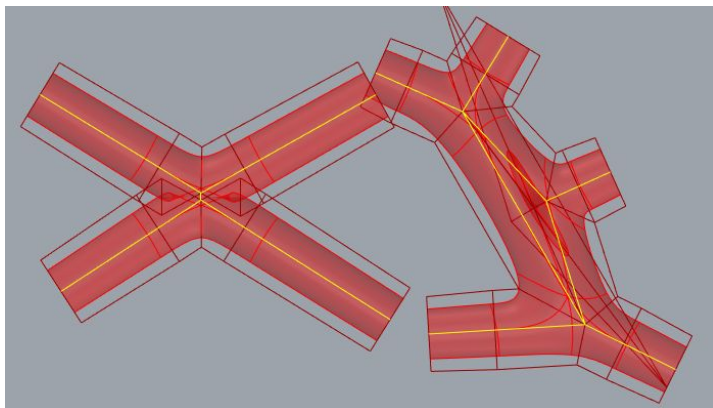
For polyline inputs, KinkAngle also controls the threshold for what is considered a corner node, which affects whether offset loops are added there:



CubeFit - For more orthogonal structures, it is sometimes desirable for the nodes to have a cube-like face arrangement. This setting controls the threshold for when to try and fit a cube at a node as a value between 0 and 1, where 0 = never, and 1=always, depending on how close to orthogonal its connected lines are.

Other notes:

Segments which are very short in relation to the local node size, or very sharp angles can give self-intersecting results.



Possible future improvements include better components for modifying line networks to collapse short segments/sharp angles, inclusion of faces in the input, and scripting support.