

Simulation of Piping 3D Designs Powered by Modelica

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Traditionally, piping systems have been defined in Modelica by connecting components in a model diagram. Additionally, the systems engineer must enter values for parameters such as pipes diameter and length, volume of vessels, etc. Those values are often also defined in CAD piping 3D designs, for example in CATIA by Dassault Systèmes. A more convenient definition of the piping system can be made by using the data from the CAD environment.

A tool has been developed to extract data from CATIA piping 3D designs. This information is used to generate the corresponding Modelica representation.

Methodology based on the use of Modelica extends (inheritance) is applied to add controllers and other features to the generated model for dynamic simulation. Simulation results can be visualized directly in the 3D view of the piping design.

With the proposed approach of generative Modelica representation of piping 3D designs, the collaboration between CAD designers and system engineers will become easier. The automated exchange of data improves efficiency and reduces the risk of errors.



Figure 1. Animated piping 3D design

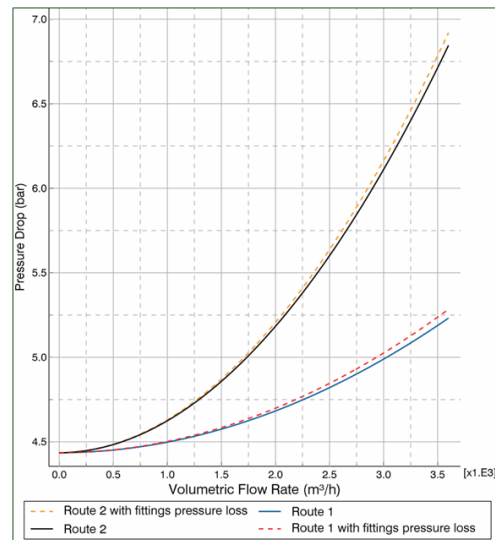


Figure 2. Computed pressure drop

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