# Computation of Water Hammers in Pipeline Systems

Problem definition

A *water hammer* (or, more generally, a *fluid hammer*) is a pressure surge or wave resulting when a fluid in motion is forced to stop or change direction suddenly (momentum change) [1]. It commonly occurs when a valve is closed suddenly at an end of a pipeline system, and a pressure wave propagates in the pipe. Computing the effects of the water hammer is an important prerequisite for dimensioning the pipes and the pipeline equipment (valves, pumps etc.).

Objective

Create a object-oriented JAVA program, which can import the pipe-network from a *.dxf-file and suggests a possible discretization of the entire network. Implement a GUI that allows the user to modify the imported pipe-network and to add the missing equipment (such as valves and pumps). Calculate the water hammer of the imported pipe-network by applying the *characteristics method*. Visualize the results.
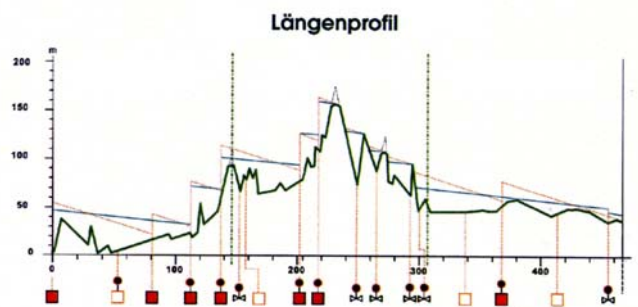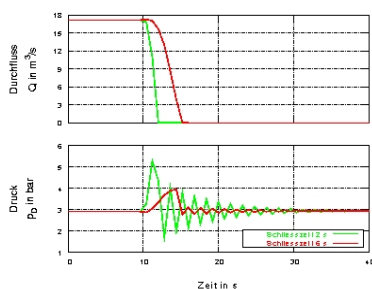
Programming Language: Java

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References

[1] http://en.wikipedia.org/wiki/Water_hammer