# Tutorial 8: Two phase flow in a pipe

# Problem Description:

A vertical tubular section is installed in a high-pressure water loop. The tube is 10.16 mm i.d. and 3.66 m long, heated uniformly over its length. Water enters the test section at 204 °C and 68.9 bar. The water flow rate is 0.108 kg/s, and a power of 100 kW is applied to the tube.

# Results

The simulation results are compared against Flownex [16], a general-purpose thermal fluid simulation software, as shown in Figure 5 and Figure 6. PINET simulation results agree with Flownex results, indicating the PINET code's two-phase flow simulation capability.

Chart, line chart

Description automatically generated

Figure 5: Pressure Profile for Problem 3.1.3

Chart, line chart

Description automatically generated

Figure 6: Volumetric Flow Rate Profile for Problem 3.1.3