FLUENT - 2D Steady Convection
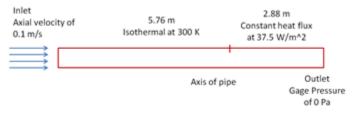
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2D Steady Convection

Created using ANSYS 13.0

Problem Specification

A fluid enters a pipe of radius 0.06 meters at a constant velocity of 0.1 m/s. The fluid has a density of 1.2 kg/m^3, a thermal conductivity of 0.02 W/mK, a specific heat of 1000 J/kgK, and a viscosity of 1.8e-5 kg/ms. The first 5.76 meters of the pipe are isothermal, held at 300 K. The remaining 2.88 meters of the pipe have a constant heat flux of 37.5 W/m^2 added at the wall.

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Using ANSYS FLUENT, simulate the above flow. Calculate and plot the velocity, temperature, pressure and Nusselt number variation in the pipe.

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