Numerical simulations of tank filling in OpenFOAM

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Abstract

This case study demonstrates the tank filling. 3D case model is made with SALOME-v9.3.2 (geometry & meshing) tool. The study is carried out using OpenFOAM-5x. The water is coming from other sources and tank is filled with desired capacity. The real application of this situation is a exapmple of day to day life for house water supply. It's purpose to describe and dealling two phase system dealing with open source CFD package OpenFOAM.

Problem Statement

Solving incompressible flow in a 3D tank (Figure 1), transient filling of a tank. Initially, it is full of air and then water is going to fill tank. In this case, two phases flow simulation approches are considered.

- Creating a 3D mesh by using Salome (Tank.unv)
- Mesh imported in to OpenFOAM (ideasUnvToFoam)
- Set boundary/initial conditions (BC/IC)
- Solver : interFoam

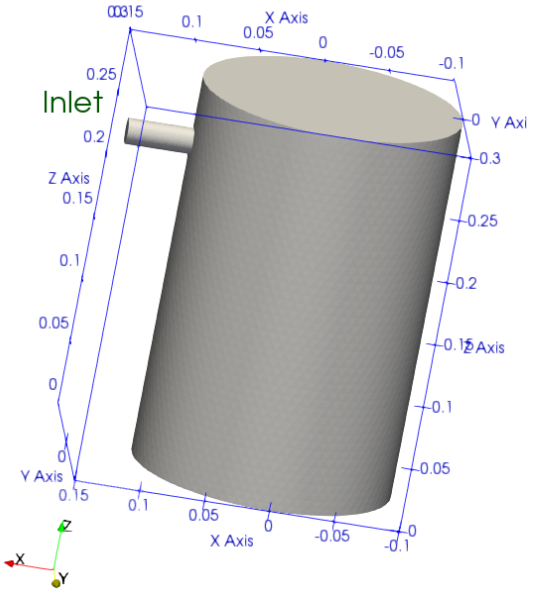

Figure 1: Tank