Numerical simulations of Sieve Plate Pulsed Column using OpenFOAM

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Abstract

This case study demonstrates the hydrodynamics of the pulse sieve plate column. The geometry (3D) and meshing of the column are created using Ansys workbench ('Design-modeler & Fluent Meshing'). The aim of this study is to investigate the hold-up distribution and velocity profile in the pulse sieve plate column. The simulations are performed using OpenFOAM-4.x. The dynamic behavior of holdup distribution is captured and the simulations results of the column are analyzed.

Problem Statement

This case study demonstrates how to do the following: To solve a transient flow using the VOF model, turbulent flow and post-processing the case for results.

- Plate spacing : 50 mm;
- Hole diameter : 4.8 mm;
- Column diameter : 50 mm;
- Plate thickness: 1 mm;
- 3D mesh imported in to OpenFOAM (fluentMeshToFoam);
- Set boundary/initial conditions (BC/IC);
- Solver - **interFoam** .

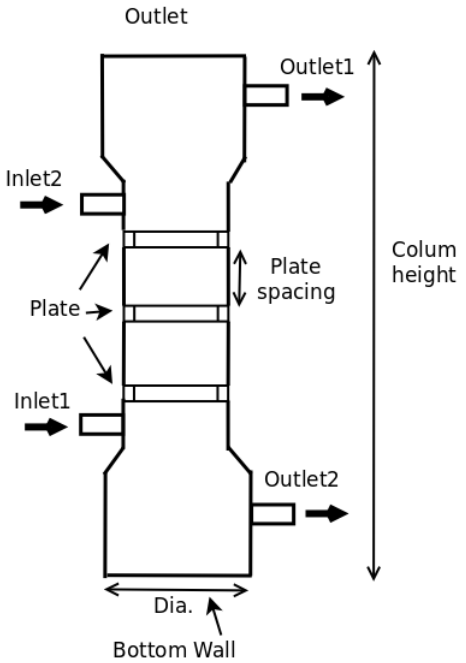

Figure 1: