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Study the Sloshing Phenomenon in the Tank Filled Partially with Liquid Using Computational Fluid Dynamics (CFD) Simulation

Authors : Amit Kumar, Jaikumar V, Pradeep AG, Shivakumar Bhavi

Abstract : Reducing sloshing is one of the major challenges in industries where transporting of liquid involved. The present study investigates the sloshing effect for different liquid levels 25%, 50%, and 75% of the tank capacity. CFD simulation for three different liquid levels has been carried out using a time-based multiphase Volume of fluid (VOF) scheme. Baffles were introduced to examine the sloshing effect inside the tank. Results were compared against the baseline case to assess the effectiveness of baffles. Maximum liquid height over the period of the simulation was considered as the parameter for measuring the sloshing effect inside the tank. It was found that the addition of baffles reduced the sloshing effect inside the tank as compared to the baseline model.

Keywords : sloshing, CFD, VOF, baffles
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