

Computational Fluid Dynamics Simulation of Gas-Liquid Phase Stirred Tank

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Abstract : A Computational Fluid Dynamics (CFD) technique has been applied to simulate the gas-liquid phase in double stirred tank of Rushton impeller. Eulerian-Eulerian model was adopted to simulate the multiphase with standard correlation of Schiller and Naumann for drag co-efficient. The turbulence was modeled by using standard k-ε turbulence model. The present CFD model predicts flow pattern, local gas hold-up, and local specific area. It also predicts local kLa (mass transfer rate) for single impeller. The predicted results were compared with experimental and CFD results of published literature. The predicted results are slightly over predicted with the experimental results; however, it is in reasonable agreement with other simulated results of published literature.

Keywords : Eulerian-Eulerian, gas-hold up, gas-liquid phase, local mass transfer rate, local specific area, Rushton Impeller

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