

TRANSPORT PHENOMENA & FLUID MECHANICS

旋流板内两相流场的CFD模拟与分析

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摘要 The flow field of gas and liquid in a $\phi 150\text{mm}$ rotating-stream-tray (RST) scrubber is simulated by using computational fluid dynamic (CFD) method. The simulation is based on the two-equation RNG $\kappa\text{-}\varepsilon$ turbulence model, Eulerian multiphase model, mad a real-shape 3D model with a huge number of meshes. The simulation results include detailed information about velocity, pressure, volume fraction and so on. Some features of the flow field are obtained: liquid is atomized in a thin annular zone; a high velocity air zone prevents water drops at the bottom from flying towards the wall; the pressure varies sharply at the end of blades and so on. The results will be helpful for structure optimization and engineering design.

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Simulation and Analysis on the Two-Phase Flow Fields in a Rotating-Stream-Tray Absorber by Using Computational Fluid Dynamics

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Abstract The flow field of gas and liquid in a $\phi 150\text{mm}$ rotating-stream-tray (RST) scrubber is simulated by using computational fluid dynamic (CFD) method. The simulation is based on the two-equation RNG $\kappa\text{-}\varepsilon$ turbulence model, Eulerian multiphase model, mad a real-shape 3D model with a huge number of meshes. The simulation results include detailed information about velocity, pressure, volume fraction and so on. Some features of the flow field are obtained: liquid is atomized in a thin annular zone; a high velocity air zone prevents water drops at the bottom from flying towards the wall; the pressure varies sharply at the end of blades and so on. The results will be helpful for structure optimization and engineering design.

Key words [rotating-stream-tray](#); [two-phase flow field](#); [simulation](#); [computational fluid dynamics](#)

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