

CFD study of gas–solid flow in fluidized bed catalyst regenerator

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A computational fluid dynamics (CFD) model including combustion and heat transfer was developed for fluidized bed in the regenerator. The modified Eulerian–Lagrangian approach was also applied to simulate the discontinuous phase dominant multiphase flow. The model was implemented to analyze various design modifications of regenerator aimed specifically at adjusting gas phase followed by combustion area in the vessel. The final design was determined that gives significantly better temperature distribution, and hence dramatically decreasing in ratio of over-regenerated catalyst caused by combustion reaction.