CFD Modeling of Gas-Solid Flow in a Fluidized Bed Reactor

강민규, 서명원[1], 김우현, 박선원[*]
KAIST; [1]한국에너지기술연구원
(swpark@kaist.ac.kr[*])

Hydrodynamic characteristics in a gas-solid fluidized bed reactor (FBR), e.g. pressure profile, gas/solid velocities, bubble generation, etc., greatly influences reactor performance. Thus, it is important to predict the hydrodynamic characteristics under different operating conditions. However, the installment of devices for observing the inside of the reactor is generally limited in actual reactors. To overcome the limitation, in this study, the computational fluid dynamics (CFD) model has been developed to predict and investigate the various fluid dynamic behaviors of the gas-solid flow in a FBR. The developed model employs the multiphase Eulerian model to describe the gas-solid flow and the simulations of the developed model have been carried out using FLUENT, a commercial CFD software. The model is found to be useful for determining appropriate operating conditions for the stable operation of the reactor.