

CFD simulation of solid and gas flows in a semi-dual fluidized bed gasifier

Ngo Ich Son, 임영일*, Thanh D.B. Nguyen, 이은도¹,
송병호²

환경대학교; ¹생산기술연구원; ²군산대학교
(limyi@hknu.ac.kr*)

The hydrodynamic behaviors of the solid-gas flow inside a semi-dual fluidized bed (sDFB) gasifier were investigated using a computational fluid dynamics (CFD) method. A two-dimensional (2D) Eulerian-Eulerian multiphase model incorporated with kinetic theory of solid particles has been used to compute the unsteady flow of the solid-gas mixture. The model was solved using a commercial CFD code (Fluent, USA).

On the basis of the simulation results, hydrodynamics of the two-phase flow and the distribution of the bed materials inside the gasifier were examined. The effects of operating conditions on the internal and external circulation rates of bed material were then discussed.