

A CPFD analysis of flow pattern under air and O₂/CO₂ mixture as a fluidizing gas in a Circulating Fluidized Bed Reactor

Mukesh Upadhyay, 최항석[†], 박훈채, 장하나, 서용칠

Yonsei University

(hs.choi@yonsei.ac.kr[†])

In this study, cold mode experiment have been performed in a Circulating Fluidized Bed (CFB) reactor with air and O₂/CO₂ mixture were used as fluidizing gas. Firstly, the CPFD simulations result were compared with experimental measurements of air and O₂/CO₂ mixture cases. The main objective of work is to evaluate pressure fluctuations along the height of the riser and their power spectral densities (PSD) using Fast Fourier Transform (FFT) analysis. Spectral analysis shows different patterns along the height of riser depending on flow structure. The results also show unique characteristics under difference air and O₂/CO₂ mixed cases in the bottom and the upper section of the riser. This work present CPFD as a useful tool to study hydrodynamic behavior in O₂/CO₂ condition.