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Cold Model Experimental Research on Particle Velocity Distribution in Gas-Solid Circulating Fluidized Bed for Methanol-To-Olefins Process

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Abstract : Radial profiles of particle velocities were investigated in a 6.1 m tall methanol-to-olefins cold model experimental device using a TSI laser Doppler velocimeter. The measurement of axial levels was conducted in the full developed region. The effect of axial level on flow development was not obvious under the same operating condition. Superficial gas velocity and solid circulating rate had significant influence on particle velocity in the center region of the riser. Besides, comparisons between upward, downward and average particle velocity were conducted. The average particle velocity was close to upward velocity and higher than downward velocity in radial locations except the wall region of riser.

Keywords : circulating fluidized bed, laser doppler velocimeter, particle velocity, radial profile
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