

Effect of pressure on riser pressure drop and solid circulation rate

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A hydrodynamic study was conducted at high pressure to investigate the gas-solid flow behaviors in circulating fluidized bed, whose riser is 0.025 m-ID and 2.75 m-high. Experiments were carried out at different pressures (1 to 5 bar) and different standard state superficial gas velocities (150-400 cm/s). Geldart group A, B particles (Glass beads and FCC) of range 21 to 133 micron in diameter, density 2440 to 2498 kg/m³ and transport velocities 56 to 130 cm/s were used. Information on riser pressure drop, axial solid holdup, solid flow rate were systematically investigated at elevated pressures. Effect of riser and loop seal aeration on solid flow rate at high pressure was also studied.