Loop seal operation of a circulating fluidized bed at elevated pressure

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A hydrodynamic study was conducted at high pressure to investigate the loop seal operation, it's calibration and gas-solid flow behaviors in a 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 diameter, density 2440 to 2498 kg/m^3 and transport velocities 56 to 130 cm/s were used. Loop seal was calibrated at different pressure for different riser velocities. Effect of riser and loop seal aeration on solid flow rate at high pressure was also studied.