

Relationship between solid flow rate and riser pressure drop in high pressure circulating fluidized bed

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A study was conducted at high pressure system to identify a method to predict solid flow rate from riser pressure drop in a circulating fluidized bed, whose riser is 0.025m-ID and 2.75m-high. Experiments were carried out at different pressures (1 to 5 bar) and different standard state superficial gas velocities (150–400 cm/s. Glass beads and spent FCC having 54.5 and 92 μm specific surface mean diameter, 2440 and 2250 kg/m^3 density respectively were used. Information on riser pressure drop, 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. An equation was developed to predict solid circulation rate at high pressure conditions, from riser pressure drop.