Pressure effects on the hydrodynamic behavior of gas-solid fluidized beds

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An experimental study on the hydrodynamic characteristics of a gas-solid fluidized bed was carried out at operating pressures from atmosphere to 4 bars with Geldart group B particles in a pressurized fluidized bed, which consists of three sections: (a) bed section, (b) conical closure section and (c) diffusion section. The effects of the fluidizing velocity and the operating pressure on the axial solid-holdup were studied. The experimental results showed that the solid-holdup in the dense region increases with increase of the total solid inventory, decreases with increase of fluidizing velocity or the operating pressure, but there was no significant effect of pressure on the minimum fluidization velocity in this operating range. The axial profiles of solids holdup at high pressure similar to those at atmospheric pressure.