

## Gas Bypassing Fraction and Solid Circulation Rate in a Square Internally Circulating Fluidized Bed

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The square internally circulating fluidized bed has been developed because it is easy to modularize for scale-up. The effects of inlet gas velocities on the solid circulation rate and gas bypassing fraction between draft tube and annulus sections have been determined in the square internally circulating fluidized bed (0.28 m i.d.  $\times$  2.6 m high) with an orifice-type draft tube (0.1 m i.d.  $\times$  0.9 m high). At fixed aeration to the annulus, the solid circulation rate increases with increasing the inlet gas velocity to the draft tube. At fixed aeration to the draft tube, the solid circulation rate increases with increasing the inlet gas velocity to the annulus. At fixed aeration to the annulus, the gas bypassing fraction from the draft tube to the annulus decreases a little, whereas the gas bypassing fraction from the annulus to the draft tube increases with increasing the inlet gas velocity to the draft tube. At fixed aeration to the draft tube, the gas bypassing fractions from the draft tube to the annulus, and from the annulus to the draft tube are almost constant with increasing the inlet gas velocity to the annulus.