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Characterization of gas–solid fluidization in fluidized beds with different particle size distributions by analyzing pressure fluctuations in wind caps

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Abstract: For the operation of a fluidized bed, solid particle size distribution is related to fluid dynamic behaviors, heat transfer efficiency, combustion efficiency, and desulfurization performance. Measurement of pressure fluctuations has a great advantage for detecting fluidization and combustion conditions, due to its flexible adaption to any operating conditions. In this study, the measurement and analysis of pressure fluctuations in the inlet of a wind cap of fluidized beds were carried out, to investigate the effects of particle size distribution on the gas–solid fluidization behaviors. Pressure fluctuations in the inlet of central wind cap were measured at different primary air velocities in cold circulating fluidized beds with different particle size distributions. In order to obtain the corresponding characteristic parameters, pressure fluctuations were

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