121f Particle Size Monitoring in a Fluidized Bed Using Pressure Fluctuations

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The amplitude of the pressure fluctuations in a fluidized bed is largely determined by the difference between the superficial velocity and the minimum fluidizing velocity of the particles. Since minimum fluidizing velocity varies with mean particle size, it follows that, for defined conditions, the magnitude of the pressure fluctuations can be expected to be a function of mean particle size, and potentially be used to monitor particle size in a process environment. Earlier experimental work with mixtures of silica sand showed that there was good correlation between the standard deviation of the pressure fluctuations and mean particle size (Davies, C. E. and Fenton, K. IPENZ Transactions, Vol. 24, No. 1/EMCh, 1997). However, the trends seen in the experimental results also depended on the base mixtures used; these differed in mean size and also in size distribution. In this paper we discuss factors contributing to the observed trends, and extend the analysis used to quantify them.