

MIXING OF FUEL PARTICLES IN A FLUIDISED BED OF SAND

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Abstract

The mixing of rice hulls and lignite particles in a shallow fluidised bed of sand has been studied. The experiments were carried out at room temperature in a $2.4 \times 1.2 \text{ m}^2$ fluidised sand bed having sparged tubes as the air distributor. Two sizes of sand with static bed height of 0.3 m were used. A layer of fuel particles (0.4×0.6 , 1% of bed weight) was placed on the bed surface adjacent to the 1.2 m wall. After air introduction, concentration profiles of fuel in the upper and lower sections of the bed were determined as a function of time by direct sampling. The results showed that the completely mixed state of fuel particles within the bed was obtained in about 7-12 minutes depending on superficial velocity of fluidising air. The fuel types have insignificant effect on the mixing time. The effective dispersion coefficient of fuel particles in the bed, which can be used in designing the fuel feeding system for a fluidised bed combustor, were also estimated.