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Characteristics on air flow distribution via spiral blade distributor in a swirling fluidized bed

Abstract

Swirling Fluidized Bed (SFB) is a new method which is very useful in drying process especially in mineral processing. By designing the annular blade distributor inclined, the gas will pass through the distributor, then certainly achieve suitable performance in term of fluidization. Numerical simulation such as Computational Fluid Dynamics (CFD) has been widely used to investigate the parameters that influence the system itself. The current study focused on the spiral blade distributor with various pitch length (60mm, 80mm, and 100mm), and various horizontal inclination angle (0°, 12° and 15°). The CFD is used to compute and btain the velocity distribution data, as well as tangential velocity. The uniformity of tangential velocity distribution are the crucial investigation as this will be used to determine the optimum SFB systems. Effect of low blades inclination angle (0°) and low pitch length (60mm) has showed the most significant finding in this study.