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# Experimental, Computational Fluid Dynamics and Theoretical Study of Cyclone Performance Based on Inlet Velocity and Particle Loading Rate

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**Abstract :** This paper describes experimental, Computational Fluid Dynamics (CFD) and theoretical analysis of a cyclone performance, operated 1.0 g/m3 solid loading rate, at two different inlet velocities (5 m/s and 10 m/s). Comparing experimental results with theoretical and CFD simulation results, it is pronounced that the influence of solid in processing flow is significant than expected. Experimental studies based on gas- solid flows of cyclone separators are complicated as they required advanced sensitive measuring techniques, especially flow characteristics. Thus, CFD modelling and theoretical analysis are economical in analyzing cyclone separator performance but detailed clarifications of the application of these in cyclone separator performance evaluation is not yet discussed. The present study shows the limitations of influencing parameters of CFD and theoretical considerations, comparing experimental results and flow characteristics from CFD modelling.

**Keywords :** cyclone performance, inlet velocity, pressure drop, solid loading rate
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