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Effects of gas leakage on the separation performance of a cyclone. Part 1: Experimental investigation

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Highlights

- Experiments were carried out in a cold model of a cyclone.
- Gas leakage fraction less than 8% didn't affect the pressure drop over a cyclone.
- Gas leakage fraction above 4% decreased the separation efficiency of a cyclone.
- Gas leakage worsen the separation efficiency on fine particles less than 200 μm .

Abstract

This paper, first of a two-paper series, analyzes the experimental results in order to clarify the effects of gas leakage on the separation performance of a cyclone. Experiments were carried out in a cold model of a cyclone. Varied parameters were inlet gas velocity, inlet solid concentration and gas leakage velocity. In the experimental range, the pressure drops over a cyclone showed small variation with the increase of gas leakage velocity. When the gas leakage fraction exceeded 4%, experiments showed that the separation performance deteriorated significantly. Gas leakage re-

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