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A novel gas-solids separator scheme of coupling cyclone with circulating granular bed filter (C-CGBF)

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Highlights

- A novel coupling cyclone with circulating granular bed filter (C-CGBF) was proposed
- Under the moving bed regime, the pressure drop tended to assume a steady state
- The pressure drop and collection efficiency increased with inlet dust concentrations
- The collection efficiency declined if the inlet gas flow rate increased
- The contribution ratios of the cyclone shell were generally around 80%

Abstract

A novel gas-solids separator scheme of coupling cyclone with circulating granular bed filter (C-CGBF) was proposed. The influences of the operating regimes, the inlet dust concentrations and the inlet gas flow rates on the scheme were investigated in a pilot-scale cold-model experimental apparatus. The pressure drop and the collection efficiency were measured and analyzed. It was shown that, differing from that under the fixed bed (FB) operating regime, the pressure drop tended to assume a steady state after an increasing period under the moving bed (MB). Experiments under the MB revealed that stable/high collection efficiency,

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