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Impact of drain rate on density and level control in dense medium CYCLONE circuits

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ABSTRACT

This paper describes the impact that variable drain rate on the primary side of drain and rinse screens has on density and level control, in dense medium cyclone circuits in coal preparation.

In dense medium circuits in use in coal preparation, most density and level control strategies have been designed on the basis that 90% to 95% of the medium associated with the product and reject coal will be recycled to correct medium. The remaining 5% to 10% of medium (apart from small losses) is subjected to rinsing in the dilute circuit, before returning to the system as over dense medium following concentration in magnetic separators.

This paper compares the impact of variable drain rate on density and level control in the two most common density control systems employed in coal preparation, namely the Dutch State Mines (DSM) system developed many decades ago, and the more common, rising density system which introduces make up water to control density. The impact of retrofitting banana screens into the DSM configuration is also discussed, showing an upgrade of the complete medium circuitry should be considered to take full advantage of the benefits offered by banana screens.

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Reference:

Leach, K., & Meyers, A. (2000). Impact of Drain Rate on Density and Level Control in Dense Medium Cyclone Circuits. *Proceedings of the Eighth Australian Coal Preparation Conference. Paper B.3*, pp. 88-96. Port Stephens: Australian Coal Preparation Society.