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FACTORS EFFECTING DRAINAGE RATES OF BANANA SCREENS IN DRAIN AND RINSE APPLICATIONS

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ABSTRACT

Recent seminars and informal meetings of coal preparation personnel have shown there are mixed opinions on the merits of banana screens used in drain and rinse applications in dense medium circuits, particularly where the desliming screen cut is at or near 0.5 wedge wire (WW) aperture.

Banana screens have been found in a number of instances to provide increased screening capacity per plant footprint area compared to combination sieve bend / low head screens. However, the merits of either screen type in terms of their efficiency in drain and rinse applications are not widely known, as the minimum particle size in the circuit changes. The impact of drain and rinse efficiency on plant operations is critical. A preparation plant designed to operate efficiently with 95% of medium reporting to the drain side of product and reject screens, will require a dilute medium circuit of significantly increased capacity if the drain function reduces to 90%. Associated medium recovery and correct density control issues may suffer. Visually, a reduction from 95% to 90% drain may not be noticed but its impact on the dilute medium circuit and over dense medium demand is significant.

This paper reports on the findings of ACARP Project C7048 – “Performance of Banana Screens in Drain and Rinse Applications” and subsequent ACARP project works being completed by CSIRO in their pilot plant facility. The primary focus of this paper is to deliver to the industry the preliminary outcomes of these works in the form of ‘Factors Effecting’ drainage rates as determined by testing at several sites, as well as initial work completed at the CSIRO pilot plant facility. The factors including screen aperture size, available and actual open area and particle residence time will be discussed in this paper. Aspects relating to the accuracy of site determined data, data evaluation and mass balancing difficulties will be highlighted. A design review summary and details of further project work are also described.

Reference:

Meyers, A., Edward, D., Clarkson, C., B.A. F., & Leach, K. (2000). Factors Effecting Drainage Rates of Banana Screens in Drain and Rinse Application. *Proceedings of the Eighth Australian Coal Preparation Conference* (pp. 60-74). Port Stephens : ACPS.