SYMPOSIUM PAPER

FINES CIRCUIT OPTIMISATION CASE STUDY – OAKY CREEK COAL

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ABSTRACT

Recent metallurgical work has been undertaken in the Oaky Creek Coal Handling and Preparation Plant (CHPP) to improve fine coal circuit performance. The staged approached has realised significant yield and quality improvements and has resulted in approved capital for a complete fines circuit upgrade.

Various circuit upgrades in the past have resulted in compromised metallurgical performance which have impacted on plant yield and operability. The methodology employed to assess and rectify the circuit began with an initial assessment of whole-of-plant performance. This was achieved by comparing actual in-plant performance to the simulated yield of the plant feed washability. The performance comparison highlighted the under performing fines circuit which was then audited in detail. The audit data was assessed and significant metallurgical issues were identified. A model of the plant was developed where a range of feed rate and feed type scenarios were investigated. Applying the model, the feed conditions to each unit process were able to be optimised, highlighting a series of design improvements which were included in a conceptual design. This formed the basis of the information used for application for the proposed upgrade expenditure.

By utilising sound metallurgical design principles, the discussed investigation and optimisation approach represents a technically robust methodology that can apply to any process plant improvement study. It provides the required circuit data to enable informed decisions to be made without reliance on anecdotal or "gut feel" information. To attempt to shortcut this process can lead to inadequate designs, which may only be realised following implementation. This can have a significant effect on the realised return from both small and large capital projects.

Reference:
Mercuri, F. (2005). Fines Circuit Optimisation Case Study - Oaky Creek Coal. *The Eleventh Annual Central Queensland Symposium*. Emerald: ACPS.