

## **PUBLISHED PAPER**

# **RECIRCULATING LOAD IMPACTS ON METALLURGICAL EFFICIENCY AND PRODUCT QUALITY**

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### **ABSTRACT**

In response to client pressures and industry financial pressures, plant designers routinely seek to reduce project costs for new plants and upgrades to maintain their market competitiveness. To meet these challenges, some recently installed circuits have incorporated substitutions of clarified water streams with dilute slurry and other recirculating loads that reduce the metallurgical efficiency of the installation. Capital expenditure savings with the design of such circuits are possible but these savings need to be carefully assessed against any potential loss in product quality or yield over the duration of the project that the recirculating load may create. Similar assessments need to be made with modifications of older plants where the introduction of a recirculating load can occur where reductions in operating and maintenance costs are prioritised at the expense of metallurgical efficiency.

Recirculating loads are most prevalent in plant fines beneficiation circuits where the predominant numbers of non-medium carrying dilute slurries are found.

This paper will investigate the metallurgical and economic issues surrounding the majority of all recirculating loads that are common in coal preparation plant design today. Modelling of a DMC, spirals, tailings wash plant will be evaluated to quantify the benefits of removing or re-directing recirculating loads that decrease the metallurgical efficiency of the plant. A specific case study has been included for a North American coal type.

**METALLURGICAL  
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#### **Reference:**

Perrin, M. J., Sherritt, G., & Meyers, A. D. (2011). Recirculating Load Impacts on Metallurgical Efficiency and Product Quality. *Coal Preparation 2011*. Lexington, Kentucky USA.