Taking Back Control: The Benefits of Introducing Centralised Production Systems to Entire Brownfields Operations

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ABSTRACT

This paper examines the benefits of centralised applications to optimise production within a bulk handling supply chain and the engineering processes used to safely introduce these systems to existing iron ore mining operations, based on Programmable Logic Controllers (PLC) and Supervisory Control & Data Acquisition (SCADA) systems.

Process control systems are frequently modified to integrate new systems and advance production optimisations. New technologies often require information collated from Enterprise Resource Planning business systems or other curated process data to function. Process safety initiatives require remote operators to correctly detect, understand and respond to complicated equipment failures in a diligent and confident manner. Analytical continuous improvement and production analytics requires data to be understood in relation to the production context at a specific time – requiring reliable information about production, stock, quality levels or changes to be cross-checked and tracked through an entire supply chain.

A Manufacturing Execution System (MES), in industrial operations often named Production Sequencing, Route Sequencing or Task Management Systems, can assist to provide consistent and well-defined interfaces to existing equipment while delivering a context-driven SCADA interface for operators.

Brownfield operations built up over years and decades can develop site-specific practices and terminology, and a complicated web of inter-connected systems – limiting the improvements by project managers, site engineers and analysts. By building a MES application using PLC and SCADA based technologies familiar to site personnel it allows them to validate benefits, make modifications or confidently package changes to third parties for larger expansions.

To help operations, engineers and wider mining organisations understand the benefits of introducing a centralised production system to brownfield operations, a case study of a MES production system built on an open and accessible platform will be included.