Mining 4.0 Initiatives – A Pathway to a Smarter Mining Fleet

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ABSTRACT

A connected fleet operation is critical to the future of mining – where real-time operational data is captured and analysed to maximise uptime and identify opportunities to eliminate inefficiencies. The key to realising this vision is through a complete integration of vehicle telematics systems, sensors and decision enablers.

As we progress into a 'smarter fleet operation', a systematic approach is required to ensure good data, captured by intelligent sensors, resulting in practical outcomes and solutions driving the profitable mining operation. The commonly used terminology for a data-driven mining operation, Mining 4.0, is too broad and lacks clear guidance and a systematic approach for the industry. Often, definitions such as Big Data and Artificial Intelligence Algorithms are loosely used words to describe the application of Mining 4.0 initiatives, with no clear implementation strategy.

The short-term objective is to ensure a stable operation where the fleet operational inefficiencies are minimized through good process visibility. The longer-term objective is to link real-time fleet operational insights into the maintenance protocols to drive data based decisions for improving overall operational efficiencies.

The paper focuses on two main topics:
1. The pathways to achieving a smarter fleet operation through Mining 4.0 initiatives
2. A practical step-by-step guide to achieving a fully integrated fleet operation using the readily available technology and systems

The paper presents examples and strategy for achieving practical outcomes of Mining 4.0 initiatives. The presented examples define the methodology and approach realizing value for the underperforming fleet operations – ushering in the transformation of these mines into more efficient operations.