Monalco Mining

Problem Statement
What opportunities exist for Monalco Mining Industries **(1)** to reduce maintenance expenditures by 20% and **(2)** to create updated maintenance 'benchmarks'?

Context
Monalco Mining is a large iron ore mining company operating in Western Australia. Iron ore prices have declined sharply from $110 to $55/ton. To maintain profit, the company must decrease costs, by focusing on maintenance expenditure (breakeven at $50/ton). The ore crushers are being used more than recommended, causing 'excess wear' and, ultimately, high-cost maintenance. Management wants a reduction in maintenance spending by 20%, while upholding the OEM recommended limits of the machinery.

Key Details:
- Spending patterns for assets exhibit "HUGE discrepancies," primarily ore crushers.
- Ore Crushers are being maintained too frequently (annually vs every 3rd year), overused ('excess wear' is responsible for at least 80% of 4 our work requests), or both.
- The estimated annual maintenance expenditure is $30M for the ore crushers.
- Ore Crusher Maintenance: $30M for 2018; $45M for 2019 (forecast)

Criteria For Success
Propose and implement an optimal maintenance budget and schedule based on analysis of historical data by Jan 15, 2019. Create and implement updated maintenance threshold standards (i.e., Key indicator(s) that trigger a maintenance order).

Scope of Solution Space
Implementation will be applied at Monalco's Bass-Shingle Basin operations in Western Australia where the maintenance issue is occurring.

Constraints within solution space
"HUGE discrepancies in our Year-on-Year spending patterns" will need to be examined for anomalies in the data.
Monalco engineers must dictate "acceptable" levels of wear based on domain expertise. There is not a specific 'benchmark' for when maintenance orders are made.

Stakeholders to provide key insight

Chris Hui - Insights & Analytics - Team Lead,
Chanel Adams – Reliability Engineer,
Jonas Richards – Asset Integrity Manager,
Bruce Banner – Maintenance SME,
Jane Steere - Principal Maintenance,
Fargo Williams – Change Manager,
Tara Starr - Maintenance SME

Key data sources

1. Data Historian - tonnes of Iron Ore processed with the ore crushers
2. Ellipse - old work orders for our equipment (pre-SAP system)
3. SAP - up-to-date equipment logs and work order requests for: maintenance work for ore crushers and other equipment
4. T3000 DCS – Sends raw streaming data on vibrations, temperature, and the humidity of the ore crushed to Data Historian

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06.29.2020