Monalco Problem Statement Worksheet (Hypothesis Formation)

What opportunities exist for Monalco Mining to increase profit margins by ~20% through overall manufacturing optimization and maintenance cost reduction of its Ore crusher equipment in order to keep up with declining selling price of crushed iron ore in market?

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1 Context

Monalco Mining, a leading iron ore mining company is seeing that the recent surge in supply by increasing competition has overtaken the demand and caused the ore crusher price go down to $55/ ton. With the operating break down at $50/ ton, Management is looking for a solution to increase profit margins and handle the lower market prices by reducing annual maintenance expenditure forecasted at $45M by ~20% over the next year (2019) keeping in mind that the equipment still needs to be maintained at prescribed limit recommended by OEM.

2 Criteria for success

For Year 2019, Operations and manufacturing will be optimized to reach a goal of maintenance expenditure reduction on work orders by ~20% in order to increase profit margins, while at the same time, ensuring that quality is not compromised and excess wear is prevented i.e. equipment is not used far more than what is expected by the manufacturer.

3 Scope of solution space

CAPEX cut will be targeted at Ore crusher maintenance department which is highly inefficient and is responsible for wear and tear of 80% of the company's work requests causing a huge chunk of profit margin being eaten up

4 Constraints within solution space

Reliability engineering team follows certain standards in terms of hosting maintenance events and hence, the maintenance expenditure cut will be marked by resistance if the maintenance standards are not as per OEM limit and prescription.

5 Stakeholders to provide key insight

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

6 Key data sources

1. Data Historian – Information on # of tonnes of Iron Ore processed
2. Ellipse – Legacy data source of equipment logs and work order requests raised for maintenance orders
3. SAP – Upgraded data source where old data needs to be migrated

Additional Sources

1. T300 DCS – Sends raw streaming data of ore
2. One Crusher System – High level process map of ore crusher model working