

Monalco Mining Problem Statement [Maulik Trivedi]

Problem Statement

How can Monalco Mining reduce its operational cost by 20% in 1 year by streamlining usage and maintenance of mining assets without compromising the assets or worker safety?

Problem Context

Monalco Mining had ramped up its CAPEX expenditure when iron ores were priced at roughly \$110 per ton to meet with the market demand. However, increased market supply has put a downward pressure on the price of iron ore which is roughly averaging around \$55 per ton of iron ore. With Monalco Mining's break even at \$50 per ton of iron ore, they urgently need to reduce their operational cost to avoid any impact on business profitability.

Success Criteria

Clear set of action items to test that will reduce the Operational cost of mining assets by 20% within 1 year.

Scope for Solution Space

- Reduce Ore Crusher maintenance events.
- Rationalize ore production rate with respect to the average ore price.
- Rationalize the usage of mining assets with respect to wear.
- Repurpose/Liquidate excess assets.

Constraint for Solution Space

- Ore crushers are required to go through one maintenance event after they process 50,000 tonnes of iron ore as per OEM recommendation.
- The company needs to maintain a base level of production rate to maintain profitability.

Stakeholders

- Reliability Engineer: Chanel Adams
- Asset Integrity Manager: Jonas Richards
- Maintenance SMEs: Bruce Banner, Tara Starr
- Principal Maintenance: Jane Steere
- Change Manager: Fargo Williams
- Chief Financial Officer

Key Data Sources

Primary datasources:

- Data Historian: This dataset includes various metrics related to the ore crushers: vibrations, temperature, humidity, and quantity of iron ore processed.

- Ellipse: This data source includes the information on previous work orders that were raised for the equipment maintenances before transition to SAP.
- SAP: This is the most up-to-date source of information on the equipment logs and work order requests that have been raised for the maintenance of the ore crushers and other equipments.

Secondary datasources:

- T3000 DCS: This component streams raw data on vibrations, temperature, and humidity of the ore crushers to Data Historian.
- Ore Crusher System: This includes a high-level process map of how the Ore Crusher System works for individual ore crusher models.