

Client Reference

Mining Coal



Client Background

Our client is a respected coal processing plant situated in Mpumalanga. The plant is designed to beneficiate approximately 16 million tons of ROM coal per annum.

The coal is beneficiated through two dense medium separation circuits into "Export", "Middlings" and "Discard" product streams and coal is supplied to the local and international market.



Focused interventions do not necessarily always have to lead to complex solutions where redesign or process changes are required. Maintaining the operational environment and the asset maintenance requirements and best practices are the 'low-hanging fruits' that can easily be rectified resulting in the designed performance of the asset.

Key Challenges

- Our client experienced an increase in pump failures because of unreliable pump belt drives.
- The DMS pumps are pivotal to the operation of the DMS plant, and breakdowns on these pumps directly result in stoppage of the DMS process which in turn results in other operational issues.
- Downtime reports are managed manually and data quality and integrity had to be reviewed and corrected.
- The intervention focused on rectifying the basics by considering reinstating the basic conditions of the equipment and maintenance best practices.



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Value Add

- Root causes and contributing factors were identified. Deviation from basic maintenance requirements/practices and operational basic conditions was highlighted as the main cause of poor asset performance.
- Potential cost saving from implementing the proposed action plan is estimated at R600,000.00 in the reduction of production down time. This estimate considers a conservative reduction of 50% in unplanned production stops that are due to belt drive failures.
- The investigation and proposed solution provides the maintenance team with shared knowledge of the basic maintenance requirements, best practices, tools and basic operating conditions required for healthy and reliable pump belt drives.

Tools and Technology

- Pareto Analysis
- On Key 5
- Microsoft Excel
- Brainstorming/facilitation sessions
- Available plant and asset technical information
- Belt drives OEM standards and maintenance best practices
- Focused Improvement
- DMAIC process
- Why-Why analysis to identify the root causes and possible contributing factors
- Structured problem solving
- Analytical data analysis
- Mind-Map building software for Why-Why analysis.

Pragma Intervention

- Analysed and cleaned available plant production downtime information and asset failure history.
- Used Pareto Analysis to determine the main downtime contributing assets (pumps identified as one of the highest contributors).
- Used Pareto Analysis to pinpoint the failure types experienced the most by the pumps. (V-belt failures were identified as one of the biggest contributors.)
- Facilitated root cause analysis to identify the root causes and other contributing factors.
- Developed a detailed action plan for the implementation of the solution and relevant best practices.
- Compiled an A3 project report.

