

Client Reference

Mining | Coal

Customisation of Asset Tactics



Client Background

The specific client operates coal mines, which includes underground and opencast operations, inclusive of beneficiation plants and discard handling facilities. Coal from these operations are supplied to both Eskom power stations and export markets. The specific mine has 3 x beneficiation plants, of which one is receiving coal from their underground mine. This plant is divided into the following streams namely:

- ROM Module 1 & 2,
- Discard,
- Reclamation,
- Flotation and
- Tailings.

Typical assets in these plants include but is not limited to conveyor belts, ring-roll crushers, screens, pumps, cyclones, power reticulation etc.

Key Challenges

- High number of conveyor belts with each a different variant from the other ones.
- Standard work packages used for all the different types of belts which pose risks with regards to labour capacity planning, the accuracy of the 5 year rolling plan as well as the Opex.
- Use of standard work packages for the variants also cause a SHE risk as critical components can be missed during inspections for certain variants which could lead to dire consequences with the DMR should there be a fatality.
- Reactive maintenance makes it impossible to track changes/modifications made to equipment, resulting in inaccurate BoQs and obsolete technical data sheets.
- Most equipment is client owned but maintenance is done by a contractor which worsens the monitoring of the change management process.

Inputs to the Model

The customisation of conveyor belts required several key inputs:

- The original design technical data sheets if available
- Workshops to solicit feedback from site teams
- Life expectancy of components/maintainable items used for analysis
- Replacement value of the components.
- Manuals for any new components not part of the original design
- Labour rates estimate
- Walkabouts by site personnel to verify the accuracy of the data collected
- Meetings with GES, Foremen and Engineers



Pragma Intervention

- Collected, collated and verified data used to align the work packages for the conveyors to the as-operated models for each belt from site teams, and compare with the original technical data sheets and design intent.
- Customised plant conveyor belts for the BoQs to match the as operated belts.
- Developed tactics for maintainable items which are specific to Greenside plant.
- Developed a more efficient method to use to customise modular, high variant assets, based on Lean six sigma concepts.
- Carried out analysis to establish the difference in the total number of components for selected maintainable items which would result, if budgeted, on a standard six pulley belt vs using actual customised belts
- Established the man hours required per the client's internal staff for the standard and customised belts spread over a 52-week plan to establish weather it is currently over/under budget.
- Collected replacement values of components and life expectancy of the components.
- Did a LCCA to establish an Equivalent Annual Cost (EAC) used to assess if the 5 to 20 year plan will be accurate if the standard conveyor is used for budgeting.



Value Add

The outputs of the customisation process include:

- A more accurate budget on renewals or the long term maintenance plans.
- More accurate loading of labour
- Work packages which would give tangible evidence for audits and investigation by the DMR
- A methodology which would significantly reduce the time to customise modular, high variant assets and minimise errors.

Tools and Technology

- Rylson 8 Software (Ausenco)
- Excel modelling and analysis
- Lean/Six Sigma analyses tools