

Case Study

Mining | Coal

CNV 202 Take up Track Wheel Failure



Client Background

Coal mining operations mine and deliver coal from open cast pit to a crushing circuit. The crushing circuit reduces the overall coal size of the ROM coal so that it can be handled and processed with ease. This coal is conveyed from the ROM silo to the coal preparation plant to wash, separate and stockpile the coal in grades to transport it to the market. Conveyor 202 conveys coal from the crushing circuit to the silos, the take up trolley designed to tension the belt experienced a failure where the take up track wheel came off and resulted in a stoppage of ROM feed to the silos.



Conveyor belt out of alignment

Key Challenges

- The M12 nut keeping the track wheel in position was not specified to handle excessive force.
- The belt stretches over time and take up limits must be re-adjusted.
- The take up trolley long travel goes over limits due to the belt stretching.
- It takes 4 hours to tension and 4 hours to de-tension the belt. A total of 8 hours.



Take up trolley track wheel

“I am happy that we can reduce the time taken to tension and de-tension the conveyor belt by automating the winches. This will drastically improve the MTTR.”

Sinini Ngwenya - Senior Reliability Engineer

Signed by: Sinini Ngwenya Signed at: 2020-03-19 13:22:53 Reason: I approve this document

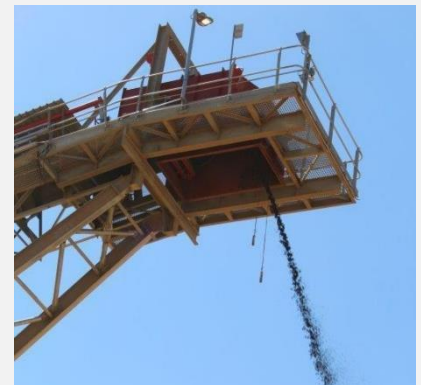
Sinini Ngwenya

19/03/20



Value add

- Eliminated stoppages due to take up limit trips.
- Improved take up trolley track wheel reliability.
- Improved conveyor 202 availability.
- Reduced production impact on Silo levels.
- Approximately R5,8 Million (\$43.00/ton of coal @ exchange rate of R15.00)



Pragma Intervention

- The Reliability Engineer facilitated the root cause analysis session.
- Engage specialist to advise on maximum stretch of the belt according to design and elasticity on load (Oriental Rubber).
- Engage specialist (Oriental Rubber) to advise on take up limit advancement when belt stretches.
- Engage Dymot Engineering to provide solution for automating the winch used to tension the conveyor.

Tools and Technology

- SAP EAMS
- MS Excel
- DMIAC problem solving methodology
- OEM specification and technical documentation.