

PUSHING BOUNDARIES

THE NEXT VISION FOR AUTOMATION



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DIGITAL TRANSFORMATION OF BELT CLEANERS ADDS PRODUCTIVITY

MARTIN ENGINEERING'S SOLUTIONS HELP REDUCE MAINTENANCE TIME FOR BELT CLEANERS THROUGH REMOTE MONITORING AND AUTOMATIC BLADE TENSIONING.

When Martin Engineering hired a team of electronic engineers at the company's Centre for Innovation in Illinois in the United States a couple of years ago, the team was asked to come up with solutions that could automatically service belt cleaners.

"We wanted to optimise the technicians' time in the field so that they wouldn't have to regularly go up and down the conveyor to inspect the belt cleaners," explains Paul Harrison, Martin Engineering's chief technology officer.

"We knew there would be huge benefits for operators if they could not only know when a cleaner needed tensioning, but also to be able to tension the cleaner remotely."

The result of the team's efforts was the N2 Twist Tensioner, an intuitive smart technology platform that can maintain proper blade-to-belt pressure without any human intervention.

In the N2 Twist Tensioner, onboard sensors inform and drive the motorised tensioner while providing performance data, allowing operators to get a clear understanding of belt cleaner performance. This data can be used to accurately estimate blade wear life and schedule replacements.

Billy Tarver, national business development manager at Martin Engineering, says the solution is

a game-changer in the industry.

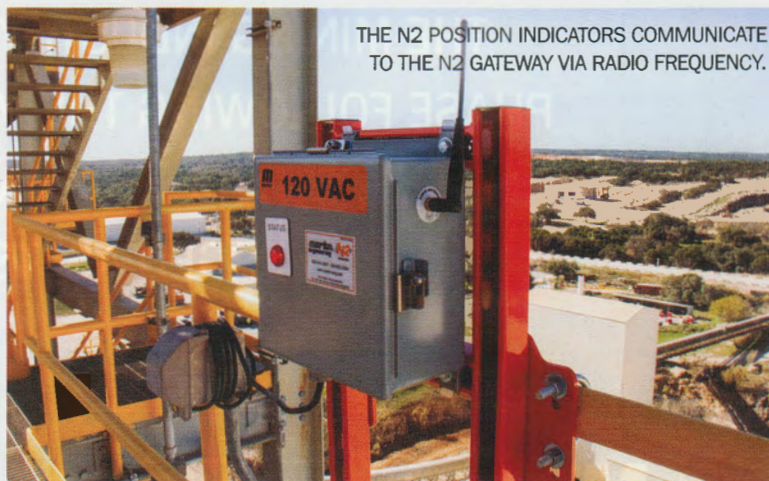
"As a salesperson with over 25 years of experience in the mining industry, it's the first time that I can go to a customer and say 'we can maximise your belt cleaner's blade life and performance at the same time,'" Tarver says.

"In underground coal mines and other mining applications where wider belts are commonly used, we can still offer solutions to apply the correct tension across the entire life of the blade."

The benefits of using an automatic blade tensioner, according to Harrison, include significant reduction in maintenance time, lower risk of human error (over/under tensioning) and reduced risks for the personnel.

"Belt cleaners are always at the end of the conveyor, so getting people to walk up and down to see what's going on with the cleaner, under hot sun or in the cold winter, poses a lot of safety-related risks. By using an automated tensioner, you are bringing the amount of personal contact with the belt down by at least three to four times," Harrison says.

"Before launching the N2 Twist Tensioner, we tested it in the field for a full year, which would mean roughly two blade changes during the period. With temperature varying drastically here in Illinois throughout the year, this test gave us fair confidence in the performance of the electronic and mechanical parts."



THE N2 POSITION INDICATORS COMMUNICATE TO THE N2 GATEWAY VIA RADIO FREQUENCY.

Remote monitoring for belt cleaners

More recently, Martin Engineering has also introduced the N2 Position Indicator, an intuitive sensor that can be mounted on the blade to monitor and report critical data to plant managers.

As Harrison explains, the device eliminates the need for manual inspections and simplifies maintenance operations by alerting operators when a blade change is required, when re-tensioning is needed, when a cleaner has been backed off the belt or when there is an abnormal condition in the cleaning system.

Martin Engineering's Position Indicators (PIs) can be mounted anywhere from three to 800 metres from the cellular gateway. The system does not require a cellular line for each PI, instead communicating via radio frequency from each sensor to the gateway.

Another advantage for mines is that the system can operate independently of any plant communications infrastructure, requiring only a 220-volt power point for the cellular gateway.

"We developed the self-contained model to minimise dependency on in-plant resources," Harrison explains. "Up to 50 units can be monitored by a single gateway connecting to the Internet, usually located at the highest point in the plant where the cell signal is strongest."

To enable customers to better interact with the data collected from

the sensors, Martin Engineering offers multiple tiers of notification and communication to customers.

"After installing either the N2 Twist Tensioner or the N2 Position Indicators, all customers can monitor the belt cleaners on their mine site using a user-friendly phone application," Harrison elaborates.

"Further, we have also developed a web-based platform through which we can push email notifications to the customer when an upset condition occurs on their site and the customer can access more extensive data.

Using this platform, information from multiple plants can be aggregated to help higher levels of management gain the insight they need."

Both the N2 Twist Tensioner and Position Indicator are expected to become available in Australia in 2021.

Harrison says Martin Engineering customers can receive support from the head office in Gold Coast, as well from the global engineering team located across 19 countries.

"We have put a lot of efforts into making our products user-friendly and easy to set-up. Where necessary, our US-based engineering team or the teams located in other countries can support customers remotely during the COVID-19 travel restrictions," he says.

"What we guarantee with our solutions is maximum cleaning efficiency and the longest efficient blade life, at reduced labour cost and reduced labour exposure to danger."



MARTIN ENGINEER'S N2 TWIST TENSIONER MAINTAINS OPTIMAL BLADE-TO-BELT PRESSURE FOR MAXIMUM CLEANING.