

Australian Mining **safer to work**

THE FIRST PRIORITY FOR AUSTRALIA'S MINING INDUSTRY

ISSUE 30 - MAR-APR 2024



Work
better, safer
and **smarter**

Keeping workers hydrated and alert



OFFICIAL MEDIA PARTNERS

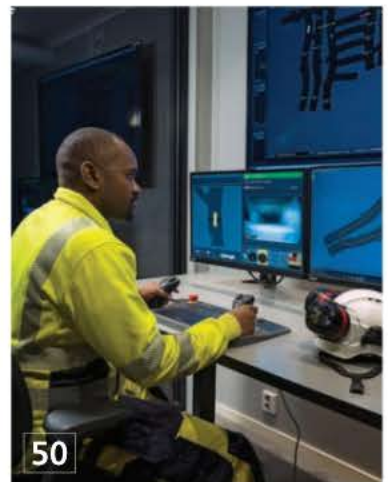


Fatigue management ▲ Working from heights ▲ Labour laws ▲ Conveyor safety

Features

10

- 8 Labour laws: What you need to know in 2024**
Safe to Work looks at the nuts and bolts of important changes to workplace legislation in 2024.
- 10 Pulling back the covers on fatigue**
Recent studies have placed a spotlight on the effects of fatigue at mine sites across the country.
- 14 PREPD for SAFETY**
Likened to an internal hard hat, SAFETY by PREPD Hydration is becoming a staple in the fight against dehydration and fatigue in the mining industry.
- 20 A beacon of safety**
HELLA's newest work lamp for mining vehicles is helping reduce operator fatigue, eye strain and safety incidents.
- 32 Balancing maintenance costs**
Martin Engineering examines the importance of cleaner monitoring and maintenance in conveyor safety.
- 38 Keeping workers safe at heights**
Falls from height are a leading cause of injury in the mining industry, but how do these risks actually come about?
- 44 Across the Pacific**
The PNG Industrial & Mining Resources Exhibition and Conference will debut under new ownership in 2024. *Safe to Work* highlights at what attendees can expect.
- 52 Game-changer in mill relining safety**
Bradken's MillSafe Solutions are keeping personnel safer during mill relining.
- 54 Keeping current with electrical safety**
The current-limiting protector from CSE Uniserve is a proven solution to a complicated problem.



Balancing maintenance costs

MARTIN ENGINEERING EXAMINES THE IMPORTANCE OF CLEANER MONITORING AND MAINTENANCE IN CONVEYOR SAFETY.

If a conveyor belt is not sufficiently cleaned, fugitive dust and material get into machinery and rolling components, raising the potential for fires.

Clearing carryback from inadequate belt cleaning can increase the chances of workers making incidental contact with a moving belt, and that is one of the main causes of conveyor belt injuries, according to WorkSafe Australia.

The need for conveyor belt cleaning is well established. Excessive fugitive material can reduce component and belt life by as much as 30 per cent, while a multiple belt cleaner system contributes less than five per cent to overall belt wear, delivering a significant benefit.

For operators who have “tried them all” and can’t find a cleaner that works, it could be that the problem isn’t the equipment, but the maintenance.

It may sound elementary, but there is a great deal of knowledge and skill required to tune a belt-cleaning system to work under varying material, environmental and belt cover conditions while still operating safely, effectively and economically.

Some manufacturers provide factory-trained direct service personnel and replacement parts, delivering expert maintenance for optimum performance and component life.



Proper matching of the blade formulation to the application is essential for optimal performance and service life.

PROPER EQUIPMENT

The number and style of belt cleaners depends on balancing many factors, the first of which is the level of cleaning. Applications like coal mining or power generation cannot tolerate much carryback because of the potential for accumulation to be the fuel in a fire.

Once the level of cleaning is established, the next task is determining the type and number of cleaners required to do the job. The trend in belt cleaning, regardless of application, is to plan for two or more cleaners per discharge (primary, secondary, tertiary).

In addition to better cleaning from multiple cleaners, there is a redundancy factor that can provide a longer service interval window. Then the tensioner and the best blade for the application are selected.

SAFETY

A trained service technician is aware of hazards involved with maintaining belt cleaners.

Having a trained provider who focuses on safety while being more productive than in-house maintenance can be a significant benefit given the importance of keeping shutdown times to a minimum.



Images: Martin Engineering

There are specialised systems for servicing belt cleaners where the belt runs 24 hours a day and cannot be shut down, but virtually all other cleaner maintenance must be performed following lockout, tagout, blockout and testout (LO/TO/BO/TO) procedures.

One primary cleaner design requires no tensioning and virtually no maintenance after initial installation. It features a matrix of tungsten carbide scrapers installed diagonally to form a three-dimensional curve around the head pulley and typically delivers up to four times the service life of urethane cleaners.

EXPERT SERVICE

Several researchers, including from the US Bureau of Mines, have established there are 'sweet spots' for cleaning pressures for different styles of belt cleaners. Outside of these ranges, the cleaning performance is



Safe inspection, tensioner adjustment and blade replacement are keys to conveyor efficiency.

lower, while the blade wear, belt wear and power consumption are higher.

Reputable manufacturers design their cleaners and tensioners to achieve optimum cleaning performance versus blade wear. It may seem counterintuitive, but if the cleaner isn't doing a good job more cleaning pressure can actually make the problem worse. Maintenance personnel must understand these

phenomena and know how and when to adjust each style of cleaner.

Some sophisticated users optimise their cleaning performance versus blade replacement costs by testing different blade materials at different cleaning pressures and changing blade materials and cleaning pressures for different seasons or run-of-mine (ROM) conditions.



Bodytrak

Bodytrak® is a smart safety solution that prevents incidents caused by **heat stress**, **fatigue** and **noise exposure** through actionable real-time data.





The Martin N2 position indicator reduces the need for regular inspection.

INSPECTION AND MONITORING

Some manufacturers offer conveyor inspections and cleaner maintenance as part of a managed service relationship.

Their monitoring systems can track component wear and update the service technician and/or operations personnel via Wi-Fi or a mobile phone on upcoming service needs.

details in their reports. Because they see so many different applications, these technicians can often alert on problems that maintenance personnel don't see or have become accustomed to ignoring.

With factory-direct managed service, the responsibility for maintenance falls on the manufacturer, allowing the staff to focus on other priorities.

factored in include the savings from avoiding injury, increased equipment availability, improved equipment life, and reductions in citations and fines.

In addition, facility managers often find that the cash flow values are surprisingly large over the life of the equipment and service relationship.

Reputable manufacturers design their cleaners and tensioners to achieve optimum cleaning performance versus blade wear. It may seem counterintuitive, but if the cleaner isn't doing a good job, more cleaning pressure can actually make the problem worse.

There are some new systems that can even adjust belt cleaner tension automatically. The technology will also send an alert through a mobile app in the event of upset conditions.

Factory-trained service technicians provide an added set of eyes on the conveyors, travelling to and from the equipment to be serviced and logging

Belt cleaner maintenance can be time-consuming and pull labour from other essential tasks, so it's especially important to choose a supplier with trained and experienced service technicians who know the equipment and safety procedures and can respond quickly to customer needs.

Automated monitoring equipment mitigates some of the issues with blade wear and provides data and alerts when blades need servicing. This can help reduce labour costs and improve safety as a result of fewer inspections and proactive maintenance.

Considering a managed service program can make safety and productivity sense and improve profitability with additional positive cash flow. **B**

RETURN ON INVESTMENT

When calculating the return on investment for professionally installing and maintaining belt cleaners, the analysis should be done over the life of the belt cleaner assembly using a net present value calculation. Other benefits that can be