



亚洲矿业

Building A Sustainable Mining Industry in Asia Pacific

www.asiaminer.com

The

ASIA Miner

Asia Pacific's bi-lingual Resource Industry Magazine 亚太双语资源产业杂志

DJAKARTA
MINING CLUB

CCI
COAL CLUB
INDONESIA

REGIONAL
TECHNICAL CONFERENCE

VOLUME 17 • ISSUE 1 • INDUSTRY TECHNICAL INFORMATION • 矿业技术信息

Exploring greener, cleaner and more 'intelligent' mining

探索更清洁，更环保，更“智能”的矿业

News from the region

地区新闻

Energy, waste & resource recovery

能源、废物和资源的回收

COAL'S

EXISTENTIAL CRISIS

煤炭的生存危机



Reducing conveyor maintenance time through better access

Conveyor systems should be designed with convenient points along the length of the belt to allow technicians to inspect its condition, perform service as needed and help prevent catastrophic failure. Unfortunately, this type of access is often overlooked when engineering conveyor systems until a pressing need arises, which increases the difficulty of ongoing inspection that could have allowed technicians to observe and service critical components before a crisis develops.

Conveyor manufacturers have responded to the need for increased accessibility to system components by developing components and accessories specially designed to reduce labour time, while improving safety during service.

Innovative equipment designs such as slide-out cradle frames, belt cleaner assemblies, idler assemblies – as well as sealed heavy-duty inspection doors – offer better access for safer and more efficient maintenance, resulting in fewer injuries, reduced labour time and a lower total cost of operation.

Daniel Marshall, Product Engineer at Martin Engineering sees this as a cascading issue.

“Insufficient access leads to poor maintenance practices, resulting in emergency outages and diminishing the operation’s productivity and safety.

From an ownership and management perspective, downtime and injuries affect profitability through loss of production, capital expenditures for new equipment and ongoing insurance implications,” explained Mr Marshall.

“In the past, managers often decided against the expense of adding safer and easier access points to a conveyor system beyond what is required by code. However, over the conveyor’s lifetime, safety professionals estimate that poor access adds as much as 65 per cent to maintenance and cleaning costs.”

According to Mr Marshall, many conveyor transfer points still have an antiquated roller system tasked with absorbing impact and centering the cargo.

“These components often break and seize, causing friction and a potential fire hazard. To replace them, several workers must remove the skirtboard and break the plane of the conveyor to reach across the stringer with heavy tools to assess and repair equipment.”

To reduce maintenance time and labour, improve safety and extend equipment life, operators should consider track-mounted impact cradles and belt support cradles. Located under the skirtboard and mounted with rugged steel assemblies, the cradles feature large impact absorbing UHMW polymer ‘box bars’ engineered with smooth surfaces that the belt can slide across with little friction or belt wear.

“These assemblies can be pulled out by a single worker and – working safely from outside the conveyor and using



Martin's slider cradle and track mount

only a single tool – the box bars can be simply removed and flipped in a matter of minutes to double the service life,” added Mr Marshall.

Along the cargo path in the settling zone and beyond, retractable idlers support the belt and maintain the trough angle. Exposed to the punishing environment, gritty dust and extreme weather, rollers can seize over time. Often set closely together in the loading zone to avoid belt sag, slide-out/slide-in roller frames permit workers to perform idler service outside of the belt plane without the need to raise the belt or remove adjacent idlers.

“Wear parts such as belt cleaner blades need to be monitored, serviced or changed regularly to prevent carryback from causing dust and spillage along the belt path,” Marshall said. “However, blade adjustments and changes can require several hours of downtime.”

Primary cleaners -- located on the underside of the head pulley -- are mounted on rotating assemblies designed to retain the proper tension between the blade and the belt. Secondary cleaners are located behind the head pulley and raised slightly above the belt line for tension. Specially designed units can slide in and out by simply pulling a lever and releasing a pin. This allows blade maintenance to be performed outside of the system by a single worker in under an hour.

A tight seal is the key to preventing fugitive dust from leaving any chute. Many current setups require workers to crouch or crawl under the system or even enter a confined space to inspect it or perform maintenance, which can result in serious injuries. Inspection of the system needs to be fast, easy and safe. Small inspection doors – either solid or grated – can allow several observation points. Larger doors can offer access points with ample space for service of specific wear parts.