

The mining industry's leading magazine

Minjng Magazine



Ultra-deep mining

Frontiers under our feet

Undersea goldrush

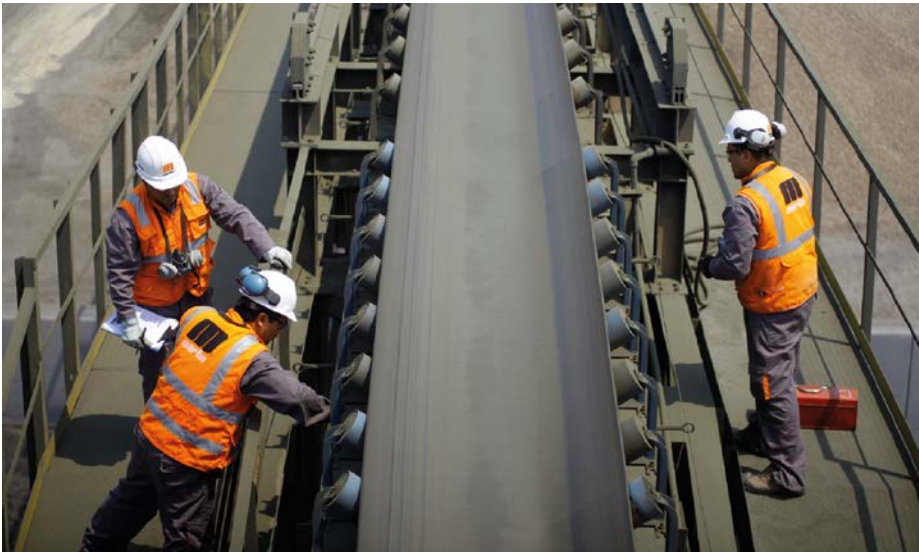
An OEM adventure

Belts and braces

Conveyor safety

Martin Engineering on the conveyor's role in 'cleaner mining'

MSHA has not eased up on its goal toward "cleaner mining" with less dust and a more worker-friendly environment, both from a health perspective and safety perspective



Dust control is key to a longer equipment life and lower cost of operation

Equipment makers say the latest advancements in sealing belt conveyor transfer points will be critical in achieving this.

Martin Engineering said its equipment works in tandem to accomplish a total solution: impact/slider cradles, tail boxes, belt alignment systems, curtains, and settling zone design. By retrofitting a total solution, operators achieve greater efficiency with less downtime, less dust, longer equipment life, and a much lower cost of operation.

Craig Guthrie, editor of *Mining Magazine* sat down with Jerad Heitzler, Training Manager at Martin Engineering, to learn more about the safety trends in the space. Heitzler is programme manager and lead instructor for Martin Engineering's FOUNDATIONS Training Workshops.

Beyond dust control, what other advancements in conveyor technology contribute to worker safety and a healthier work environment?

Worker safety is the highest priority to reputable equipment designers and manufacturers like Martin Engineering. We believe everything we bring to

market must reduce risk to personnel working around belt conveyors. In the recent past, we improved belt conveyor guarding and return roll guarding designs. Martin® Guarding is one of the most effective tactics to protect workers.

Another important innovation has been redesigning our belt scraper mounting assemblies to slide in and out, which makes changing standard polyurethane blades an external process that is easier and safer



for maintenance workers. Our N2® Position Indicator technology allows our service technicians and facility managers to monitor belt cleaner wear life and tension. This significantly reduces the time spent doing regular belt cleaner inspections and provides a more predictable service schedule.

Taking belt cleaning one step further, we introduced the high performance CleanScrape® belt cleaners that last up to four times longer than standard belt cleaners with no need for tensioning after installation calibration for the life of the blade. This limits the maintenance time, worker exposure, and the risk of injury from belt cleaner maintenance.

Q How do advancements in conveyor transfer point sealing specifically improve efficiency and reduce downtime?

Transfer point sealing is the cornerstone of any well-operating belt conveyor system. A conveyor transfer point that emits dust lowers air quality throughout the entire facility. Spillage of fines and aggregate leaking from gaps in the seal causes material to clutter walkways and limits access to the equipment. Dust can also clog machinery causing rolling components to seize and material spillage can migrate to the unprotected return side of the belt, seriously damaging it. When this happens, maintenance staff must react to remain compliant to workplace safety standards and avoid expensive unscheduled downtime. Often, reactionary maintenance results in increased labor costs for regular monitoring and cleanup, as well as expensive equipment repair and replacement, adding to the cost of operation.

Regularly exposing workers to the moving parts of a conveyor increases the risk of significant or catastrophic injury. In addition, regulatory standards around dust have become significantly more stringent in reaction to mounting scientific evidence regarding the effect of respirable particulates on workers. The US Mining

Martin® Guarding
Photo: Martin
Engineering 2024

Safety Health Administration (MSHA) has incrementally increased enforcement of personal exposure limits (PEL) for respirable crystalline silica (RCS) dust commonly found in mining operations, specifically emitted at conveyor transfer points.

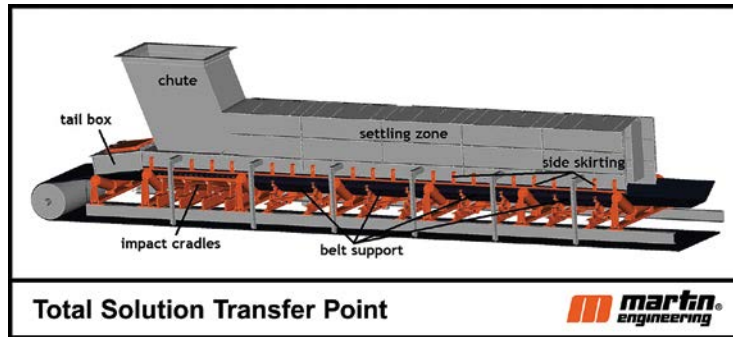
Q Can you elaborate on the concept of a “total solution” approach for conveyor systems? Why is it beneficial compared to individual component upgrades?

When conveyor experts consider a total solution, they look at all aspects that may be needed to resolve a problem and use their knowledge and skill to help the conveyor operate more efficiently. Experience helps identify the root cause of the problems, choose the correct component for the job, and recognize how one retrofitted piece of equipment can affect the performance of other components. For example, improving efficiency at the loading zone can put a greater demand on cleaners down the line at the discharge zone. Preventing dust in one area could cause more in another, thus a total solution is needed to resolve dust emissions.

Individual component upgrades are the easy way to solve a dust problem, but a piecemeal approach is rarely a long-term solution. A total solution installation includes highly skilled technicians who ensure the conveyor performs well for many years. Maintenance and service may include the need for training internal personnel or engaging in a service contract. Adding these elements into cost projections along with other financial analyses ensures the upgrade has a return on investment that reflects all aspects of the installation and operation.

Q What are some key considerations for companies looking to retrofit their existing conveyor systems with these advancements?

Eliminate instances of belt sag throughout the entire length of the skirted area along the conveyor transfer chute by either reducing the space between idlers or installing proper belt support like troughed cradles with low abrasion bars. Belting should be examined for unnecessary wear and replaced if damaged. The main causes of belt damage include mistracking, inadequate impact support, return side fouling from spillage, and splice



damage from ineffective cleaners. Since it is one of the costliest components of the conveyor system, rather than merely replacing the belt, investigate the causes of the excessive wear and install updated components designed to prevent it.

A total solution examines and mitigates the causes of belt wear and often includes Martin® Trackers™ to prevent belt drift. As I mentioned, spillage is a huge issue, so wearliners made of abrasion-resistant steel reinforce the walls of the skirtboard and protect the rubber or urethane skirt seal from premature wear. Just like skirting seals in dust emissions, wearliners protect against damaging fugitive fines and aggregate.

Q Looking ahead, what emerging technologies or trends do you see shaping the future of conveyor systems in terms of efficiency, safety, and cost-effectiveness?

Service – Many facilities are relying more and more on factory-direct service from a reputable manufacturer like Martin Engineering to perform the checks and repairs. In fact, Martin Engineering is the first manufacturer to offer factory-direct

service in North America. These trained professionals ensure safety protocols are met, keep service on a predictable schedule, and offer reports/recommendations that allow operators to better monitor performance and plan budgets. All of our services are backed by an Absolutely No Excuses Guarantee. That means, if we don't solve your problem, we will provide a different solution or fully refund your money.

Training & longer lasting components – In the field, operators are saying it is more and more difficult to attract and retain skilled conveyor technicians. This requires reskilling existing staff or training candidates to expand their core competencies. By installing longer lasting autonomous components, fewer workers require less time to maintain and service each conveyor system.

Remote monitoring – The ability to remotely monitor component performance eliminates the need for skilled inspectors and reduces worker exposure to moving conveyors. Alerts allow managers greater control over maintenance schedules and equipment replacement, lowering the cost of operation. ▼

Total Solution Transfer Point
Photo: Martin Engineering 2024

“Worker safety is the highest priority to reputable equipment designers”



Spillage between idlers
Photo: Martin Engineering 2024