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# PIT & QUARRY

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cone crusher

+++

**ROAD TO  
RECOVERY:  
REASONS FOR OPTIMISM**

**SUCCESSFUL WASH  
PLANT UPGRADES**



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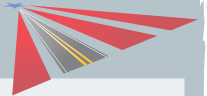
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# CONSIDERATIONS TO MAKE AROUND CONVEYORS

Manufacturers offer insights to keep employees safe around conveying and material handling equipment

BY KEVIN YANIK

**G**etting the job done at the end of the day is, of course, important. But getting the job done safely and returning every employee home is *most* important.

Everyone who's worked in and around the aggregate industry for at least a short period of time has surely heard this sentiment, and you'd be hard-pressed to find a person who disagrees with this notion in an industry that puts such a high value on safety.

Still, accidents pop up from time to time, and a number of these pertain to conveyors and the equipment supporting conveying systems.

"I believe in-house operations and maintenance personnel are well-versed in standard safety work practices," says Benjamin Brewer, plant and engineering manager at Douglas Manufacturing Co. "But few are aware of how the overall conveyor works as a system. Optimizing the conveyor system can reduce routine maintenance, cleaning and unplanned downtime, which is when the majority of safety incidents occur."

An assortment of unsafe scenarios can unfold around conveying equipment if the right precautions are not taken. But manufacturers are continuously taking measures to enhance conveyor safety with new and enhanced products, predictive maintenance solutions and routine services designed to make the quarry environment safer.



Says Eriez's Darrell Milton: "Heavy industry folks take safety very seriously. They don't want anybody injured or any black marks. I see a high degree of safety put into consideration."

## TECH CHANGING THE GAME

As Brewer describes, the IoT (Internet of Things) should greatly improve conveyor performance in the years to come while making conveying systems more safe.

"By combining sensors with computer models and eventually machine learning, computers could perform predictive maintenance and even make real-time adjustments to the system to regulate belt speed and belt tension based on product flow and/or demand," he says. "This would reduce power consumption and maximize the life of conveyor components, therefore reducing personnel exposure to the conveyor equipment."

Remote monitoring solutions are already positioning aggregate producers to operate more safely. Take a new tool monitoring belt cleaners as an example.

Martin Engineering's N2 position indicator allows for the remote monitoring of belt cleaner blades via a mobile app that details the remaining blade life and notifies when a retensioning or replacement is required. The solution eliminates the need for technicians to do manual inspections, keeping them away from conveyor belts and reducing the chance of an incident occurring.

"Walking around conveyors is unsafe," says Brad Pronschinske, global director of marketing at Martin Engineering. "The more time you're anywhere around that conveyor, the more chances you have of something falling on you or a slip or a trip. Bad things can happen."

Although belt cleaners are a somewhat simple technology, consider that some quarries have hundreds of belt cleaners in

# SAFETY CONVEYING & MATERIAL HANDLING

place across the plant. The more traditional belt cleaners are in place, the more visual inspections are needed. So the remote monitoring solution eliminates at least one scenario where a technician is needed around a conveying system.

“We designed and built a position indicator so we can service more customers and walk down that belt fewer times,” Pronschinske says. “The fewer times down the belt, the less chance of anything happening.”

Martin Engineering is taking conveying safety to the next level with its Mr. Blade service, too. The company does not vulcanize and splice belts or change idlers, for example, but it services belt cleaners to ensure the people operating around them fully understand the equipment.

“We have many Mr. Blade technicians who service and replace belt cleaner blades, walk down customer belts and identify problem areas,” Pronschinske says. “They do an 18-point inspection for every belt they walk down. In most cases, we include that in the cost of the product they buy.”

## MATERIAL SPILLAGE & GUARDING

According to Brewer, material spillage is another hazard that can cause a cascade of problems to an overall conveying system.

“Most material losses are addressed by cleaning up the loss, which causes more exposure to unsafe areas,” he says. “But the conditions that caused the losses are rarely addressed. Better belt tracking, skirtboard adjustments, belt scraper maintenance and material flow regulation – summed up as better transfer point engineering – are all areas that can reduce material spillage.”

Conveyor guarding continues to be a safety issue, as well – or at least one of the areas the Mine Safety & Health Administration (MSHA) cites on a recurring basis. Regarding the construction and maintenance of guards, MSHA found 497 violations in 2019 within sand and gravel operations as well as 463 within

stone operations.

The construction and maintenance of guards was one of the more frequently cited violations across stone, sand and gravel operations in 2019. But equipment manufacturers remain focused on guarding as a means to enhance safety.

Conveyor Components Company, for example, recently unveiled its Ready Gate, an adjustable self-closing safety gate used to protect guardrail openings more than four feet from the ground.

A lack of pull cords is another ongoing problem related to guarding – one Conveyor Components Company sales manager Rich Washkevich notes when he visits aggregate operations.

“I have been to many quarries where conveyors are running at ground level and with easy access by employees and other personnel that do not have e-stops or pull cords on them,” Washkevich says.

## ANOTHER VIEWPOINT

Darrell Milton, director of heavy industry at Eriez, agrees guarding is an issue that must be taken seriously. As his company manufactures magnet separation equipment, guarding is undoubtedly a talking point but one he sees customers taking extremely seriously.

“Where we get involved is with the magnets,” Milton says. “The biggest concern may be flying metal that’s picked up and thrown off to the side. So it’s important to guard that, but it’s something heavy industry folks take very seriously.”

The use of metal detecting systems can prevent safety issues that arise due to an unfortunate chain of events. From Milton’s view, there are two reasons producers should remove metal.

“One is to remove it from downstream equipment,” he says. “If it gets into a cone crusher that’s meant to crush rock, that can cause damage to that downstream equipment. Secondly, if you get things like rebar or angle iron, that can puncture a conveyor belt. If you puncture a conveyor belt, it can split right down

the middle and create a large slit where material can discharge. That’s a potential safety concern.”

To ensure metal detectors are working properly, Eriez recommends they be calibrated or tested regularly.

“Like any instrument, you want to make sure it’s doing what it’s meant to do,” Milton says. “Just put a piece of metal through the detector. You can send a test piece through to make sure it’s still operating as needed.”

And when the magnet is working properly, make sure it’s disposing tramp iron to a safe location such as a bin or a bunker.

## TAKEAWAYS

Although the makeup of every aggregate plant is unique, there are common approaches and solutions that producers can take to enhance employee safety around conveying systems. Bringing the right mindset to the jobsite is a good starting point.

“Safety should always be the No. 1 priority in any work environment, especially mining, cement and quarry situations,” Washkevich says. “There are so many areas that could easily cause harm to personnel in a moment’s notice.”

Those who work in the nation’s quarries are still human, though, and many have skirted a safeguard or a best practice at one time or another in the name of getting the job done faster.

“Each time we do this it actually increases our chance of harm, as it builds a false sense of safety,” Washkevich says. “Safeguards and best safety practices are set in place for the benefit and safety of all personnel, and should be followed faithfully.”

Brewer offers some parting remarks for producers, as well.

“Becoming knowledgeable about conveyor systems can help agg producers make better decisions with how they run and maintain their equipment,” he says. “This will reduce the impromptu interactions with the equipment that may lead to dangerous conditions.” P&Q