

CIMMAGAZINE

Unnecessary interruptions

Improved material handling the product of smarter modelling, design and monitoring

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The monitoring technology of the CBGuard system generates a constant video feed of a scan that penetrates the conveyor belt and notifies the operator of problems.
Courtesy of Conveyor Belt Gateway

How ore journeys from mine to mill through unglamorous bins, chutes and conveyors is no less important for improving efficiencies and productivity than the ore's highly instrumented and automated destination. Bulk material handling experts point out that as more miners invest in automation and the optimization of big-ticket equipment, it becomes more critical to pay attention to the design and maintenance of transfer and storage systems to ensure a predictable and reliable feed to the mill. There is good news, with new technologies making it possible for mining companies to monitor their equipment in real time to reduce downtime and maintenance costs. And there is also increasingly herculean computational power that is enabling a 40-year-old technique, discrete element method (DEM) analysis, to be a much faster and accurate design for both new and existing material handling systems.

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CBG Conveyor Belt Gateway in Germany is offering the CBGuard system, which monitors conveyor belts and generates a constant video feed. "At any point in time, you know exactly the condition of every component in your belt," said Bernd Küsel, the company's president.

There are two incidents in which the system will automatically stop the conveyor: if it detects that a splice is opening or the belt is being ripped. "Otherwise, whenever there is something above a certain threshold, the system will notify the user by a multimedia messaging service notification," said Küsel.

The user can then review the video and zoom in on the image of the problem area to examine a highly detailed photograph of that point.

Not only does the system eliminate the need for shutting down the belt for visual inspections – and catch all the components beneath the surface that such inspections can miss – it also means "you can let your belt run to its real limit, when the belt is genuinely worn out," said Küsel. "Many users don't realize they replace the belts much too early because they can't take any risk in something going wrong, even though the belt might be fine."

The system also stores all the scanned video data, something that appealed to one original equipment manufacturer who is using it to research patterns to improve their systems – and could potentially be employed by mining operations to do the same.

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Today's tools to improve material handling performance are more powerful than ever. However, when each way station, transfer point and conveyer along the line has its own unique constraints, one solution alone may not be enough to keep things moving smoothly. A steady flow of material is a careful blend of design and technology.