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# MOTION METRICS HAS YOU COVERED

New solutions from Motion Metrics International Corp aim to improve both safety and productivity in mining and streamline mine-to-mill operations.



Already well-known in the mining industry for their missing tooth monitoring system for shovels, Motion Metrics has now applied their expertise in image processing and sensor fusion to wheel loaders and conveyor belts with their new products: ToothMetrics™ for Loaders and BeltMetrics™. Motion Metrics has also introduced a new solution that brings vital information from their equipment monitoring systems in the field, back to the office for instant access to critical information on mine operations.

The success of the ToothMetrics™ missing tooth detection system for mining shovels brought in numerous inquiries to develop a similar solution for wheel loaders. After months of development and field trials, Motion Metrics is proud to introduce ToothMetrics™ for Loaders.

The ToothMetrics™ for Loaders system continuously monitors the condition of a loader's bucket teeth and informs the operator of possible tooth breakage incidents. The system uses three rugged cameras: a bucket camera, a front-facing camera, and a rear-facing camera. The front and rear surveillance views provide the operator with a clear view of these two critical areas around the loader, preventing fatal accidents and costly equipment damage. The bucket camera captures images of the loader teeth which are analyzed, and if a missing tooth is detected, the system provides both a visual and audible alarm to alert the operator.

Without such a system, missing teeth can go undetected and end up in the crusher. Removing a tooth, once it has made its way to the crusher, is a very dangerous procedure which can lead to fatalities and costly downtime.

The other new product, BeltMetrics™, is a revolutionary belt monitoring system capable of sensing key performance indicators such as material fragmentation (P numbers), volume flow, and mass flow, in real-time using mostly

ShovelMetrics™ for Cable Shovels

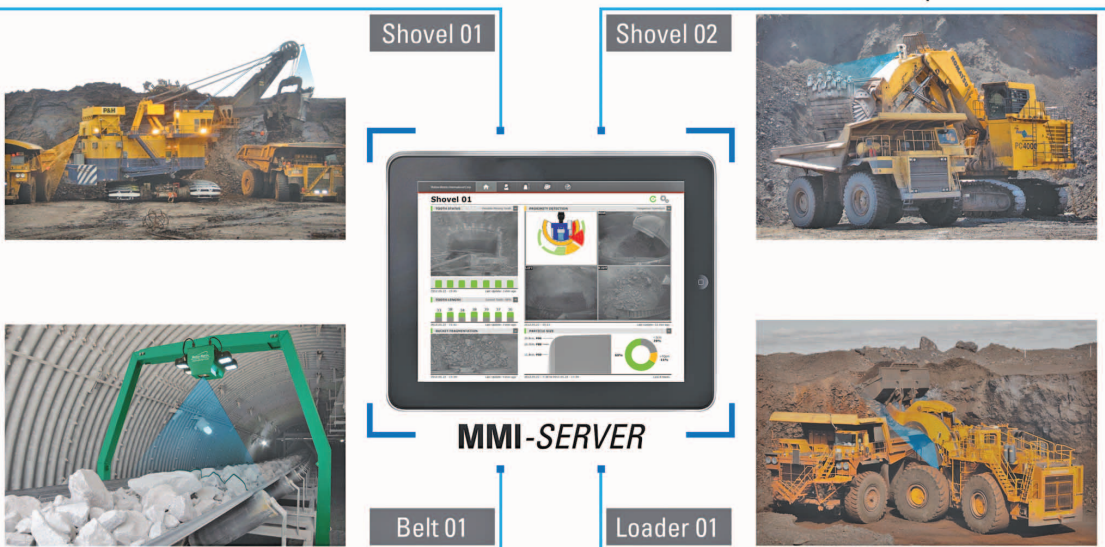


BeltMetrics™

ShovelMetrics™ for Hydraulic Shovels



ToothMetrics™ for Loaders



non-contact sensors. A high-resolution camera automatically captures images of material on a moving conveyor belt and analyzes the size, shape, and fragmentation of the material. A proprietary multi-sensor system provides the real-time mass and volume flow on conveyor belts, which is used to determine the instantaneous and accumulated mass and volume on conveyor belts with high-accuracy. The system is engineered to withstand the tough operating conditions of the mine with minimal calibration and maintenance, and its modular design adapts to various belt sizes.

With shovel and loader monitoring from the pit and conveyor belt monitoring to the mill, the tremendous benefits of correlating this information to optimize operations is obvious. To create this link, Motion Metrics has designed a robust centralized data server solution, "MMI-Server".

MMI-Server utilizes a mine's existing IT infrastructure to connect directly to any Motion Metrics equipment monitoring systems, making critical safety and productivity information accessible throughout the mine. The simple MMI-Server web interface allows any device on the mine network, whether it is a laptop or a tablet, to instantly access a wealth of equipment KPIs and the health status for all their shovels, loaders, and conveyor belts. When productivity benchmarks are not met, customized alerts can

be configured to notify the appropriate personnel.

This complete monitoring solution from Motion Metrics saves precious time and money, and provides a collection of unparalleled information to monitor and streamline mining operations.

## About Motion Metrics

Since 1999, Motion Metrics International Corp has been providing innovative solutions to improve safety, efficiency, and productivity of mining operations around the world.

With systems deployed in over 40 large-scale open-pit copper, nickel, iron, gold, diamond, and oil sands mining operations across the globe, Motion Metrics has built a strong reputation for innovation and reliability in the mining industry. Motion Metrics backs all their solutions by providing comprehensive support, from on-site installation and commissioning, to scheduled maintenance and performance reports.

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