

When Experts Collaborate, It's the Customer Who Wins

History of the collaboration

The relationship between Emerson and Joy Global has always been a strong one. Beginning in the early 90's, Joy Global leveraged CSI vibration monitoring technology as part of its service offerings for P&H shovels. Even as the Joy Global service model changed and evolved, the company continues to use CSI's vibration monitoring technology. In fact, they use PeakVue™ technology as a quality control check before gearboxes leave their manufacturing facility.

The need

Shovels are among the most critical pieces of equipment in a surface mine. When they need replacement parts, the lead times can be lengthy. And if it's not identified soon enough, the fault can result in an unplanned shutdown.

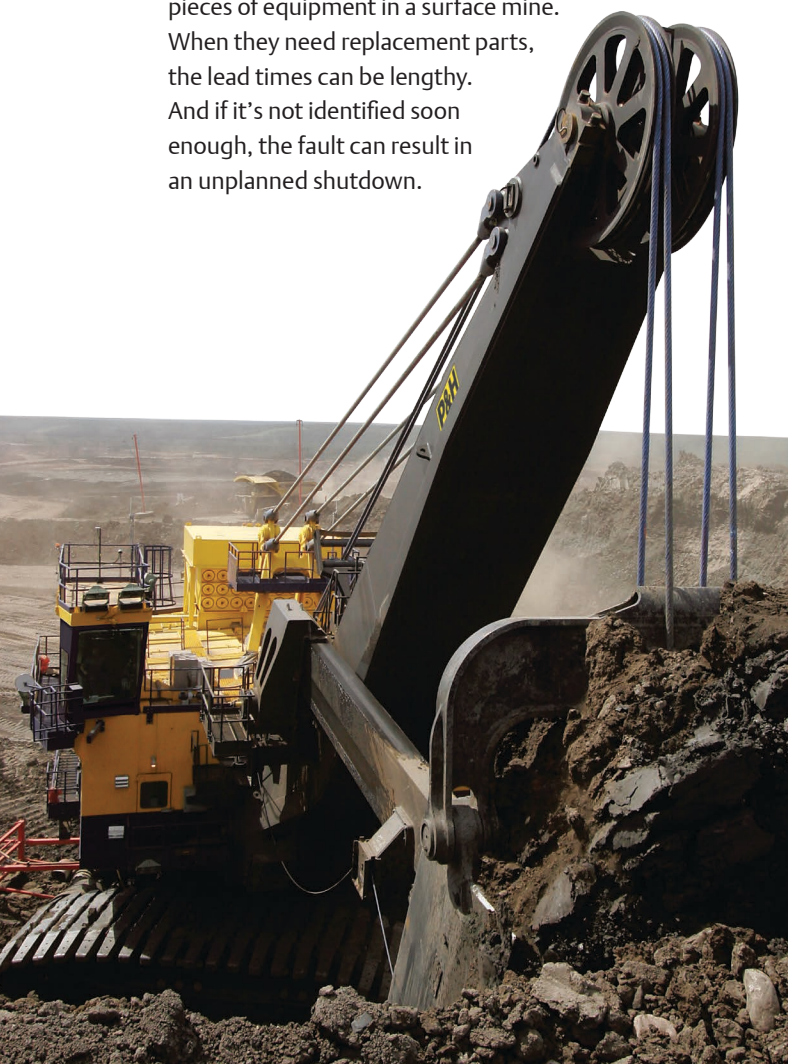
For these reasons, many progressive mines began monitoring their shovels with portable vibration instruments approximately ten years ago. Mines would plan shutdowns to test their shovels on a monthly, bi-monthly, or quarterly basis. This approach required the mine to take a shovel out of production for a half shift and send a technician with a portable vibration monitor to capture the data, who needed to be on the moving shovel while collecting the data. In addition to the down-time for the shovel to be tested, further time was needed to analyze and interpret the data.

Making the solution a reality

There has long been agreement on the potential benefits of installing a CSI 6500 on a shovel. In 2006, a copper mine in North America made the request and the timing was right to develop the solution.

Both Joy Global and Emerson knew that leveraging the CSI 6500 technology for this application would be difficult because the shovel is very unique in how it operates on a mine site. They had to consider the dynamic movement of the machine, the placement of the vibration sensors, the length of the cables, and the weight and placement of the cabinets among other things.

"We knew there would be cost saving opportunities associated with installing the vibration monitoring technology on a piece of equipment. But to get to the point where the technology was installed and we were able to use it for remote monitoring has required an enormous effort from both Joy Global and Emerson. To ensure that the end results would be a suitable, industry-leading product, we needed Joy Global's expertise on the shovel and Emerson's knowledge of vibration monitoring technology," said Matt Koss, Technology Products Manager for Surface Mining at Joy Global.



Mines want to minimize downtime, but they also need to know that the new technology is not going to interfere with their production. “What is important is for each customer to be able to customize the technology to their specific needs. That’s what our solution provides,” said Nathan Pettus, Vice President of Emerson’s Machinery Health Management business.

The preferred method is to install the CSI 6500 on the shovel at the factory. But there are users that are interested in installing the CSI 6500 on their existing fleet.



Emerson and Joy Global continue to work closely to improve their ability to install the product in the field as after-market applications. Recently, the focus has been on pre-engineering to minimize installation time and impact to customer.

Building the market

The adoption of the solution was accelerated by Joy Global’s Smart Service Center model, which incorporates the remote health monitoring capability as part of their services package. As soon as the technical capability was installed, they began leveraging remote monitoring on behalf of their customers.

Remote health monitoring is relevant for any electric rope shovel customer; gold, oil sands, coal overburden, copper and iron ore mines all want to avoid the cost of downtime. To date, gold, copper and iron ore mining customers have been the drivers and premiere users of the technology. But the market is expanding with inquiries from surface mines across the board.

Experiencing the benefits

In the past, monthly data collection was the best that most mines could do. At times, test exercises would need to be repeated to ensure data was collected correctly and then after collection additional time was needed for analysis. Now, users can get relevant, accurate data several times a shift. Both the Joy Global Smart Service Center and the users gain access to the data they need to make timely decisions about the condition of the shovel, its operation and the need for replacement parts. Installing CSI 6500 vibration monitoring on the shovels removes the need to put a person on a moving shovel to collect data. And the solution enables mines to reduce the number of planned shut-downs. For certain commodities, that can mean as much as 50,000 USD per hour in production revenue.

The next frontier

The vision is that vibration information will drive predictive maintenance strategy and the inventory planning process, ensuring mines have the right parts on-site for a planned outage. By fully leveraging the remote vibration monitoring technology, Joy Global can better predict the life-span for specific components, reducing unplanned shutdowns.

“We continue to evolve our remote health monitoring services to ensure that our customers realize cost savings. The work we are doing with customers is creating a more streamlined process that will deliver costs savings across a global fleet of machines,” said Koss. “At Joy Global we look at this as a core competency. We’re excited about the opportunities to grow and enhance vibration monitoring as part of our Smart Services offering.”

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