Mine Haul Trucks and Equipment

The high cost of the CAT® 797 and higher costs of not monitoring

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A growing sector of Monico's business is coming from the mining industry. Caterpillar® engines are prevalent in the Mining Industry and with the company's purchase of Bucyrus, it now owns a commanding presence in this market. Caterpillar® produces very large mine haul trucks that can carry up to 400 metric tons of payload per trip. This truck is the CAT 797, which is close to four stories tall, has a 4000HP 20-cylinder engine and each tire costs about $75,000. These trucks are so expensive to buy (approximately $5,000,000 US dollars) and operate that every nuance is monitored for maintenance savings and operational efficiency. Many mine operators have driver-simulators almost as sophisticated as airliner simulators where drivers can be trained to better operate the equipment. For example, if an operator goes down a hill too fast and has to overheat the breaks, this mistake can cost tens of thousands of dollars for repair. Engine alarms are monitored constantly and drivers are required to go through remedial training to prevent reoccurrences when mistakes are made. In fact, some industry experts say that unmanned, remotely operated mining trucks will be in operation by 2015. With this level of detail and expense, you can imagine the interest in remote monitoring.

There are many companies that can remotely monitor trucks and other heavy equipment in the mines including an offering by Caterpillar® called MineStar. However, there are also many private companies that install wireless networks throughout the mine and install data collection devices on each piece of equipment. Many of these monitoring companies and end-users are turning to Monico as an alternative to other devices. Monico has pre-configured solutions for this heavy equipment, making our Gateways very economical to install and operate. Since Monico Gateways have onboard data logging, you can use "Store and Forward" network topologies when not every square foot of a mine is covered in a wireless network. Monico Gateways operate on the Cat Data Link or the J1939 Network and communicate with all of the various ECMs on these huge pieces of equipment. Many of these trucks can have 6 to 8 computers controlling the engine, transmission, brakes, and payload systems.

Most companies using Monico's Gateways are installing them in the cab and pairing them with wireless Ethernet transmitters. Data is collected and sent to the host data historian over wireless. In some cases, we also log all data points at requested frequencies up to once per second and store this data on Compact Flash card in CSV format. When a wireless receiver is in range, these files are transferred to the host device.

The features of our PLUS Gateways are used to provide immediate wireless access to real-time maintenance and performance data including complete Fault Code Support. In essence, our gateways provide remote access directly to the piece of equipment from any location on the network. Our Gateways can even send pre-determined email or text messages to maintenance and operations personnel when a condition of immediate importance is encountered. In fact, the Monico PLUS Gateways™ have the capability to program complicated algorithms for monitoring very specific circumstances.

In short, the mining industry is so large, and the capital expenditures are so high, that remote monitoring is the only way to maximize your capital efficiency.

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