

MINING & POWER

GLOBAL INSIGHT FOR INDUSTRY LEADERS IN TODAY'S ECONOMY

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pg. 16

OPM METALS

GOLD RUSH

OPM METALS REFINES ITS OPERATIONS FOR GLOBAL GROWTH.

PLUS

MANAGING MINES FOR ITS CLIENTS

N.A. Degerstrom Inc. handles day-to-day operations so its customers can focus on profits.

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READY FOR THE WORLD

Mincon Group PLC boasts locations in 10 countries worldwide.

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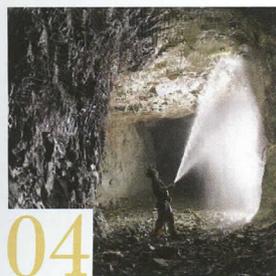


Cover Story



16 AS OPM METALS turns 40 this year, the company positions itself for international expansion via a number of strategic moves.

FEATURES



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The mining industry is changing its collective mindset to keep employees healthy and safe.



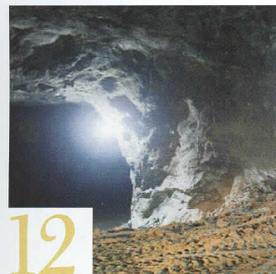
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Since energy is a commodity and a need, more choices are better for all parties in the industry.



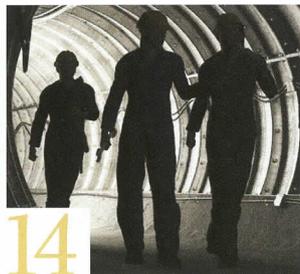
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Lenders typically look for borrowing needs, asset types and operations that fit within their borrower profile.



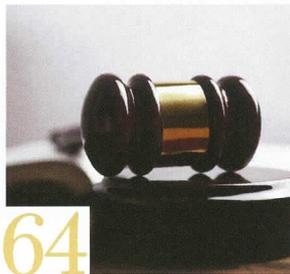
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LED luminaries lend themselves to mine applications and hold many advantages over traditional HID lighting.



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Life-Saving Cables

Optical Cable Corp. cables prevent tragedies and stand the test of time at the Galena mine. The higher crush rates these cables have can mean the difference between life and death.



BY PETER FILE

SUDDEN ROCK BURST, a violent and dangerous phenomenon occurring in the depths of mines, kills dozens of miners each year around the world. Rock exploding causes the burst as it attempts to re-establish equilibrium when the opening, and depth, of a mineshaft relieves neighboring rocks of tremendous pressure. This singularity can be further exasperated by the size of excavations and ongoing seismic activity. ¶ From the 1960s through the early 1990s, U.S. Silver & Gold's Galena mine, located in Idaho's Coeur d'Alene Mining District, a historic

silver-producing region, had a very high rate of rock burst activity – a major problem for miner safety.

The Galena mine is a high-grade narrow vein deposit consisting of silver, copper and lead, with reserves of 23.2 million ounces at average grades of 14.3 troy ounces.

The U.S. Bureau of Mines conducts rock burst research, and published a report in 1993 regarding seismic activity and the effectiveness of distressing burst-prone pillars as part of its program to improve mine safety. The report focused on the Coeur d'Alene silver district of northern Idaho, which includes the vein geology of the Galena mine.

The in-depth research provides background on the seismic activity around the mine vein and reports that much of the faulting displacement post dates mineralization. It also reports that the country rock consists of Precambrian Belt Series quartzites and minor argillites, the vein geology is near vertical, and offsets showed postmineralization faulting.

During a 20-month period, the locations of stopes – steps made by mining steeply inclined or vertical veins – experiencing rock bursting and the major fault trends in the immediate vicinity of the Galena mine were investigated. The examination of the mine's geologic maps did not reveal a singular significant fault surface that extended through the plane of major seismic activity, but that there were many faults of the appropriate strike and location.

To combat the issue, the 5,800-foot-deep mine purchased six-strand B-series MSHA-rated deployable fiber-optic mining cables from Optical Cable Corp. (OCC). The cable was originally installed in support of a seismic monitoring system that allowed for communication and data processing, and at the time was the longest in the world.

“Prior to the OCC cable installation, the Galena mines had one of the more advanced monitoring systems for its time, but it was de-

pendent on manual processing from the underground office,” says Kathryn Dehn, senior rock mechanics engineer.

Dehn also says that before the installation, seismic activity was monitored by one to three people housed in an underground office, tasked with performing critical calculations by hand.

“The 1988 cable worked very well for a time, until a section of cable was crushed by equipment and blasting during the enlargement of an adjacent shaft station,” Dehn says. “Due to the blast, the cable no longer submitted data, but is still intact, so we actually have hopes of repairing the section and putting it back into service soon.”

A blast or cave-in can cut or crush cable, and it is typical that it be repaired when that happens. The OCC cable has a higher crush rating than competitors, and helps reduce the failure due to a cave, but will not always prevent it completely.

In 1992 the mine was closed due to flagging silver prices and did not reopen until 1996. Enough money was finally available in 1998 to purchase a second OCC cable to replace the damaged one. Additional improvements have been made over the years, but the most significant was a four-strand cable hung in 2001 for additional monitoring outside of seismic activity.

“The mine replaced the aging USBM analog monitoring system with a real-time digitized system from ESG, which required a good deal of bandwidth to handle the real time data,” Dehn says.

Since this cable was installed there have been zero rock burst related deaths or injuries.

“Communication and monitoring via fiber optic cable has revolutionized mining safety and operation,” says Dehn. “We have a far better picture of what is happening a mile below the surface and can monitor situations and provide recommendations to operations in real-time that may otherwise have taken 30 to 45 minutes in the past.”

Thanks to OCC fiber optic cable, mine operators can now monitor and fix problems from the surface, or even remotely from home using

a laptop. In 2012, the mine also installed 10,000 feet of additional four-strand cable to expand the system. No matter what the installation, there was no question about which cable the mine would choose.

“We chose to stay with OCC cable because it survives,” Dehn said. “Our choice has always been MSHA deployable cable because it has never failed, even though we operate in the harshest of environments.”

The mine recently cut into part of the cable installed in 1998, and added two splices to expand branches to the rockburst network.

“We used mechanical terminations versus fusion splicing and it worked great,” Dehn says.

OCC B-Series MSHA-rated Deployable Mining Fiber Optic Cables are designed to provide reliable communications and monitoring in hazardous and unforgiving mine environments, which can mean the difference between life and death for workers who are thousands of feet below the ground. The cable's polyurethane Core-Locked™ jacket is extruded under high pressure directly over the cable's core, which results in a cable that has no voids and acts as one unit when bent or twisted. The core is helically stranded for flexibility, deployment, survivability and mechanical protection for the optical fibers. The cables are some of the most rugged, high-strength cables in the world incorporating color-coded subcables for direct termination.

Made to be crush-resistant and resilient, with two separate layers of aramid strength members in the subcables, it's easy to see why the Galena mine trusts OCC with all their cable needs. When it comes to safety, and piece of mind, for workers thousands of feet deep, accurate and reliable monitoring can mean the difference between life and death. 

Peter File

Peter File, Optical Cable Corp. business development specialist, has worked in the mining communications industry for 12 years. For more information, visit www.occfiber.com.