Customer Success Story:
Global mineral resource company

Market segment
Mining

Eaton conversion proves to be a 'gold mine'

Location:
Western U.S.

Challenge:
Aging circuit breaker equipment creating significant operational challenges from faulty racking/lifting mechanisms to obsolete replacement parts to asbestos arc chutes posing an environmental hazard.

Solution:
Eaton's VHC-Series+ medium-voltage conversion service.

Results:
The company achieved longer circuit breaker life, enhanced reliability and increased safety from the upgrade. Significant downtime was averted because Eaton completed the process in just two days.

Background

The customer is a leading global mining group focused on finding, mining and processing mineral resources in some 35 countries throughout the world. Working in mines, smelters and refineries, the organization seeks to harness new and emerging technologies to produce iron ore, copper, diamonds, gold and uranium.

"The mining company no longer has to try to maintain switchgear with old breakers while constantly attempting to source expensive parts that have very limited availability."

Tanner Esco, lead engineer, switchgear modernization, Eaton

Challenge

Within one of its U.S.-based processing facilities, the mining company was struggling to maintain aging electrical infrastructure associated with a 5000 V incoming main service. "The existing equipment was GE Magne-Blast™, dating back to the late 1960s and early 1970s," explains Tanner Esco, lead engineer, switchgear modernization, Eaton. "While these breakers were great in their day, their racking and lifting mechanisms had become faulty over time, making it increasingly difficult to perform routine maintenance. Additionally, the asbestos arc chutes presented a dangerous environmental hazard that needed to be removed."

Due to the highly critical nature of the equipment, it was imperative that any upgrade or replacement be executed flawlessly. Even more, the organization needed the project to be completed quickly, as even the slightest amount of downtime would be extremely costly for the facility. However, replacing this type of equipment is generally a labor-intensive, costly and time-consuming process.

Solution

The mining company did not have to dig deep to unearth the ideal solution. Engaging with Eaton's Electrical Engineering Services & Systems (EESS) team, the firm discovered a comprehensive portfolio of services tailored for every stage of a power system's life cycle—from design and build to service and support. By integrating and optimizing the elements of a power system to ensure it aligns with each company's business goals, Eaton power experts are dedicated to keeping customer systems safe, efficient, reliable and up to date.

In the case of the mining company, Eaton presented an ideal option: the VHC-Series+ vertical to horizontal, medium-voltage conversion. The process—in which GE Magne-Blast vertical lift circuit breakers are converted to horizontal drawout—involves no cutting or drilling of the original cell structure, nor does it violate the metal-clad integrity of the switchgear.

To learn more, watch the video.

Powering Business Worldwide

VHC compartment adapter

VHC compartment adapter inserted

VHC breaker

VHC breaker installed

Fully tested to IEEE® Std C37.59™ and IEEE Std C37.09™ for k=1 and k>1 ratings, the converted vacuum circuit breakers provide increased mechanical endurance and short-circuit capability, dramatically reducing scheduled maintenance and requiring no lubrication or adjustments for 10 years or 10,000 operations. Additionally, the circuit breaker includes a three-year warranty as standard.

The mining company needed no further convincing, as the conversion—combined with upgraded relays and controls and bottle repair—would enable the organization to achieve like-new switchgear at a fraction of the cost of replacement, while realizing significant benefits including longer life, improved reliability and enhanced safety.

"We couldn't believe all of the advantages," acknowledges a company spokesperson. "Our only concern was the amount of time required to complete the conversion, as we know how tedious, time-consuming and labor-intensive a project like this tends to be."

But any worry proved to be unwarranted. In addition to remedying all of the challenges the mining organization was experiencing with its aging equipment, Eaton was able to complete the entire upgrade in just two days. The quick turnaround was not due to cutting corners; in fact, the Eaton field service representatives tasked with the conversion first completed a trial run on a mock display.

"We set up old units of the GE switchgear and essentially mimicked the entire situation they'd be walking into," explains Tabby Davis, Eaton's site manager for the project. "The field service technicians actually performed the installation of the carriage, the racking of the breaker and the bottle repair process before ever setting foot on site. It allowed them to practice and walk into the job with confidence, because many of these applications are not cookie-cutter in nature."

The company was so impressed with the Eaton team and the VHC service that it is already planning to complete conversions on other vintage equipment in need of upgrade. "We couldn't be more pleased with how quick, reliable and cost-effective the approach was," the representative reveals.

"The mining company no longer has to try to maintain switchgear with old breakers while constantly attempting to source expensive parts that have very limited availability," Esco says.

"The conversion eliminated the rickety old breakers, the elevator lift with failing mechanical parts and the arc chutes that contained dangerous levels of asbestos."

Results

The mining organization struck gold with Eaton's VHC conversion. "Now there is no asbestos, no elevator required to get the breaker up and down, and no worries about obtaining spare parts," the company's spokesperson confirms. "We were able to achieve essentially new switchgear—without the downtime or cost."

Thanks to Eaton's VHC-Series+ medium-voltage conversion service, the mining firm is now able to:

- Improve the reliability of its lift mechanism operation
- Save time and money through the advanced retrofit process
- Dramatically reduce maintenance requirements
- Promote a safe, asbestos-free environment by eliminating arc chutes
- Easily obtain spare parts when needed

For more information, visit
Eaton.com/VHC

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