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Electra Mining Africa 2024: a showcase for value-adding products and solutions from ABB for diverse sectors

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* ABB will focus on the latest trends, from ESG commitments to energy efficiency
* ABB will present the latest innovations in switchgear, motors, automation and digitalisation

A technology leader driving the digital transformation of industries, with a history of innovation spanning over 130 years, ABB will have a major presence at Electra Mining Africa 2024. With both an indoor and outdoor stand, the company will showcase products and solutions for diverse sectors. These range from mining to electrical, automation, manufacturing, power generation and transport.

ABB will also focus on the latest trends and developments in these industries, from increased Environmental, Social and Governance (ESG) requirements to sustainability, to Just Energy Transition and energy efficiency. This, in turn, is resulting in an increased uptake in digitization and automation as companies look to become more futureproofed and resilient.

An excellent solution for energy transformation in secondary distribution networks is ABB’s Compact Secondary Substations (CSS), which include medium voltage (MV) switchgear, distribution transformers, and low voltage (LV) switchboards. Highlights include a high level of safety for personnel and equipment due to the highest degree of internal arc classification.

The CSS units are available in various configurations and materials, including steel, concrete, and innovative GRP housing, depending on the application. They are suitable for a range of industries, from renewables to utilities and infrastructure. “This is an innovation that reflects ABB’s commitment to creating safer, more efficient and sustainable solutions for modern electrical distribution needs,” comments **Graham Abrahams**, Senior Vice President, Electrification, Commercial Leader.

Another groundbreaking innovation from ABB Electrification is the UniGear ZS1 switchgear, which supports applications from utility substations to industrial plants. It is available in various configurations, including single busbar, double busbar, and double level solutions. The switchgear features a slim panel width of only 500 mm, making it one of the most compact air-insulated switchgears available. Its unique design saves space without compromising performance.

Advanced safety features include a system that actively prevents electric shock accidents and enhances equipment safety. The UniGear ZS1 can handle up to 24 kV, 4,000 A, and 63 kA, making it suitable for demanding environments. It also incorporates tubular busbar technology for optimized electricity distribution and improved heat dissipation.

The switchgear is IoT-enabled and integrates digital technologies for real-time monitoring and analysis. This allows for improved asset health management, predictive maintenance, and improved operational reliability. With over 500 000 panels installed worldwide, the UniGear ZS1 is a proven solution supported by ABB’s global network.

“It is all about leveraging electrical infrastructure and technologies to improve efficiencies,” points out **Martin van Zyl**, Sales Manager, Process Automation, ABB South Africa. This integration depends on several key pillars, including high-efficiency motors, advanced magnetic motor controls, hoisting technologies, and energy management systems, all part of a broad portfolio available from ABB.

ABB Ability™ eMine comprises a portfolio of electrification technologies enabling the all-electric mine, integrated with digital applications and services throughout to monitor and optimize energy usage. It ranges from the electrification of mining trucks to the entire mining process. In addition to haulage, the portfolio includes the electrification of ABB’s more traditional solutions for mining like hoisting, grinding, and materials handling.

An example of this is the pilot technology eMine™ FastCharge, set to be the world’s fastest and only fully automated charging system for mining trucks, offering up to 600 kW of power. Using trolley-assisted hauling, the eMine™ Trolley System can reduce diesel consumption and resulting carbon emissions by up to 90% compared to exclusively diesel operations.

ABB will also have an energy efficiency demonstration at its stand designed to showcase the energy savings achievable with drives compared to conventional damper-controlled fan systems or valve-controlled pump systems. The demo application highlights the power consumption of both scenarios as real-time bar graphs for easy comparison, as well as showing the calculated yearly savings.

In addition, ABB provides energy efficiency appraisals to assist mining engineers determine the payback period of installing a Variable Speed Drive (VSD) or upgrading to a higher efficiency motor. ABB VSDs can assist with sustainability by calculating real-time energy savings and CO2 reduction.

VSDs can be used in conjunction with energy-efficient, low-voltage motors based on Synchronous Reluctance Motor (SynRM) technology to achieve IE5 efficiency. An IE5 SynRM motor achieves a 50% reduction in energy losses than an older IE2 motor and 40% lower than traditional IE3 motors. Upgrading from older induction motors is straightforward, as IE5 SynRM motors are available in the same standard dimensions and output power classes, meaning they can be drop-in replacements in many cases.

Next-generation SynRM motor technology combines ultra-premium energy efficiency with effective liquid cooling to deliver high-power density, quiet operation, and excellent reliability. ABB is developing the world’s first IE5 SynRM liquid-cooled motors, ranging from 75 kW to 710 kW, reveals **Sean McCree**, Product Marketing Manager, ABB Motion South Africa. The new design sets a new benchmark for high power output and reliability in a compact footprint by combining the benefits of established ultra-premium energy efficiency with highly effective liquid cooling. A key advantage is the absence of fans or ventilation systems for cooling purposes, leaving the ambient air undisturbed. This feature is particularly beneficial in mining where dust contamination can be problematic.

For safety in mining in particular, ABB has been engineering hoist systems for over 130 years to ensure efficient and harm-free mining. Latest products include the BHX hoist control system to enhance the safety, reliability, and efficiency of hoist operations, explains **Mike Davis**, Global Product ManagerABB. It integrates seamlessly with other ABB technologies such as the ABB Ability™ NGX Hoist Control, which offers flexibility and can replace older or third-party systems.

The system is known for its ergonomic design and intuitive human-machine interface, making it user-friendly for operators. In addition, ABB’s hoist control systems are equipped with advanced digital monitoring services like ABB Ability™ Performance Optimization to continuously track the status of the hoist and provide actionable insights to improve uptime and productivity. “We are currently promoting a Safety Integrity Level (SIL) certified hoist solution called ABB Ability™ Safety Plus for Hoists,” reveals Davis.

ABB’s YuMi® IRB 14000, the first truly collaborative dual-armed robot, designed for a world in which humans and robots work together, will be on display at the indoor stand. It has been utilized in various industries to improve production efficiency and reduce waste.

ABB aligns its efforts with several UN Sustainable Development Goals, particularly SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 9 (industry, innovation, and infrastructure), and SDG 13 (climate action). ABB’s sustainability messaging is not just about gradual improvements but about transformative changes that drive real progress towards a sustainable future. They are actively working with various stakeholders to embed sustainable practices across diverse industries and ensure that we all achieve a sustainable future.

**ABB** is a technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. The company’s solutions connect engineering know-how and software to optimize how things are manufactured, moved, powered and operated. Building on over 140 years of excellence, ABB’s more than 105,000 employees are committed to driving innovations that accelerate industrial transformation.[www.abb.com](http://www.abb.com)

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