

Safe, smart and sustainable mining



Following the 2024 Mining Indaba, MS Prakash, Emerson's vice president for the African region, spoke to *MechChem Africa* about championing safe, smart and sustainable change in the mining sector and the innovations making this possible.

The mining industry across Africa is at an inflection point right now. Global megatrends along the energy transition, energy security and climate change pathways are all driving momentum towards the next phase of investment.

"In order to meet the growing demand for renewable energy, as well as the needs of a fast-growing sustainable transportation solution for the electric and hybrid vehicles industry, there needs to be improvement in the availability of critical rare earth metals such as lithium, where production needs to increase in the range of 50x to 70x to support industry growth.

"In addition, several governments around the world, particularly in the United States, European Union and China, have outlined goals to create a secure supply of minerals and raw materials that are critical for eco-

nomic sustainability and growth. Of course, with more than 40% of global mineral reserves, all roads point towards Africa in terms of Investment," begins Emerson's Vice President for Africa, MS Prakash.

This, he continues obviously translates into growth potential, not only on the mining side, but local processing is also being considered – mostly from an aspirational perspective at this stage. "From an extraction standpoint, the centres of gravity are going to be in Africa, Australia and Latin America. At Emerson we see a lot of opportunity to support mining companies that are looking to extract minerals in a safer, smarter and more sustainable way," he adds.

Traditional mines, he says, are having to go deeper and the ore body grades are dropping. This puts added pressure on operational efficiency. The industry is also under pressure to reduce its contribution to carbon emissions. So safety, sustainability and ESG are being prioritised more than ever before.

Emerson, he continues, plays a big part in supporting forward-looking mining customers with the innovative technologies to

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meet their own ESG needs as well as to refocus operations towards the world's energy transition. "We have a full suite of technologies, right from sensors and valves all the way through to the control systems and mission critical industrial software that is helping transform mining sites into best-in-class operations. Our automation technology and software are improving safety and reliability, operational efficiency and environmental performance simultaneously," he says.

Improving safety in mining

From a safety perspective, he adds, there are unique challenges that mining customers see Emerson can support them with. Taking the example of tailings, he says, "As mining operations mature, existing tailing



infrastructure reaches its design limitation. With mining companies looking to reprocess waste to extract residual value from declining ore grades, the risk of tailing-dam collapse is increased.

"Emerson's Tailings Monitoring system is a fully automated smart system. It consists of wireless sensors to measure water levels and pressures, and it provides real time data back to the control room to notify operators when conditions start to change so they can take timely action. The interconnecting slurry pipelines between dams are included. We monitor pressure and the slurry density for piping anomalies that might help avoid environmental harm due to spillage incidents," he explains.

Further, there are design-driven solutions, such as Emerson's knife-gate valves designed for abrasive slurry service, that increase the time between maintenance downtime for tailing operations.

Another example of a safety solution that is becoming a focus area is worker safety and gas breakthrough in deep mining activity. "Emerson's solution combines smart wireless gas sensors with discrete measurement local alarms that can help to identify dangerous levels of gas concentrations quickly at the mining operation, and help to relay critical information to the control room, thereby ensuring worker and operational safety," MS Prakash explains.

Towards smarter and more efficient mining

One of the most important operational metrics for operators across the mining industry is uptime of critical equipment, which relates directly to profit. Critical assets need the right monitoring and preventive maintenance programmes to maximise availability. "Emerson's online condition monitoring solution (AMS6500) does away with traditional periodic data collection and fetches important condition monitoring and frequency data that can help to identify developing issues during normal operations. This assists operators to deploy a predictive maintenance strategy that complements traditional machinery protection systems,"

he tells *MechChem Africa*. For other essential assets, Emerson's machinery health analyser (AMS 2140) simplifies field collection of machine vibration and has unique peak detection capabilities that help operators get early indications of machine degradation.

As the complexity and variety of assets and systems across mining sites increases, Emerson's Delta V integrated control and safety systems help integrate operational data across these sources and add context that assists operators to get better visibility of operations and reduce the need for manual data processing. "This capability is further enhanced by our industrial data lake and advanced process control capabilities that are powered by AspenTech," he says.

From a digitalisation standpoint, Emerson believes in initially making small scale investments that result in quick returns. "Then we can scale-up, rather than going for a full site-wide digitalisation, which is typically costly and sometimes difficult to justify based on ROI. But when looking at benchmarks involving smart devices and seeing the efficiency improvements for a single circuit, it becomes easy to replicate that success across multiple critical circuits," Prakash explains.

"In summary, Emerson can offer everything in the mining and metals value chain for any customer seeking to become smarter, safer and more sustainable," he says.

People development

People, says Prakash, are fundamental to the implementation and adoption of technology-based approaches – and talent

development is a bedrock of Emerson's offering. "Our primary focus is on upskilling our own people across Africa to support the engineering and lifecycle needs of our customers and to ensure that our technologies are successful on site. Of course, this is supplemented by our comprehensive competency development programmes that are aimed at building technology awareness and expertise with mining operators.

"Talent development in geographies such as Africa can be complex, so we put extra effort into engaging the best-in-class local talent we can find into our organisation, putting graduates from local universities into our own graduate programmes to get experience in the various Emerson technologies. We give new recruits rotational assignments at different sites in Africa: in Dubai, South Africa, Morocco, Algeria, Nigeria and Egypt and anywhere we think there is a hands-on opportunity to interact with experts in the field. Then we bring them back into their own countries to support local customers. This approach not only develops talent, it also brings us closer to our customers.

"While we can also offer digital remote support, we really prefer somebody from Emerson to be physically available to go onto client sites," he adds. "We believe this is a critical differentiator that helps our customers achieve their operational goals.

"The way we see it, if our customers' businesses grow, so does Emerson's potential to support their growing operations," MS Prakash concludes.

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The Emerson stand and team at the 2024 Mining Indaba.



Emerson plays a big part in supporting forward-looking mining customers with innovative technologies to meet their ESG needs.