In Focus: Digitalization

No. 02–2024

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MINING & CONSTRUCTION

A magazine from Epiroc

miningandconstruction.com



[Our Customers]

The rig of choice

Daesung MDI full of praise for Boomer S2

Digitalization – better for people and productivity

DEAR CUSTOMER, one of the big industry trends of our day is digitalization – and for good reason. For companies like yours, implementing the right digital solution can make a major positive impact. Benefits that our customers experience include efficient collision prevention, real-time information and asset tracking, increased drilling efficiency and quality, and informed operational decisions. In short: safer people and better productivity.

SAFETY IS OF COURSE the top priority for all of us. Did you know that more than 30 percent of mining industry fatalities are related to failures of vehicle interaction controls? We are working hard to help the industry change this. We offer all levels of collision avoidance, including the highest, Level 9. This ensures that if the operator does not act when a collision is near, the system automatically intervenes.

Other safety-related digital solutions include emergency support, which shortens evacuation times by 25–50%. This can make a life-or-death difference when there is a mine fire or other emergency.

Epiroc's approach to digitalization and automation is agnostic. This means they work regardless of which company manufactured the equipment. We are proud to be at the forefront of mixed-fleet automation (driverless vehicles), which enable mining operations with machines from different manufacturers to work fully autonomously with one system. Our solutions are modular and scalable, so they can easily be expanded into more areas of the operation.

OUR DIGITAL SOLUTIONS create value for you across all levels of the mining operation – for a single machine, a full machine fleet, and an entire mine. The more complex the operation is, the more benefits you reap by implementing the right digital solutions.

Read more about digitalization in this issue of Mining & Construction magazine.

On my radar

MINExpo International
It was fantastic to meet customers and colleagues at the world's largest mining exhibit in Las Vegas and to see all the latest innovations.

Mixed fleet automation
We see strong interest and demand for this among customers. This is the future of mining, and we already offer solutions today.



Enjoy the magazine, and stay safe!

Helena Hedblom
Epiroc President and CEO

Epiroc Group – get to know us better

Epiroc
At a glance



Epiroc is a vital part of a sustainable society and is a global productivity partner for mining and construction customers. We develop and supply innovative and safe equipment and offer world-class service and other aftermarket support, as well as solutions for automation, digitalization and electrification.

What we strive for
Accelerate the transformation

The world needs metals and minerals for the energy transition. And we need cities that can cope with a growing population in a sustainable way. To succeed, we need to speed up the shift toward a more sustainable mining and construction industry. We at Epiroc accelerate this transformation.

Switch from diesel to battery
Better working environment and economy

Epiroc drives the transformation from diesel to electric by being a technology leader and having the most extensive range of battery-powered machines.

Swappable batteries
Our underground battery electric range is powered by swappable batteries. A quick swap and you're ready to go again.

Prepared for automation
Thanks to the RCS, Rig Control System, our battery electric range is prepared for automation and remote control.

Battery conversions
We can help you speed up the transition to battery-powered equipment through diesel-to-battery retrofit solutions.

Epiroc

With Epiroc as a dedicated partner, you get a passionate team that supports you in a sustainable, efficient and safe way. No challenge is too big for our curiosity and persistence when it comes to increasing your productivity, safety or sustainability. We lift your competitive advantage through our continuous drive to make good things better – from high-performance equipment and service excellence to building the mining and construction industries of tomorrow.

More epiroc.com

Epiroc Group
2023 in numbers

~ 19 000

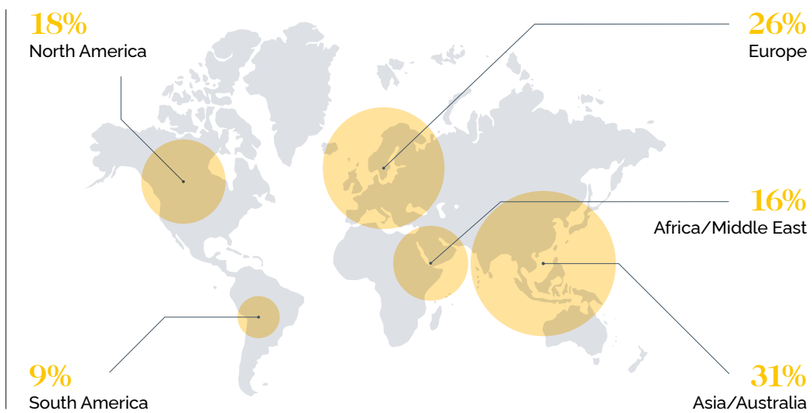
Almost 19 000 employees.

Customers in around 150 countries.

151 years of experience.

Revenue: SEK 60.3 billion.

Global presence
Average employees



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[In Focus]

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We are firmly entrenched in the Digital Age, with information transforming every aspect of business. Hopefully for the better.

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Quiet and flexible
SmartROC T30 R packs a lot of punch for a small rig – without being noisy. This combination was just what Mair Josef & Co. needed for its operations in South Tyrol.

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Stellar efficiency and precision
A fast and reliable drill rig was paramount when CJR drilled foundations for 21 000 solar panels on the outskirts of Lisbon. The Epiroc SmartROC D60 exceeded expectations.



DYLAN GOLDBY

ON THE COVER
Equipped with two powerful booms, Boomer S2 is a compact face drilling rig, particularly useful for operations in small drifts. Thanks to automation features such as ABC Total, operating costs are lowered and productivity potential increased, the Samcheok mine being case in point.

bauma
APRIL 7–13, 2025, MUNICH

The world's leading trade fair for construction machinery will once again be held at the exhibition center in Munich from April 7–13, 2025. From the digital construction site to alternative drives and tomorrow's construction methods, the most important topics will be discussed and innovative solutions will be presented.
www.bauma.de/en



DYLAN GOLDBY

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Perfect fit in South Korea

OUR CUSTOMERS
The Boomer S2 face drill rig has the right size for the shafts in the Samcheok mine, and Daesung MDI also loves its smart features.



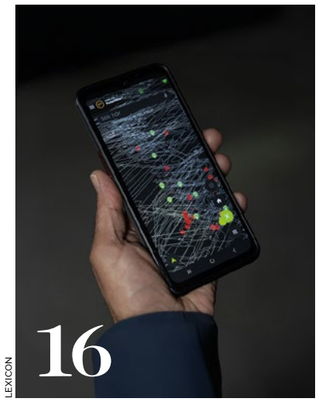
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Mining & Construction is published by Epiroc. The magazine focuses on the company's know-how, products and methods used for mining and construction worldwide.

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Gustaf Höök

Product news and innovation stories
(choose country and click Newsroom): epiroc.com

Epiroc corporate press releases
(click Media): epirocgroup.com

New Minetruck combines power and innovation

The new Minetruck MT66 S eDrive is the first of Epiroc's large-capacity mine trucks to feature the latest generation of electric drivetrains. Along with an upgraded and powerful diesel engine, the hauler combines the cost-effectiveness of a traditional mine truck with the productivity of an electric one – without having to change to a mine's infrastructure.

The Minetruck MT66 S eDrive has been completely redesigned to feature an electric drivetrain powered by the strongest engine yet in Epiroc's line-up of underground mine trucks. With several other upgrades, such as weight reduction and better utilization of the engine's sweet spot, the truck can reach up to 11 percent higher ramp speeds compared to current models.

"The Minetruck MT66 S eDrive has been built from scratch, with room for an additional ton in the box, making it the largest capacity underground mine truck on the market. By combining power with innovation, it really is the best of two worlds," says **Wayne Symes**, President at Epiroc's Underground division.



The Minetruck MT66 S eDrive has been completely redesigned to feature an electric drivetrain, powered by the strongest engine yet in Epiroc's line-up of underground mine trucks.

WHILE THE Minetruck MT66 S eDrive enables both higher maximum payload and increased speed compared to other high-capacity mine trucks, it also reduces fuel consumption by up to 7 percent thanks to the electric drivetrain. The removal of mechanical parts also lowers maintenance costs, promising reduced total cost of ownership. All in all, with all these improvements on board, the Minetruck MT66 S eDrive offers an easy step to improve productivity quickly.

"In a typical mining application, the increased payload capacity means that the Minetruck MT66 S eDrive can add an additional cycle each day compared to a 65-ton mine truck. That means well over 23 000 additional tons annually for our customers' productivity," says **Martin Wallman**, Global Portfolio Manager for Underground Trucks at Epiroc's Underground division.

The Minetruck MT66 S eDrive was first presented at MINExpo International in Las Vegas in late September. Field trials will be conducted together with Gold Fields Australia, starting in Q2 2025.

Epiroc launches new fleet monitoring solution

EPIROC HAS LAUNCHED Fleet+, a monitoring solution that offers customers the complete My Epiroc experience, and convenient access to real-time updates and data from connected Epiroc equipment. The fleet monitoring solutions have been tailored to meet the unique needs of the industry. Fleet+ aims to help customers reduce emissions and fuel consumption, improve fleet utilization and operational safety, as well as track equipment health and manage fleet servicing conveniently.

New product line name for surface mining autonomy

HAVING COMPLETED the full acquisition of ASI Mining, Epiroc will now market its surface autonomous business solely under the Epiroc brand. As part of this rebranding, the ASI Mining autonomous mining solution, previously known as Mobius, has been renamed LinkOA. LinkOA, where OA is short for "Open Autonomy," is an advanced agnostic integration platform designed to revolutionize mining operations by offering unmatched flexibility, scalability, and safety.



Large mining equipment order in Kazakhstan

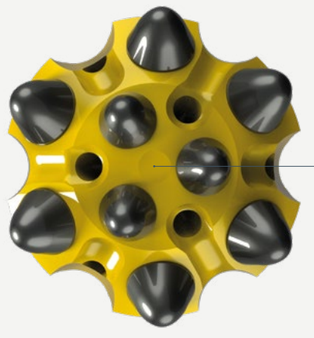
EPIROC HAS WON a large order for underground mining equipment, including battery-electric vehicles, from Eurasian Resources Group (ERG) in Kazakhstan. Several of the machines, including the Minetruck MT42 SG (pictured), will be operated driverless (tele-remotely), and all of the equipment will be fitted with a collision avoidance system.

FIGURE

1 000 000 DRILL METERS

FOUR OF EPIROC'S teleremote-controlled Simba E6 C WL production drill rigs have surpassed 1 million drill meters in LKAB's Malmberget mine in northern Sweden. This impressive achievement was made possible largely due to consistent high-quality service along with well-implemented automation features.

PROJECT NEWS



HIGHLIGHT

The innovative design of the Epiroc SR35 non-grinding drill bit eliminates the need for re-grinding, further reducing downtime and maintenance costs.

Non-grinding drill bit – a standout innovation

The Epiroc SR35 non-grinding drill bit is designed to transform the industry. This new Epiroc product offers several key advantages that promise to enhance efficiency and safety in mining operations.

One of the most significant benefits is its ability to complete an entire face without the need for changing bits, saving time and reducing the operational costs associated with frequent bit changes.

More www.epiroc.com/non-grinding-bits

Digital technologies are empowering tools in building efficient, safe and sustainable workplaces.

How can Epiroc boost digitalization?



Hugo Dias
Business Manager Digitalization, Drilling Tools, Portugal

"To accelerate digitalization, it is crucial to focus on innovating and effectively implementing new business models that maximize the advantages of digital solutions for both customers and Epiroc, fully realizing their benefits."



Anton Ronquist
Global Product Manager, Deep Automation, Sweden

"Epiroc has the people, processes, and tools to help mines collect relevant data and structure it into understandable information. Combining the mine's insights with Epiroc's global benchmarking, we take actions to jointly progress towards the mine's goals."



Kumeshan Naidu
Global Digital Portfolio Manager, South Africa

"Simple to adopt, easy to integrate, and hassle-free to maintain. Our goal is to deliver digital and automation solutions that empower every operator, manager, and CEO to deliver consistent and predictable results."

William Seungmock Oh and Gustaf Höök Dylan Goldby



[On Location]
South Korea

Entering the autonomous era

At the Samcheok mine in South Korea, Daesung MDI is joining the quest for limestone with Epiroc Boomer S2 rigs.



Operator Hong-Kwan Kim drills holes with the Boomer S2 using ABC Total mode. He was able to learn this automation function easily, without long experience in the mine.

After driving in the dark for more than two kilometers, we enter a shaft. A two-boom face drill rig is positioned at the face, operator in cabin. **Hong-Kwan Kim** grabs the joysticks and looks at a monitor showing the coordinates of the scanned wall that he is about to drill. It almost looks like he's preparing to play a video game.

"The computer program scans the wall, and the perforation parameters are shown very clearly," Hong-Kwan Kim says. "I get to know everything I need to know and can then proceed with automatic drilling or drill manually. It's really convenient."

Hong-Kwan Kim is drilling holes for mining limestone with an Epiroc Boomer S2, a face drill rig with a diesel-powered driveline, in the Samcheok mine. It is the first of its model to be used in South Korea, and it's fast becoming the rig of choice for one of the biggest mining companies in the country.



Chang-Oh Kim
Managing Director,
Daesung MDI

Founded in the 1960s specializing in resource development, Daesung MDI has been a steady supplier of quality limestone and dolomite in South Korea, contributing to the development of the domestic industry.

The company operates seven mine sites across the country, among them the Samcheok mine, located in the northeastern part of South Korea, close to the East Sea. Daesung MDI has been using Epiroc equipment since the mid-1990s, including several models of the Boomer face drill rig. Purchasing the Boomer S2 was a clear-cut choice.

"Epiroc equipment has become a favorite of Daesung MDI, as the features and size of the Boomer S2 perfectly fit our shafts," says **Seung-Kyu Lim**, Daesung MDI Deputy Director for production.

Equipped with two powerful booms, Boomer S2 is a compact face drilling rig, its smartness and robustness particularly useful for mining operations in small drifts. With fewer boom hoses, operators have excellent visibility for maneuvering in tight spaces. But it's not only the convenient size that appeals to Daesung MDI. The automation features of the Boomer S2, not least ABC (Advanced Boom Control) Total, are vital for lowering operating costs while increasing productivity, exemplified by Hong-Kwan Kim's use of the rig.

"The efficiency of the work we're talking about is in the pre-fracture phase of drilling with the jumbo drill," **Chang-Oh Kim**, Daesung MDI's Managing Director, says. "Thanks to ABC Total, the operator can see what is drilled in 3D so, yes, the effectiveness of blasting has greatly improved."

With Advanced Boom Control, drilling is performed according to digital drill plans, and ABC Total enables drilling a sequence of holes (a full round) automatically. This feature allows the operator to control more than one boom simultaneously, resulting in repeatability, time savings, and the possibility to drill during shift changes.



Jae-Seob Sim
Site Manager,
Daesung MDI



Seung-Kyu Lim
Deputy Manager
for Production,
Daesung MDI



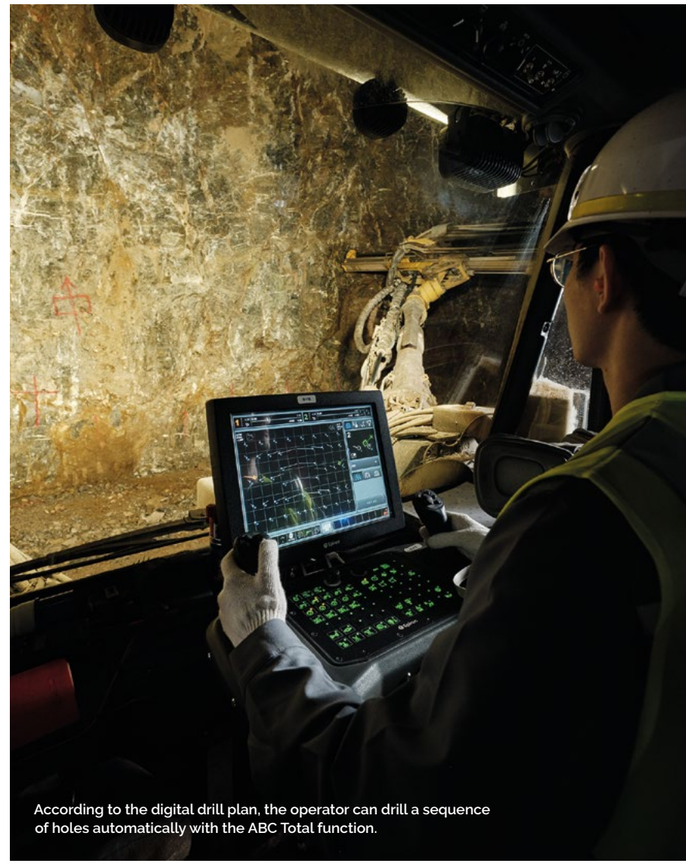
Hong-Kwan Kim
Operator,
Daesung MDI

With the Boomer S2, Daesung MDI produces 10 to 20 percent more ore than with other equipment with no automation features. Moreover, ABC Total has been transformative for Daesung MDI when it comes to finding new talent. In 1970, when the mining industry was booming, the Daesung coal mine employed some 3 000 people. These days, Samcheok has the lowest population density of any autonomous city in South Korea, sometimes making the hiring of skilled staff a challenge.

"To recruit a jumbo drill rig operator, we used to look for experienced operators from nearby mines, but most of them were in their 60s. Hence, the company has decided to employ and train operators such as **Hong-Kwan Kim**, who is 25 years old," Chang-Oh Kim says, adding: "Training a novice operator would normally take more than three years, but the automation features of the Boomer S2 has slashed that time to three months. It's been tremendously helpful for us."

Hong-Kwan Kim echoes those sentiments:

"Even though it was my first time driving a jumbo drill, I was able to adapt to the job quickly with the Boomer S2," he says, adding: "Most young people have not learned about the mining industry, but it's certainly not bad when you try it. A lot of people from the young generation are very self-conscious around others, but the working environment of a mine, where an operator can work alone or with a few people, suits us well. I think mining is one of the best jobs for young people."



According to the digital drill plan, the operator can drill a sequence of holes automatically with the ABC Total function.

Daesung MDI

Daesung MDI manufactures and sells a variety of products, including limestone and quicklime for steelmaking and desulfurization, hydrated lime, soil improvement fertilizers, light dolomite, and construction and environmental materials. As of 2024, the company annually produces 3.4 million metric tons of limestone and 400 000 metric tons of dolomite. Daesung MDI operates six business sites in Samcheok, Jecheon, Danyang, Seokgyo, Okdong, and Limechem Center.

The shaft in which Hong-Kwan Kim operates the Boomer S2 is rather wet, despite hours of drilling. This is achieved through the rig shooting water while drilling, minimizing dust. Another thing improving the work environment is that when the rig is connected to electricity there is no emission of toxic gasses (CO, CO_2, NO, NO_2, SO_2). Instead, the electric drill rig merely requires a

transformer, moved every 500 meters or so, since it is difficult to operate the electric drill rig due to voltage drop. In the future, Chang-Oh Kim hopes to better that.

"The ideal energy source for the rig would be batteries, which would eventually lead to the complete automation of mining, with remote operation," Chang-Oh Kim says.

The Boomer S2 is equipped with Epiroc's new Rig Control System (RCS 5), which makes full automation easier and more productive. The system provides a number of safety and interlock features, as well as a foundation to add new functionality later, without a major rebuild of the machine. Thanks to the RCS 5, Daesung MDI already gets a finer contour of the tunnel, resulting in less overcut. The system makes it possible to drill with an operator on board using options such as Autodrill and Autolevel, or to run with the operator off the drill with the optional BenchREMOTE package, allowing one operator to run one or multiple units.

Currently, the use of automation equipment at the Samcheok MDI mine is still in its infancy. Daesung MDI now has two automated drill rigs, accounting for about 33 percent of the mine's entire operation, and Chang-Oh Kim plans to invest further.

"In the future, we will continue to purchase more automation equipment and increase the ratio, which will further reduce production costs," says Chang-Oh Kim.

"We will continue to purchase more automation equipment and increase the ratio, which will further reduce production costs"

Chang-Oh Kim
Managing Director, Daesung MDI

Epiroc and Daesung MDI

Daesung MDI has been using Epiroc equipment since the mid-1990s. Daesung MDI recently purchased the Epiroc Boomer S2 face drill rig with ABC Total (Advanced Boom Control), an automation feature, with the aim to further automate its mining. Epiroc has become a favorite original equipment provider for Daesung MDI, as Epiroc's compact equipment perfectly fits Daesung MDI's mines.





December 1, 2024, the name of the Boomer S2 face drill rig was changed to Boomer SM20 S. In the range of underground mining equipment, Epiroc makes continuous improvements to align the product model names to reflect the offering within automation, digitalization and electrification.

Samcheok mine

- Daesung MDI's largest production base, Samcheok mine in the Kangwon province of South Korea, has 30 years of history. The Samcheok mine produces 1 500 000 metric tons of limestone per year.
- The Samcheok mine laid the foundation for long-term development strategies such as opening a transportation-only tunnel, expanding automated factory facilities and environmental pollution prevention facilities.

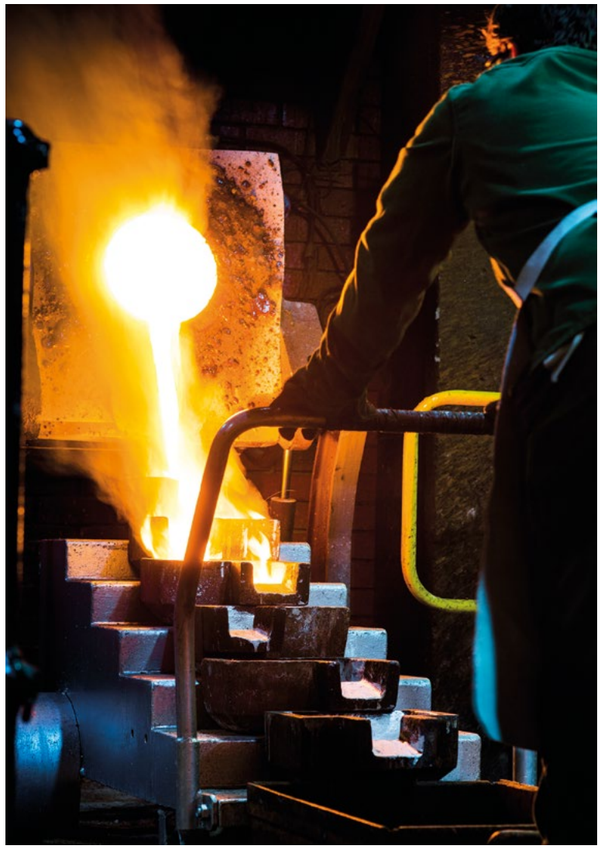
Five keys to success

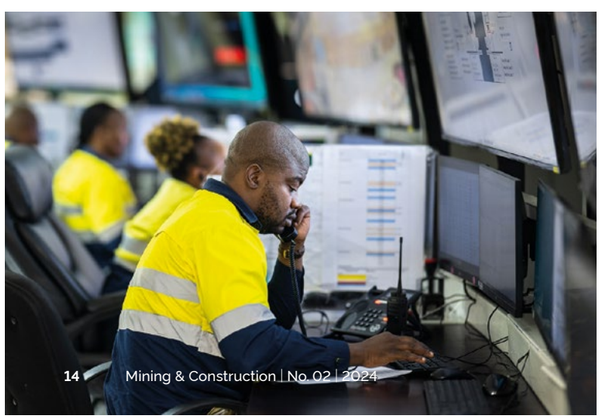
1	2	3	4	5
Automation	**Joy(sticks)**	**Efficiency**	**Sizing**	**Safety**
The ABC (Advanced Boom Control) Total feature enables the automatic drilling of a hole sequence, making it possible for Daesung MDI to deploy a novice operator in three months. Such automation was tremendously helpful when the company was hiring.	*The interior of the Boomer S2 drill rig makes drilling feel like a computer game with joysticks, which, in turn, has appealed to young operators. Making mining work joyful has helped Daesung MDI in their recruitment process.*	*The ABC Total system is a big plus not only when it comes to talent recruitment, but also for mining efficiency. The Boomer S2 produces 10 to 20 percent more ore than other equipment with no automation features.*	*The compact size of the Boomer S2 fits Daesung MDI perfectly, since the shaft size of the Samcheok mine is fairly small. This was an important reason why Daesung MDI chose to purchase this particular drill rig.*	*The rig's cabin protects the operator from noise, dust, and rockfall. The drill rig also shoots water when drilling, which effectively controls dust, keeping the shaft's air clean. This hugely appeals to operators in the mine.*



The South Deep Mine, located approximately 50 kilometers south-west of Johannesburg, is the only South African mine in Gold Fields' global portfolio of ten operations.







Frida Valentin Gold Fields

ENDLESS OPPORTUNITIES

South Deep Mine in South Africa has a bright future. Contributing factors are MineRP Volumetrics and MineRP CAD, an all-in-one system for reliable reporting and planning.

GOLD FIELDS LIMITED, with roots in South Africa's mining industry, is one of the world's largest gold producers. Today, the company also operates in Ghana, Australia, Chile, Canada, and Peru. The only remaining operation in South Africa is the South Deep Mine, about 50 kilometers southwest of Johannesburg, with a depth of 2 995 meters. Gold Fields has used mining software from MineRP, a company acquired by Epiroc in 2021, for a long time. In June 2024, Gold Fields also implemented MineRP Volumetrics and MineRP CAD, used together to collect, analyze, calculate and report on extracted material and mined out areas. **Thabang Meno**, Chief Surveyor at South Deep Mine, already sees improvements.

Why did you invest in the system?

"Accurate mine surveying is critical for South African gold mines due to the complex and dangerous underground operations. This is especially true at South Deep, where multiple mining methods are needed to access the ore body. Therefore, we needed to find more effective surveying methods."

The impact has been immediate. Please elaborate.

"Earlier, we did reporting and surveying in different systems, and it could take three to four days to analyze and process the results. Thanks to this all-in-one solution, it basically takes a day and a half, since the source data is available as soon as the geometrics are captured. Everything is combined. Also, we do not need human intervention between data capture and reporting. We save time, we are quicker, and fewer people need to be involved. Last but not least, the results are more accurate and reliable. Today, the MineRP solution is important – crucial even – in our daily operations."

Gold Fields Limited and Epiroc started discussing the solutions about three years ago. What was key in the process?

"A close collaboration and a lot of effort from both of us. Working with Epiroc helped us in understanding the way forward. There is always frustration associated with any type of change, and this was no exception. We appreciate that Epiroc has stood by us this whole time. Together, we took it piece by piece, and it was totally worth the effort."

Looking ahead, what will be the next step for Gold Fields and South Deep related to the system?

"I see the opportunities as endless. We truly believe Epiroc's system is a sound solution for the unique challenges we face at South Deep, and it has great potential. I am excited to see where it can take us in the future."

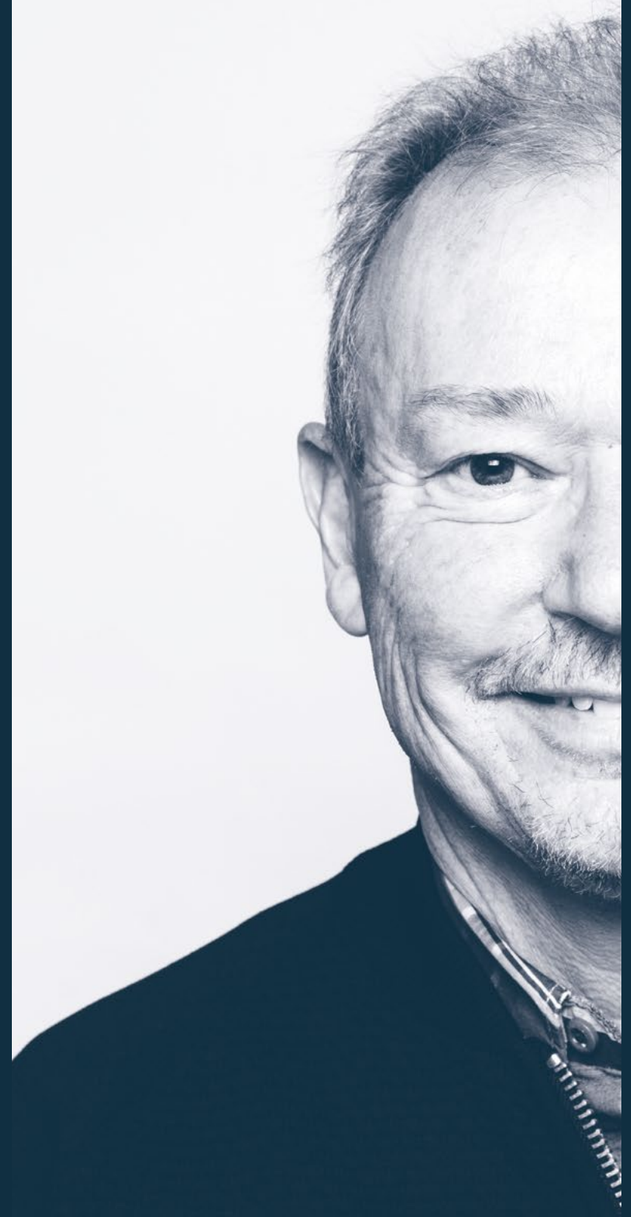


Thabang Meno
Chief Surveyor,
South Deep Mine

[On Location]
South Africa

More www.epiroc.com/digital/operate

Ulrika Vallgårda Tomas Bergman & Mikael Winnebäck



MIKAEL WINNEBÄCK
Project Manager in LKAB's IT department, based in Kiruna

AS SAFE AS CAN BE

LKAB teams up with Epiroc to further digitalization

Digital solutions from Epiroc are set to increase safety at LKAB's mines in northern Sweden. The system, which is currently being rolled out, is already delivering positive results.

[On Location]
Sweden

MINING GROUP LKAB is aiming to digitalize operations at its iron ore mines in northern Sweden. This transition also includes increasing workforce safety, leading the company to team up with Epiroc. Two years ago, LKAB launched a project to implement digital safety solutions that meet the challenges it is facing at its Kiruna mine, one of the largest of its type in the world. The project was further expanded to include the Malmberget mine, and roll out and testing of the solutions has now begun in both locations.

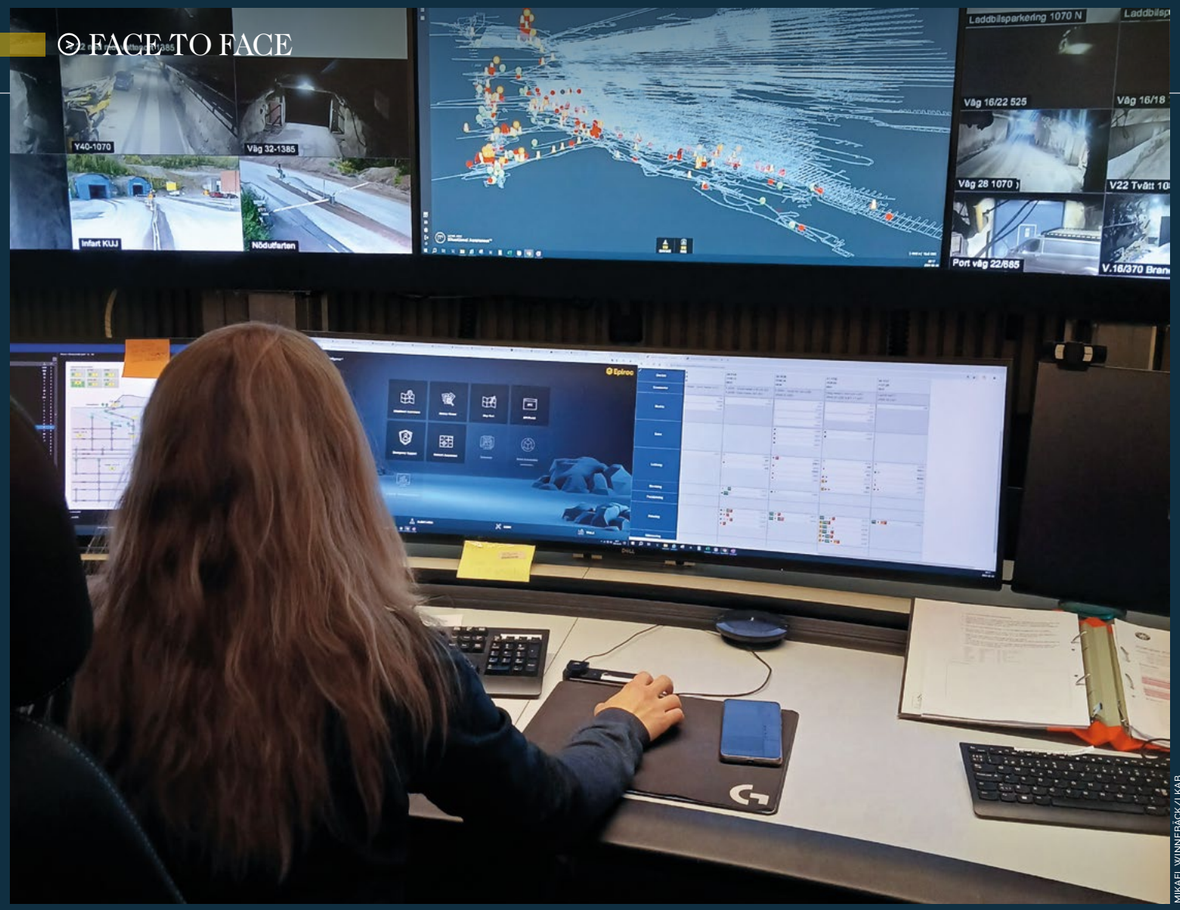
Mikael Winnebäck, a project manager in LKAB's IT department, and **Erika Svedlund**, a project office manager at Epiroc, were responsible for implementing the solutions in the Kiruna mine, and they worked closely to help make the mine an even safer workplace.

Tell us more about the background of the project in Kiruna.

MIKAEL WINNEBÄCK: "LKAB wanted to expand its safety capabilities since the existing safety system did not fully address the very special challenges in the mine. For example, we needed to improve communication with employees underground and also receive more reliable information about the location of both people and machines in the event of an emergency."



ERIKA SVEDLUND
Project Office Manager at Epiroc, based in Luleå



MIKAEL WINNEBÄCK / LKAB

The process manager in LKAB's mine staff monitors production in the mine via the control center and support systems, which visualize the processes. Thanks to the 3D map (big screen), she has an overview of the mine and the objects, people and vehicles that are there.

ERIKA SVEDLUND: "Epiroc has a wide portfolio of digital products that increases safety in mines, already implemented all over the world. However, we are extra proud that LKAB trusted us to be their partner to further digitalize its mines. LKAB had a clear vision of its needs; therefore, we have improved certain products to meet the requirements."

How did you tackle the joint challenge?

ES: "We started by creating a common target image. The next step was to bring together the right people from both sides. For example, both control room personnel and miners were involved in the project."

MW: "For us at LKAB, it was important to have Epiroc's team on site in the mine so the developers could understand the complexity and clearly see the effects of the solutions they developed. We also prioritized the team spirit and did not take a 'we vs. them' approach; instead, we were working from the idea that 'this is the vision, this is what we're going to create, and we must do it together.'"

ES: "Both product managers and developers were on site in the mine regularly during the project and received a lot of useful input on how to adapt the products to meet LKAB's requirements."

How did you bring the solutions to the level required by LKAB?

ES: "One element was to add new functionality to the Virtual Tag, a software tag integrated into the miners' work phones. The product already existed and was refined to be able to manage the size of the mine."

MW: "LKAB already uses a mine tag system that shows information on a 2D map, but we needed a solution that indicates the position more accurately and in 3D. We also wanted to add a function that would enable quick and efficient communication with our employees underground."

The Kiruna mine is huge. What challenges did this pose?

MW: "We needed a solution that divides the mine into different zones and allows us to send messages to restricted areas and communicate only with relevant personnel. The system also needed to be very reliable because it must be able to process large amounts of data that can be displayed in real time. In order to achieve this, a stable Wi-Fi network is essential."

In Focus: LKAB

Luossavaara-Kiirunavaara Aktiebolag (LKAB) is a mining group that was founded in 1890 and is owned by the Swedish state. Its head office is located in Luleå.

LKAB conducts iron ore mining operations at sites in Kiruna, Svappavaara, and Malmberget. The extracted ore is processed into pellets and shipped to a number of companies, including steel producer SSAB.

The Kiruna site is the largest underground iron ore mine in the world and employs around 2 000 people. The Malmberget site, the second largest underground iron ore mine in the world, employs 900 people.

More www.lkab.com/en



Mikael Winnebäck
Project Manager, LKAB



Erika Svedlund
Project Office Manager, Epiroc

ES: "One product that is especially useful in large mines is Network Awareness, which allows Wi-Fi access points and their network coverage to be visible. We also, together with LKAB, got the opportunity to enhance our zone-based notifications and evacuation products, Emergency Support, which makes it possible to send notifications to parts of the mine. Using PocketMine, a digital map of the mine that is installed on work phones, also provides support for navigation to a safe location."

You started with the Kiruna mine and are in the process of rolling out the same solutions in the mine in Malmberget. What experiences did you take with you?

ES: "An important part was, and indeed is, working with change management, including training of mine personnel. Everyone should know how the new digital products work and what added value they bring to every miner. Ultimately, it's about increasing the safety of everyone underground."

MW: "Those of us who worked on the Kiruna project, both from LKAB and Epiroc, gives the Malmberget team support based on our experiences. Because we had already developed the technology, everything went much faster."

How have all the new features affected everyday life in the mines?

MW: "We are using our existing mine tag system in parallel with the rollout of the new digital safety solution, and we are conducting regular notification and emergency tests."

ES: "From Epiroc's side, we are still on hand to provide support in every way we can."

MW: "Although safety is our primary consideration, we also see more added value. The fact that employees can see vehicles in PocketMine makes it easier for them to quickly find relevant vehicles that, for example, need servicing. It also means that they avoid having to go to a production site where there is already another machine." ×

3

KEYS TO A SUCCESSFUL PARTNERSHIP

In order to achieve the best possible results when solving complex problems, it is important that everyone shares the same goal. Mikael Winnebäck (LKAB) and Erika Svedlund (Epiroc) define the success factors of the project in Kiruna.

Participation

✓ The LKAB and Epiroc teams taking part in the project were decided at an early stage. Both parties have been dedicated to meet the goal of the project.

Attendance

✓ The Epiroc team visited the mine regularly, which enabled Epiroc to gain a better understanding of the complexity of the mine environment.

Team spirit

✓ Working together as a team and not adopting a "we vs. them" attitude played a major part in the project's success. Everyone worked toward the same goal.

More www.epiroc.com/digital/newsroom

EPIROC IN BRIEF

Gustaf Höök & Maritha Arcos

Want to keep track of what's happening in the mining and construction industry? Visit miningandconstruction.com for links to industry news and other interesting reading.



EPIROC

The SmartROC D65 BE is fitted with the same type of well-proven batteries and subcomponents as in other Epiroc battery solutions. This streamlines spare parts handling and service for customers with several different operations.

Milestone rig showcased at MINExpo

AT THE MINEXPO exhibition in Las Vegas in September, Epiroc showcased a demonstrator of the first ever Down-The-Hole SmartROC D65 battery-electric drill. This innovative surface drill rig will play an important role in the shift toward a green transition and zero-emission drilling in surface mines.

"The SmartROC D65 BE is a milestone for us and for surface drilling around the world. The fact that we are removing tail pipe emissions from the drilling process is an important step toward a better environment," says **Martin Johansson**, Acting Vice President Marketing, Epiroc Surface division.

THE SMARTROC D65 BE demonstrator at the stand will be used by Capital Limited for field trials after the exhibition.

"We are excited to be partnering with Epiroc to field test this innovative electric drill rig technology that will help drive our industry toward more sustainable operations. To be at the forefront of the gradual transformation to emissions-free surface drilling supports our company's overarching commitment to decarbonization, as well as providing value for our customers," says Peter Stokes, Chief Executive Officer Capital Limited.

Martin Johansson
Acting Vice President Marketing, Epiroc Surface division

Titan CAS + Onboard = an unmatched traffic awareness system

TITAN CAS + ONBOARD is the integration of two safety systems that provide both long and short-range traffic awareness. Titan CAS is an OEM-independent peer-to-peer Collision Avoidance System up to EMESRT Level 9, increasing awareness and saving lives.

Onboard, with its patented navigation system working without dedicated tracking infrastructure, it provides a virtual long-range radar warning about incoming traffic, helping to avoid traffic congestion. These systems together improve traffic flow and prevent collisions for smoother and safer mine traffic.



EPIROC



EPIROC

Groundbreaking Intelligence provides open and scalable solutions that align with the industry's shift towards sustainability and efficiency.

Groundbreaking Intelligence can transform mining

MINING TODAY IS becoming more complex than ever, as miners reach deeper into the earth to find profitable orebodies and work further and further away from infrastructure.

With the Epiroc Groundbreaking Intelligence solutions, you can enhance safety, accelerate planning, adapt to changes, and get actionable insights for data-driven decision-making. The solutions are designed to create flexible digital and automation ecosystems that integrate standalone systems, mixed fleets, legacy solutions, and equipment from existing partners.

They are also open, tailored, and scalable, having been created with the customers' need for interoperability in focus. This means that you have the freedom to design your own technology ecosystem with mixed fleets, legacy equipment, and existing partners.

EPIROC NEWS IN SHORT

01 Core logging to new levels

Corescan Powered by Epiroc is now providing a range of automated geotechnical solutions derived from its Hyperspectral Core Imager (HCI) and HyLogger drill core scanning systems that take core logging to new levels of efficiency and consistency.

02 Full range HVO100 fueled

Starting now, Epiroc's full range of equipment – including drill rigs, mine trucks and loaders – will be fueled with HVO100 fuel when delivered from the Örebro factory. HVO100 leads to a substantial reduction of particulates and other harmful substances, including greenhouse gases.

03 Christensen ready to order

The Christensen 160 Smart surface core drill is now available for global orders. Its modular design allows for use in multiple applications, and it offers best-in-class depth capacity, a Smart control system, and data logging, all of which increase productivity and lower operational costs.

[On Location]
Örebro, Sweden

Hello there!
What is happening in Sweden?



Anders Hedqvist
Head of Strategic Projects, Epiroc

TO ACCELERATE THE transformation of the mining and construction sector, Epiroc is planning for a new test, competence, and demo center in Örebro, Sweden. Gathering all activities in one place will enhance development, improve testing efficiency and improve logistics. **Anders Hedqvist**, Head of Strategic Projects, elaborates.

What is the Test and Competence Center?

"Essentially, it is a cornerstone for testing and developing products and services, to be utilized for both surface and underground operations. Covering 30 hectares, the center will encompass surface and underground facilities across various levels, reaching depths of up to 80 meters into solid, dry granite."

How will the center benefit Epiroc customers?

"It will serve as a hub for training sessions and demonstrations of our products and solutions, offering firsthand experience to our global clientele. It will consolidate control room environments, integrating digital, autonomous, and remote monitoring solutions. The facilities will also be available for product launches, for developing activities, and for showcasing what it's like to work in a modern mine."

What does the timetable look like?

"We plan to start construction in 2025, and operations will gradually roll out over the coming years."

Gustaf Höök Giorgio Santoro
Fredrik Saarkoppel & Epiroc

PERFORMING AT OLYMPIC HEIGHTS

[On Location]
Italy

Tight spaces and sometimes difficult terrain. Mair Josef & Co. KG has specific needs for its operations in South Tyrol. Enter SmartROC T30 R.

Family-run Mair Josef & Co. KG, operating in South Tyrol, is very pleased with how the SmartROC T30 R copes with the sometimes difficult terrain.

THE AUTONOMOUS Province of Bolzano – South Tyrol boasts a spectacular landscape. Located in northeastern Italy, south of the main Alps, the province attracts a lot of tourism all year round, whether the visitors are hiking in the mountains or skiing down one of the hundreds of slopes.

This, in turn, also means that there is plenty of work for contractors in the construction sector. One such family-run contractor company is Mair Josef & Co. KG, whose services include road construction (the company has its own asphalt plant), ski slope construction, reservoirs (including pre-piping work) for snowmaking, and infrastructure (water, hydropower, etc.).

"For the upcoming winter Olympics in Livigno, we will construct the snow park, where all the freestyle events are held, as well as a 200 000 m³ reservoir for the snowmaking," says **Stefan Patscheider**, Quarry and Operation Manager.

Mair Josef & Co. KG also operates two quarries, one of which produces gneiss blocks used in walls that protect against rock fall or avalanches. Since the quarry is small and located very close to a village, not just any drill rig could be deployed.

"The rig needs to have a silence kit, and due to the quality of the gneiss, we often have to drill horizontally. If we drill vertical holes, we would end up with gravel and not blocks. For that reason, the rig has to be very flexible," says Stefan Patscheider.

BEING FAMILIAR WITH Epiroc through its use of top-hammer drills – and knowing that Boomer face drilling rigs have performed well in a tunnelling consortium it is involved in – Mair Josef & Co. KG invested in SmartROC T30 R. The newly launched drill rig is designed to work well in the roughest terrain or the most remote construction site. The swing radius of the boom – a very impressive 45°/45° – is coupled with a 5.7-meter boom system, equipped with a hydraulic 360° feed swing, which means that the user can spend more time drilling and less time setting up. Additionally, the rig is very powerful for its compact size and possesses great terrainability.



Stefan Patscheider
Quarry and Operation Manager, Mair Josef & Co. KG

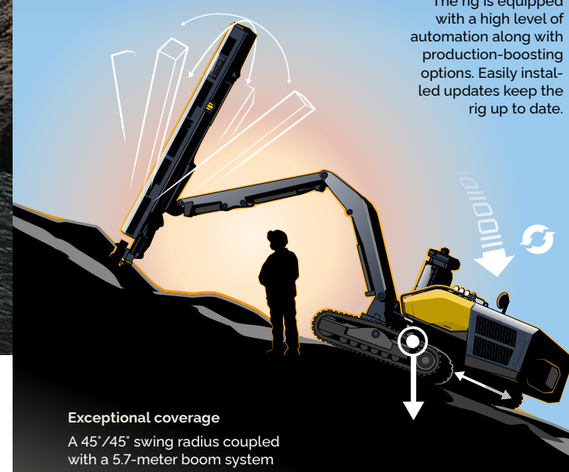
"We needed something flexible that can move in any direction, and we felt very comfortable going with an Epiroc rig," says Stefan Patscheider, praising the performance of the SmartROC T30 R taken into operation in June.

"The rig basically works like an excavator-mounted drill rig, and the maneuverability is just great. There's not always the space to position the

LEARN MORE // SmartROC T30 R

Your new best friend

EACH DAY IS DIFFERENT, with unique problems and challenges. The SmartROC T30 R has been designed with this in mind. Impressive boom coverage, a smart control system and unrivaled adaptability all add up to make sure that the job gets done safely, efficiently and on-time. The rig is also extremely powerful for a machine with such a small footprint.



RCS opens the door to automation

THE SMARTROC T30 R features a smart control system (RCS) which presents the user with all the information needed to get the job done. The Smart RCS also opens the door to automation plus many valuable options. This rig includes a rod handling system which increases consistency, reduces wear on consumables and boosts productivity.

More www.epiroc.com/smartroc-t30r



The boom on the SmartROC T30 R is extremely manoeuvrable, which makes it a great counter-weight when tramming over uneven ground.

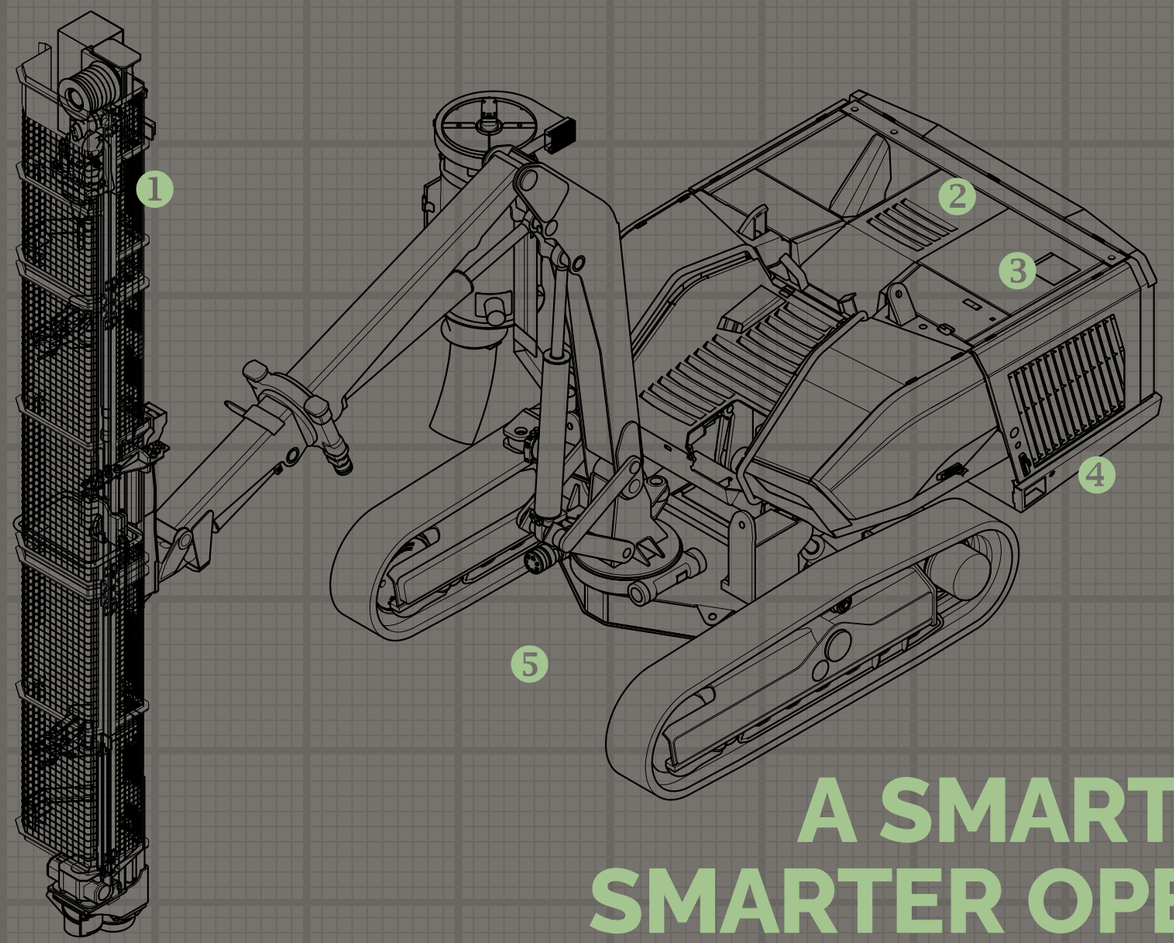
rig ideally, but with the SmartROC T30 R, we manage to do the work anyway. Also, the noise reduction is even better than we expected. The compressor is actually louder than the drill, that's how good the noise cancelling of the drilling is. This is good news not only for the operator, but also for the neighbors," says Stefan Patscheider.

He adds:

"Finding the right people can be a challenge. That also played a part when we invested in such a modern and highly automated rig. Drilling is very fast, and the rig is easy to learn and easy to operate. That makes work more fun and efficient. Which, in turn, is valuable for us as an employer."

THE RIG CONTROL SYSTEM (RCS) of the SmartROC T30 R also opens the door to automation, plus many valuable options, such as the Epiroc Hole Navigation System (HNS). This option allows the user to upload a pre-prepared drill plan, which Mair Josef & Co. KG plans to take advantage of.

"In the near future, we will use HNS data to get a better understanding of explosive consumption in the quarry. This means doing a drone survey before each blast, and then we would like to integrate the HNS data with the 3D model, so we can better calculate the explosive distribution."



Five success factors

1. A noise-reduction kit (not featured in the illustration) is available for sensitive worksites. An impressive boom reach means you can drill more holes between setups.
2. The Hole Navigation System (HNS) option ensures that holes are drilled in exactly the right position without the need for manual marking.
3. The rig is available with an LED lighting package (not featured in the illustration), ensuring that you can work whatever the conditions or time of day.
4. Large hatches and grouped service points make for quick and easy servicing.
5. Wide track placement and good ground clearance combined with excellent balance ensure that the rig has class-leading reach and coverage, without compromising safety or stability.

A SMART RIG FOR SMARTER OPERATORS

A powerful and versatile partner, ready to help the user take on the toughest jobs.

Mair Josef & Co. KG

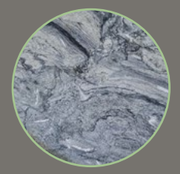
With multiple locations in Vinschgau and Burggrafenamt, Mair Josef & Co. KG is one of the leading civil engineering companies in South Tyrol. Services range from small and large earthworks to road construction, production and installation of asphalt and infrastructure, construction of ski slopes and reservoirs, as well as the extraction of recycling materials and raw materials.

- Founded: 1962
- Workforce: 140 employes
- Machine park: >300
- Sites: Two active quarries, two gravel pits, one asphalt plant

Sellwand quarry

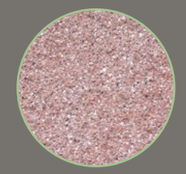
Located in Schnalstal valley, Val Senales in Italy, next to the area were Ötzi (also called The Iceman, Europe's oldest known natural mummy) was found. Here, Mair Josef & Co. KG extract gneiss, a high-grade metamorphic rock. A large amount of rock from Sellwand quarry was used to build a 750-meter-long and 15 to 25-meter-high dam/wall in Schnalstal valley.

Three extracted materials



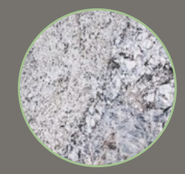
Gneiss

High-grade metamorphic rock, used as armored stone (dam construction, river protection), and countertops.



Red porphyry stone

Natural stone with with a lively color, varying from dark red to brick red. Used for façades, floors, baths, staircases, etc.



Granite

Granite from Martelltal (Marteller Granit Plima), used locally for floors and tabletops. Large rocks used as riprap stones.

[On Location]
China

Efficiency in a compact package

Trying out a next-generation prototype PowerROC T35 from Epiroc solved a complex limestone quarry challenge for Chinese mining company Feilong Drilling.



Christian Tarras Ericsson Zhong Zhishan

With the PowerROC T35, Feilong Drilling's total cost of ownership has been greatly improved.

1 THE CHALLENGE

ANHUI PROVINCE in China has an abundance of quarrying and mining resources such as limestone and nonferrous metals. The province boasts a limestone quarry with one of Asia's largest deposits of electrolytic stone that produces 16 million metric tons annually. Feilong Drilling is responsible for the drilling operations at this quarry and utilizes a fleet that includes half a dozen large drill rigs from Epiroc – PowerROC D45, PowerROC D50, and PowerROC D55 – as well as a number of smaller, semi-hydraulic drill rigs from other brands.



Masanori Kogushi
Senior Product Manager, Epiroc

However, Feilong Drilling recently encountered a challenge. The complex geological conditions of the quarry made it difficult for the large and heavy drill rigs to access smaller benches. Passing through narrow passages was especially problematic for these rigs.

"For these parts of the quarry, Feilong Drilling needed a compact and maneuverable drill rig, but the smaller semi-hydraulic rigs they already had were not productive enough," says **Masanori Kogushi**, Senior Product Manager at Epiroc.

2 THE SOLUTION

EPIROC PROVIDED Feilong Drilling with a next-generation PowerROC T35 prototype for running drill tests, making it the first company in the world to test the updated rig operationally. As it turned out, the rig solved the challenge.

PowerROC T35 is developed and designed for the demanding applications of construction operations and aggregate and limestone quarries, providing both fuel efficiency and fast operations. The new generation that Feilong Drilling tested has even better fuel efficiency – up to 40 percent lower consumption depending on conditions – and is substantially faster at changing rods, which decreases the total drilling time.

"The PowerROC T35 is flexible and compact and can easily maneuver on rugged paths and narrower bench floors. The rig is equipped with new engine-speed control, which enables automatic optimization of the engine speed for all operations, considerably lowering the fuel consumption," says Masanori Kogushi.

In addition, he says, the user interface is more intuitive, allowing for easy system monitoring with all data presented to the operator on a 12-inch touch screen.

"The rig has also been equipped with a one-touch lever operation that makes changing rods much safer and quicker. Operators can begin drilling with only a few actions, reducing the lever operations required."

Another improvement is the new hydraulic return filter, which helps to nearly halve the amount of hydraulic oil required.



3 THE RESULT

AFTER ONLY A few months, Feilong Drilling had gained several benefits from using the PowerROC T35: the flexibility, maneuverability and compactness allowed the operations to reach the problematic benches and the average drill penetration rate exceeded expectations.

"They are getting 35 to 40 meters per hour with a hole size of 89 millimeters, which is more than they had expected. Also, they are very pleased with the lowered fuel consumption, which makes the operations more sustainable and cost efficient. The rig is a very good fit for the sustainability trend in the mining industry," says Masanori Kogushi.

The operators can complete nearly all operations from the comfort of the cabin, saving machine standby time and enhancing the safety of the personnel.

"The TCO, total cost of ownership, has improved greatly, not least due to longer drill bit service life, the hydraulic oil filter, and longer service interval times. Feilong Drilling is very happy with the results."

More www.epiroc.com/powerroc-t35

Shutterstock



Digitalization is here, in full force. Machine intelligence, of which generative AI is but the most recent incarnation, is rapidly transforming the shape, progress and pace of the business world. Gathering relevant data – and making productive use of it – will be key to staying ahead in the years to come.

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The next industry step

AI and big data change the face of business, paving the way for Industry 5.0. The future is data-driven.

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Chile-based Mining TAG is digitalizing South American mines, improving both safety and efficiency.

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Revamping home decoration

IKEA has, over the last few years, gone from depending almost wholly on physical stores to digitalizing the sales process, enriching the customer experience. The result: a tripling of e-commerce revenue.

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Digital future

The transition towards digitalization will pose many challenges, including finding professionals with the right skills, handling cybersecurity, and integrating new systems with older ones.

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SEVEN THINGS

Industrious societies

From artisanally crafted objects and manual labor to robots, AI, and future off-Earth factories – relative to recorded history, man has transformed the process of manufacturing in the blink of an eye.

Henrik Ekblom Ystén Björn Öberg Shutterstock



How to keep up in the digital race?

Digital technology is advancing rapidly, and experts are now talking about a future where AI, humanoid robots, and analysis of big data will change most things fundamentally. So what does that mean for industry?

THE INDUSTRIAL REVOLUTION of the 1700s was characterized by steam power and mechanization. The next big change, from the 1800s onward, was the use of electricity, and in the 1970s, automation and computers took over the development. But the question is whether development has ever happened faster than today, where what has been called the fourth industrial revolution is moving into its next phase.

According to **Gardar Björnsson Rova**, Head of McKinsey Nordics' AI department Quantum Black, the development of AI has been "underway for 70 years but has strongly accelerated in recent years."

"ChatGPT has been the face of development, but the same advances are being implemented in industry. It is about investments in virtual assistants in, for example, maintenance, an AI that you can communicate with while working and that has all the information that has ever existed about maintenance," says Björnsson Rova.

The next wave will be even more extensive. If it is possible to communicate with AI via text today, there will soon be machines that can see and analyze the world around us. This lays the foundation for an advanced production robot that listens to its human assistants, understands what they mean, and then performs the steps.

"We are talking about a revolution in the next ten years that is greater or at least equivalent to the advent of the Internet," says Björnsson Rova.

There are, of course, challenges with the development. For example, greater security thinking is needed, not least with regard to cybersecurity. But the biggest risk is not keeping up with developments, says Gardar Björnsson Rova.

"Companies that do not implement this quickly enough may fall behind. As with all major changes in history, there is a risk of geographical competitive shifts."



Gardar Björnsson Rova
Head of Quantum Black, McKinsey Nordics' AI department



Werner Stengg
Digital expert, The European Commission

DIGITAL EXPERT at the European Commission, **Werner Stengg**, agrees. He serves in the cabinet of Margrethe Vestager, Executive Vice President of the Commission's initiative *A Europe Fit for the Digital Age*.

"The starting point for the initiative was that Europe is not adequately prepared for the digital age and that we need to do something about it, so that China and the US do not continue to pull away," he says.

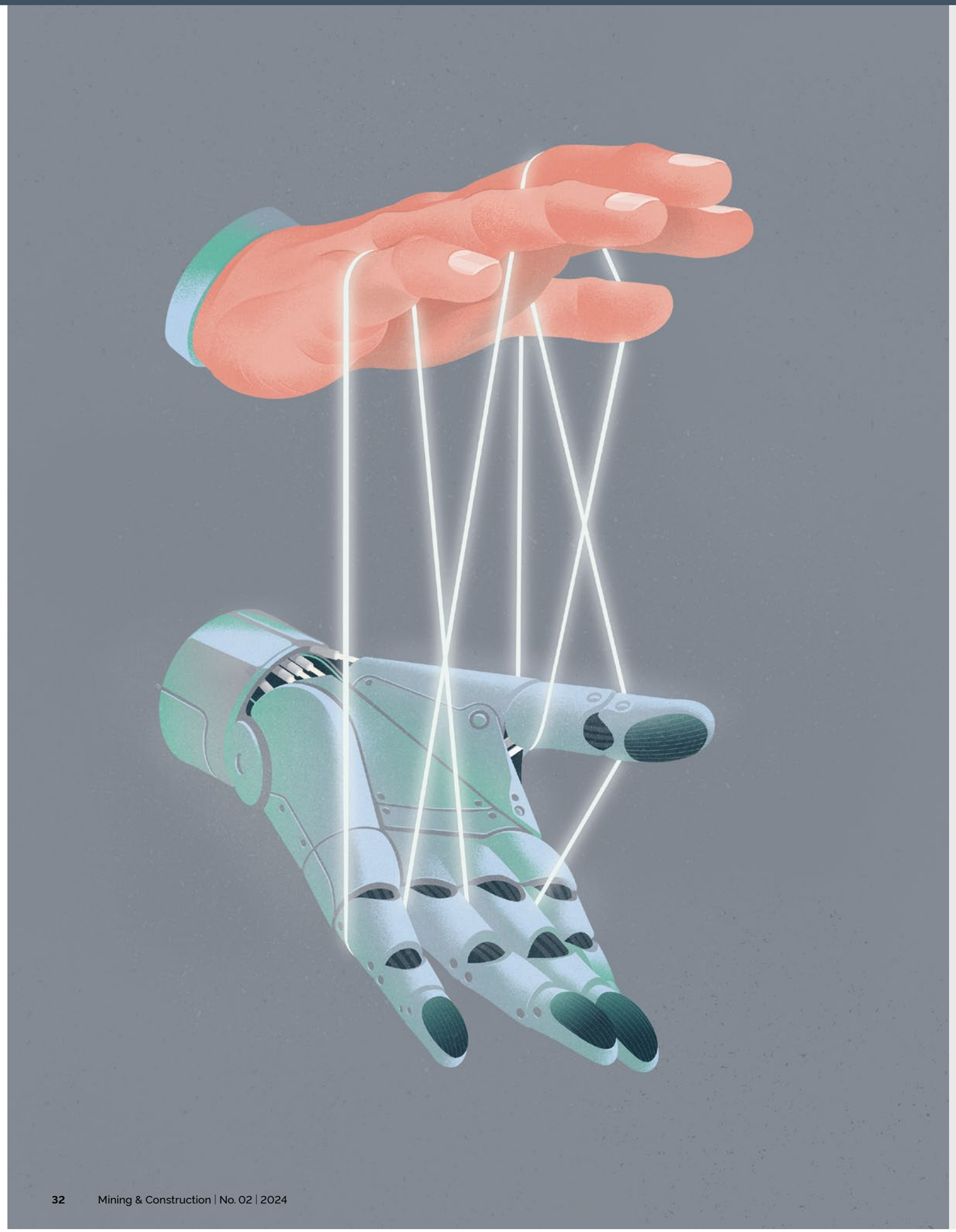
Since 2011, he has been working on behalf of the Commission on digitalization. For the past four and a half years, the focus has been on AI, big data analytics, cybersecurity and everything else falling under what is called Industry 5.0. Werner Stengg believes that the work cannot only focus on increased productivity, but needs to go hand in hand with building trust in new technology and legislating long-term so that industry dares to advance.

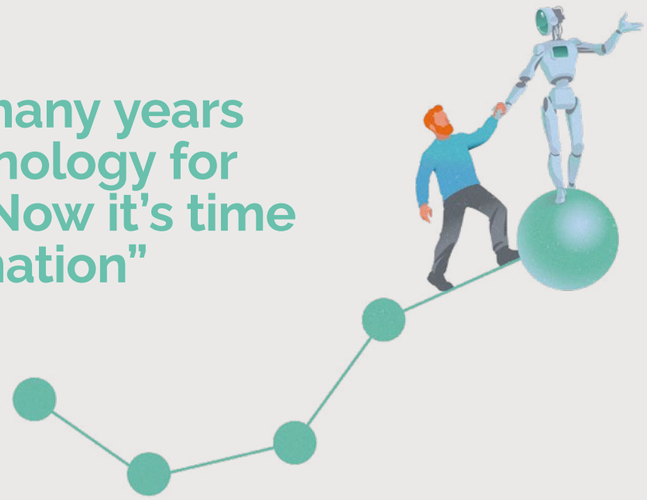
"When we produced the EU White Paper on AI, the phrase 'an ecosystem of excellence as much as an ecosystem of trust' was introduced."

Tangible investments are being made. Taking all funding sources together, it is realistic to expect EU will spend €20 billion per year on artificial intelligence.

"One area Europe excels in is supercomputers, which are needed for increased AI development, for example. Today we have nine supercomputers spread across different countries, and soon there will be even more. Then four of the world's top ten supercomputers will be here," says Stengg.

In the long run, such things help industry.





“We have spent many years developing technology for data collection. Now it’s time to use the information”

Bissan Ghaddar
Professor, Ivey Business School, Canada

“Getting maximum productivity out of it is important. But we also have to take into account social issues, such as how to make our planet greener,” says Werner Stengg.

THIS BALANCING ACT is possible. That is the opinion of **Bissan Ghaddar**, professor at Ivey Business School in Canada. She realized early on that the mathematical theories she was researching could be applied to practical problems in the industry, and her current research projects aim to assist in the transition to a more sustainable use of resources. The necessary data to, for example, reduce carbon dioxide emissions and waste while making production more cost-effective already exist in many industries, she says.

“We have spent many years developing technology for data collection. Now it’s time to use the information,” says Ghaddar.



Bissan Ghaddar
Professor, Ivey Business School

Not everyone is as agile in the transition. Some industries are conservative in nature and, according to Ghaddar, rely more on ‘human knowledge and intuition’ than on automation and technology, despite the fact that they are already highly digitalized and accumulate huge amounts of data that could have made them both more cost-effective and sustainable.

“Hiring people with knowledge of how data is used can be a challenge, as it often requires a mental adjustment for the business,” says Ghaddar.

Another challenge is the lack of international standardized regulations.

“A global company based in, for example, the United States needs to know that the policies that apply to data collection and use are equivalent in Asia or Europe. This requires government agreements.”

However, Bissan Ghaddar believes that increased digitalization in industry is the way forward.

“Everyone is aware of the development and what needs to be done, because digitalization has proven to be a competitive advantage on many levels, including when it comes to sustainability. Customers are becoming increasingly aware and thus more loyal to companies that are sustainable and make an environmental contribution.”

INDUSTRY 5.0

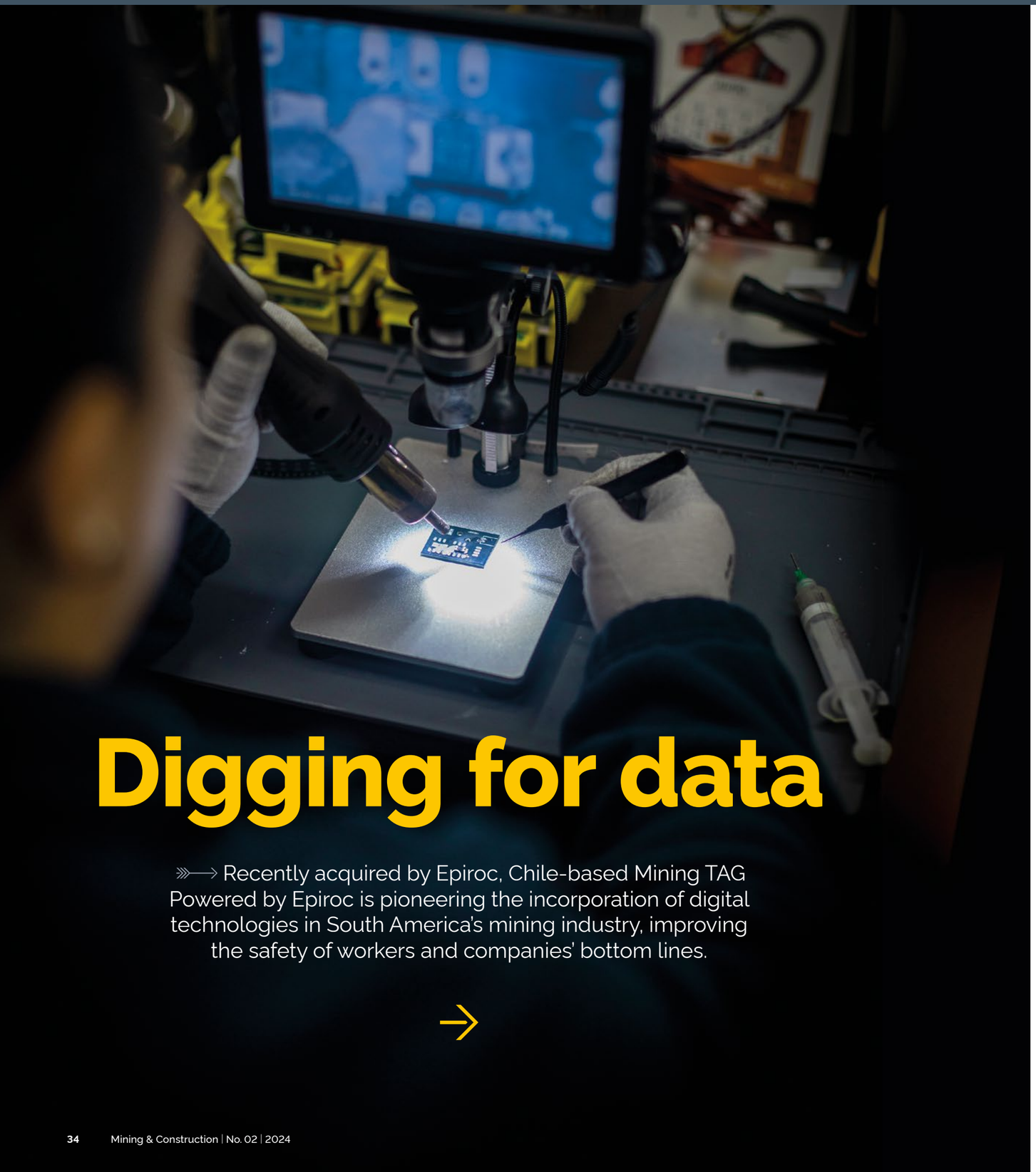
The new collaboration

INDUSTRY 5.0 AIMS TO take advantage of the smart technology that the previous revolution developed, by getting man and machine to work together. Rather than asking what an employee can do with the machine, the question is now what the machine can do for the worker. Using all the data that new technology provides us with is the way forward, says Bissan Ghaddar, professor at Ivey Business School in Canada, who says that the automotive industry in particular has its sights set on the future:

“I know that several automotive companies are testing their car design according to circular economy principles and building them from recycled materials, and others for example are using data to create a sustainable supply chain from start to finish.”



Juan Carlos Recabal



Digging for data

Recently acquired by Epiroc, Chile-based Mining TAG Powered by Epiroc is pioneering the incorporation of digital technologies in South America's mining industry, improving the safety of workers and companies' bottom lines.



"One of our aims here is to provide insights. Not just information but how can it help you"

Francisco Casals
Technology Manager, Mining TAG

[On Location]
Chile

IN A BRIGHTLY-LIT workshop in a warehouse on the outskirts of the Chilean capital Santiago, a young woman is bent over a bench, placing chips on a printed circuit board.

Using tweezers, the components are carefully positioned before being baked in a special oven to solder them in place. The boards are then installed in heavy duty casing made onsite using 3D printers.

Outside the container, the cardboard boxes full of electronic devices are piled ready for shipping to mines across South America.

The company – Mining TAG Powered by Epiroc – is one of the pioneers in the rush to incorporate digital technologies into Chile's mining industry.

Acquired by Epiroc, the business was founded by three Chilean partners just over a decade ago when they spotted a gap in the market.

A huge rockfall in northern Chile trapped thirty-three miners several hundred meters underground. It took rescue teams weeks of drilling through solid rock to confirm that they were still alive and then to dig a tunnel wide enough to pull them to the surface. The story of their dramatic rescue was broadcast around the world (and later turned into a movie starring Antonio Banderas and Juliette Binoche).

In Chile, the accident brought a new focus on safety in one of the world's largest mining industries where dozens of workers died each year.

AUTHORITIES QUICKLY IDENTIFIED one of the biggest challenges: that mining companies had little way of monitoring which miners were at work and where they were in the mine.

Workers usually signalled their presence by hanging an identity tag on a hook at the entrance. But the rudimentary method was unreliable (hanging one's tag could be forgotten), time-consuming and imprecise – once miners were in the mine there was no way to monitor where they were.



Sebastián Salinas
Technical Manager, Mining TAG



Peter Strimaitis
Vice President of Strategy and M&A, Digital Solutions division, Epiroc

So the partners imported a technology deployed in Norway's offshore oil industry (where safety is primordial). Through electronic tags carried by each employee and portals on the threshold of each work area, mining companies can monitor in real time how many people are onsite and where.

"It's super simple," explains Mining TAG's technical manager **Sebastián Salinas**. "Each time you pass, it is detected by the portal and the information recorded."

IN AN EVACUATION, rescuers would immediately know exactly how many people were still underground and where they were.

The system is extremely robust and reliable with a detection rate of close to 100%. Even with a packed bus rumbling through the mine, it will detect the identity of each passenger as they enter or leave.

As the business has grown, Mining TAG has moved from importing equipment to manufacturing some devices in Chile, including the screens and tags.

More than 24 000 of Mining TAG's tags and 500 detection antennas have now been distributed to workers at mines in Chile and Peru.

But Mining TAG thought they might be overlooking an opportunity. If their tags could indicate location, perhaps they could be modified to measure other variables.

It's a trend that is sweeping the industry, explains **Peter Strimaitis**, Epiroc's vice president of Strategy and M&A – Digital Solutions division.

As companies strive to boost productivity to stay ahead of rising costs, they are increasingly turning to data to better understand their operations and spot where improvements can be made.

Data which improves safety can improve productivity, which in turn boosts sustainability. "It's hard to just plot one (improvement) thread. They all intertwine with and build on each other," Strimaitis notes.

As well as vehicle location, they want to know how fast it is moving, how much fuel it is consuming, and the pressure in the tires, data which can suggest whether a vehicle is running well or is about to break down.

A NEW ENHANCED TAG was designed to collect more information as well as a heavy-duty touch screen for the cabin where workers enter additional information.

Attached to the arm of a power shovel, these tags can show how many loads it makes during each shift, or how many holes a drill rig bores.

The gains can be immediate and big.

At one mine in Chile, after deploying Mining TAG's devices, managers discovered that trucks would not begin hauling ore until an hour after the shift had begun. Once the issue had been

Q&A



Schalk Janse van Rensburg,
General Director, Mernok Elektronik

As mining companies place a sharper focus on safety, collision avoidance is the latest technology sweeping the industry. Mining & Construction spoke to Mernok Elektronik general director Schalk Janse van Rensburg about how the South African company, acquired by Epiroc, is helping customers in South America.

Q Why is collision avoidance coming to the fore?

A "There's been a lot of focus on collision avoidance in the South African mining industry in recent years, to the point where it became a legal requirement. Since 2022, all mine vehicles must be equipped with an intervention system, meaning that, if the operator does not react to a warning, the machine will automatically take control. This is what we call Level 9 under the EMESRT (Earth Moving Equipment Safety Round Table) guidelines. And with all the big mining houses wanting to be at the forefront of safety, it is becoming the industry standard globally."

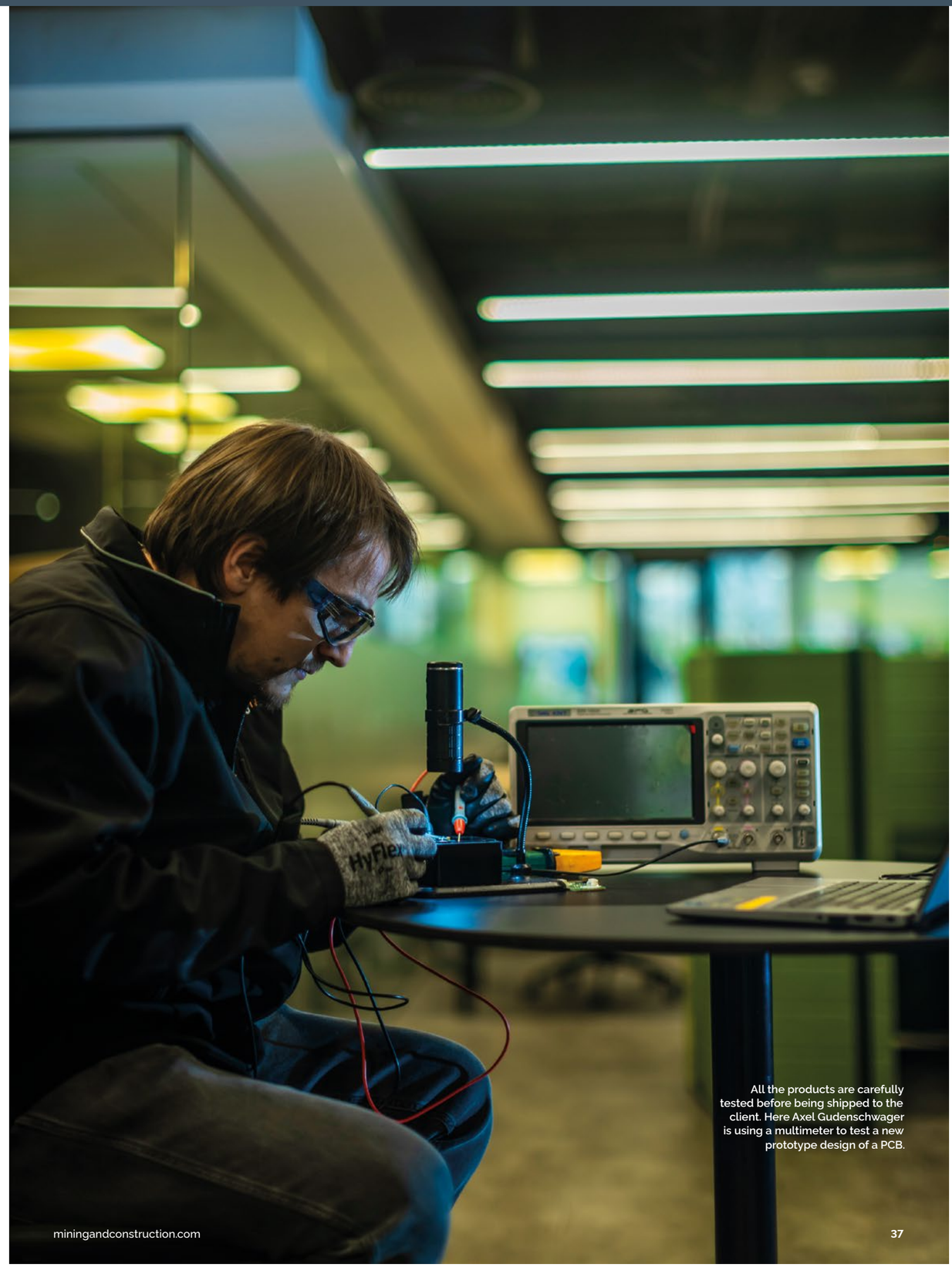
Q How does Mernok stand out in the marketplace?

A "Our real differentiator has always been that we never rely on a single technology. On surface applications, for example, we would typically use GPS but combined with radio frequency, magnetic field sensing, or an AI camara, adding or subtracting technologies as required. That is a different approach from most of our competitors."

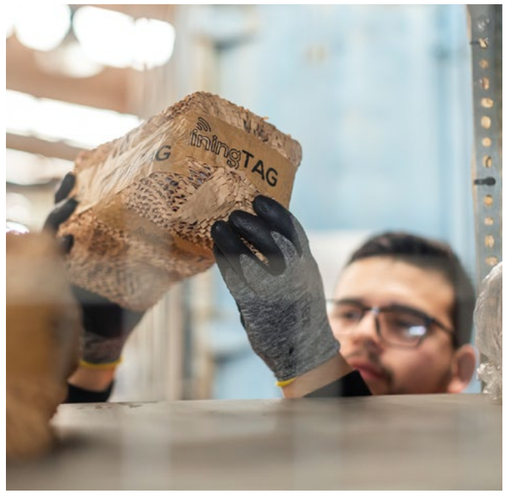
Q How has becoming part of Epiroc enabled you to be part of the deal with Codelco?

A "We were contacted by MiningTAG to equip 66 surface machines with vehicle-to-vehicle sensing at Codelco's El Teniente mine. It became a much bigger contract because we were able to put together multiple solutions. The South American market has been notoriously difficult to penetrate. Epiroc expanded our footprint basically in a couple of months. Having someone there that is able to communicate with that customer, that was all pivotal. Collision avoidance requires change management because you need the buy-in from the people. Without that, technology won't be able to solve the problem."

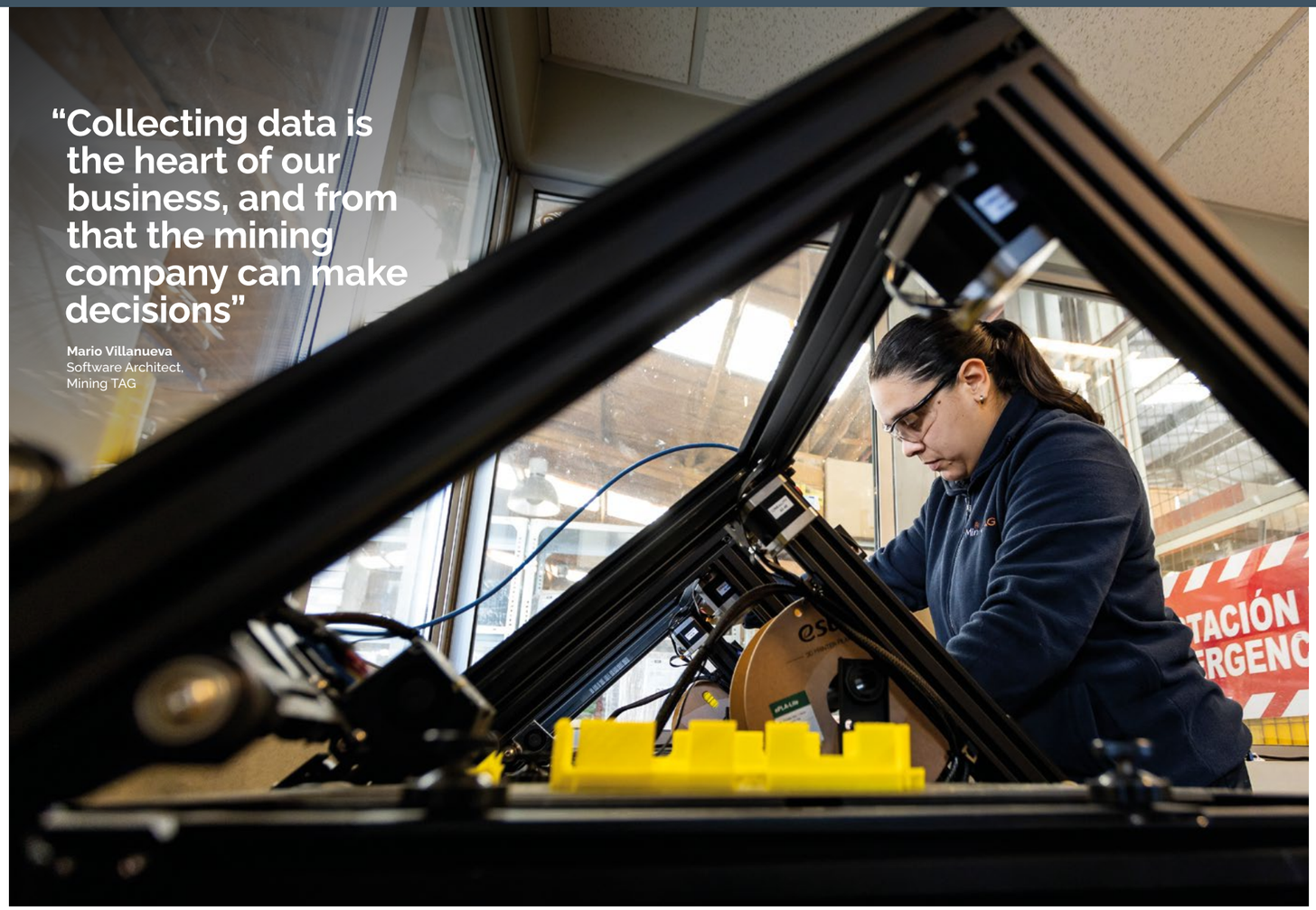
More www.epiroc.com/digital/protect



All the products are carefully tested before being shipped to the client. Here Axel Gudenschwager is using a multimeter to test a new prototype design of a PCB.



Thousands of Mining TAG's devices have been shipped to mines across Chile and Peru from the company's workshop and warehouses in Santiago.



"Collecting data is the heart of our business, and from that the mining company can make decisions"

Mario Villanueva
Software Architect,
Mining TAG

brought to workers' attention, productivity in the haulage operation soared by over 40 percent, with a significant impact on the mine's bottom line.

Despite the potential gains, mining lags far behind other sectors in harnessing the power of data, says Mining TAG's Technology Manager **Francisco Casals**, who used to work in tourism and e-commerce.

"With lives at stake, you can't experiment. It's got to be tested," he notes. The scale of investment in the industry also tends to slow the adoption of new technologies.

But now mining companies are seeing the potential, they are rushing to incorporate digitalization into their operations, through autonomous vehicles, integrated operation centres and real-time monitoring of equipment.

New acquisitions like Mining TAG are allowing Epiroc to provide a suite of interlocking technologies to help mining companies bring their operations into the 21st century.

Together with Mernok Elektronik (see Q&A with Mernok's **Schalk Jense van Rensberg**) and automation specialists RCT, companies also acquired by Epiroc, Mining TAG is a key part of a deal between Epiroc and Chile's Codelco to incorporate digitalization at its El Teniente mine, the largest ever signed by Epiroc's Digital Solutions division.



Francisco Casals
Technology Manager,
Mining TAG



Mario Villanueva
Software Architect,
Mining TAG

"You've got to be able to connect all of these pieces like individual instruments in an orchestra all coming together," explains Strimaitis.

AT THE CUTTING EDGE, mining companies are even turning to machine learning and artificial intelligence to analyze all this data to understand and see how their operations could be run better.

"One of our aims here is to provide insights. Not just information, but how it can help you," notes Casals.

There are potentially hundreds of improvements to be made in any business operation as long as the people in charge can access the data.

"Collecting data is the heart of our business, and from that the mining company can make decisions," explains **Mario Villanueva**, Mining TAG's Software Architect.

That's easy in a factory. Less so in an underground mine where conditions are harsh, and personnel can be separated by hundreds of meters of rock.

TO KEEP TRACK at staff at El Teniente, Mining TAG installed almost one hundred portals to keep tabs on personnel moving through thousands of kilometers of tunnel.

"The challenge is how to make this work when there is no communication inside the mine," Villanueva notes. So Mining TAG has now begun work on technology that allows its tags to store data until a reliable connection is achieved.

Following its acquisition by Epiroc, the Mining TAG team is thinking big.

"Now we've got financial backing and a world of contacts. Suddenly we could have clients in Africa," explains Salinas.

3D printing has radically reduced manufacturing costs, allowing Mining TAG to produce parts in Chile. Here Emily Meza is preparing one of the printers to be operated.



Martín Galaz
Head of Mine Automation,
Codelco Division El Teniente

What do you gain from working with Mining TAG?

MiningTAG technology supports Codelco operations at the El Teniente mine. Please elaborate.

"This technology allows us to control production in detail by registering each shovel load of ore that the LHD loaders haul in each part of the underground mine. Block caving must follow a series of operating criteria, such as extraction speeds and expansion rates, and this allows us to stay on top of all that."

How important is digitalization to Codelco's mining business?

"Digitalization is just the beginning for us, and we have already digitalized many mining processes. This generates online information that is critical to the management of the mine. We are now taking the next step, which is to automate these processes, beginning with production equipment. But we want to advance some service equipment at least to the level of remote operation. We hope that MiningTAG can help us in this challenge and reduce the number of people exposed to risks in the underground operation."

How important is the collaborative nature of the relationship with Mining TAG?

"This contract with Mining TAG seeks creative and innovative solutions, not just transactional products and services. This service requires long-term and lasting collaboration, where Mining TAG understands the needs of the operation and seeks and delivers effective solutions; for example, in discipline management, people tracking, and so on."

More www.codelco.com

Christian Tarras Ericsson IKEA

IKEA

There are always things to be learned from other organizations and other industries. Here's a look at how IKEA has undergone a digital transformation.

These days, the IKEA customer journey frequently starts at home, with an AR solution to try out furniture and decorations before even setting foot in a physical store.

IKEA TRANSFORMATION

Assembling a digital strategy

IKEA, THE WORLD'S LARGEST furniture retailer, has spread Swedish meatballs and products with quaint sounding names over the planet for decades – as of 2023, there were 467 stores operating in 62 countries. However, despite the growing digitalization of society, IKEA did not appoint its first Chief Digital Officer until 2018. Since then, the company has adopted a multi-year strategy and undergone a comprehensive digital transformation. The evolution is driven by the goal of adapting to changing customer needs, as well as the need to stay relevant in the digital age.

ONE OF THE most significant steps has been to gain data-driven insights to analyze and understand customer behaviors, preferences and market trends. Consequently, over a three-year period from 2020 to 2023 IKEA tripled its e-commerce levels. Data, along with AI and machine learning solutions, have played a crucial role in reshaping IKEA's supply chain, inventory management, logistics and store layouts. Now, the physical stores increasingly work as fulfillment centers, with around 80 percent of customer journeys starting online.

THE CUSTOMER EXPERIENCE has been revamped, with AR and VR solutions to help customers better envision how furniture would fit in their spaces. A "Shop & Go" feature in the mobile app allows customers to scan and pay for items, bypassing checkout lines. Along with this, the company introduced a "Customer Data Promise" and a digital ethics policy, giving customers control over their data.

The workforce has also been transformed, with IKEA investing in reskilling and upskilling initiatives to enable its employees to take on new roles. The company views technology as a means to relieve employees from repetitive tasks, allowing them to explore more diverse roles. ×

In Focus: Virtual homestyling

IKEA'S AR SOLUTION allows users to visualize how furniture and home decor will look and fit in their own homes, offering true-to-scale and realistic 3D models of a large range of products. Users can walk around and view the products from different angles to get an immersive experience. The app simulates realistic lighting and shadows based on the room conditions and uses intelligent object recognition to ensure products are placed in the right context. The AR experience is integrated with the e-commerce platform, allowing users to add products from their designed rooms directly to their shopping cart for purchase.

More www.ikea.com

Gustaf Höök

FORWARDING DIGITALIZATION

Want more input on this theme? Three people from different fields offer their insights to help paint a broader picture.

01 What are the main challenges in the transition toward digitalization?

02 How should those challenges be met?



Matthias Pohl

Global Marketing Manager TIA Portal & Efficient Engineering, Siemens, Germany

01 "The industrial sector is facing significant challenges. High energy prices, a skilled worker shortage, unstable supply chains and rapid innovation cycles continue to keep companies busy. To tackle these challenges, industry has to become more sustainable, resilient and efficient. And we cannot lose any time."

02 "Firstly, the essential part is to combine the real and the digital worlds. We can use the digital world to become faster, more flexible, and sustainable in the real world. Secondly, with AI we have a powerful tool that can help us – generative AI in particular is a supercharger for the digital transformation. It helps us to be more productive, efficient, and competitive. Thirdly, no company can meet these challenges on their own. This is why we need to work together in ecosystems and jointly develop solutions."



Beatriz Bolonio

Client Solutions Architect, Idrica, Spain

01 "The digitalization of companies involves challenges such as cultural and technical resistance to change, lack of adequate skills among staff, integration of legacy systems with new digital solutions, as well as cybersecurity and data protection. Addressing these challenges strategically will enable organizations to improve their competitiveness and efficiency in the digital era."

02 "To make the most of digitalization, we must define specific objectives and communicate this vision throughout the organization, have strong leadership, involve stakeholders in planning and execution, and foster a culture of innovation within the organization. In addition, continuous monitoring and evaluation are necessary to assess progress."



Francisco Betti

Head, Global Industries Team, World Economic Forum, Switzerland

01 "First, there is a significant shortage of skilled professionals needed to implement and manage digital technologies. Second, digital transformation requires substantial investment, which can be a barrier. Third, integrating new digital solutions with existing systems can be complex and costly. Lastly, organizations may lack a clear perspective on the short-term benefits and long-term opportunities."

02 "Companies or countries should first establish a comprehensive, clear, and ambitious strategy that takes into consideration the various stakeholders, goals, and pillars of the transition. After that, they should identify the digital skills gap and create programs to address it, focusing on upskilling and reskilling for future needs. Lastly, increasing investment through both traditional and innovative financing models will be essential."

More www.bit.ly/weforumdigitalization

Christian Tarras Ericsson Shutterstock

From manual labor to autonomous factories – the evolution of industry spans from pre-industrial hand tools to futuristic nanobots and off-world manufacturing.



Industry 6.0?

The dim and distant future might bring both fully autonomous factories and nanobots and will certainly employ 3D printing on a large scale in a wide variety of materials. Off-world resourcing of asteroids and the Moon may be viable, as well as manufacturing in orbit.

Industry 0.0

Pre-industrial manufacturing was performed by manual labor mostly using hand tools. At best, the artisan had access to a workshop and was part of a guild. There might have been some exchange of ideas between cultures and individuals, but no standardization.

Industry 5.0

The near future may see the rise of collaborative robots – cobots – used for repetitive work, while people focus on decisions and problem-solving. Plant process management will increasingly rely on AI, and there will be even more emphasis on energy efficiency and sustainability.

Industry 1.0

The Industrial Revolution and steam-powered machinery enabled mass production. Factory-produced goods increasingly became the norm, while standardization improved quality control and efficiency, leading to increased output. A working class and industrial cities emerged.

Industry 4.0

Internet of Things has enabled remote solutions, while Big Data has given insights to make data-driven decisions. Robots are becoming more integrated and autonomous, and digital twins, AR, and VR allow for simulation and analysis. Machine learning is used to develop AI processes.

Industry 2.0

Electricity gradually replaced steam power and provided lighting, while the telegraph and telephones eased communication. Vehicles run on internal combustion engines transformed transportation, and assembly lines streamlined production processes for increased efficiency.

Industry 3.0

The next leap involved computerization, electronic components for monitoring and controlling equipment, and the gradual introduction of automated solutions; all these were combined through PLCs (Programmable Logic Controllers), used to control machines and processes.

Next issue [In Focus] Exploration is the starting point of successful mining operations, but how does a company develop equipment that optimizes the processes? We take a closer look in next issue's Feature.

MY WORK: SERVICE TECHNICIAN

Epiroc's greatest asset is our employees. We take pride in offering them an outlet for their creativity in order to provide the best possible value to our customers.

Frida Valentin
Santiago Salinas

"I hope I can inspire other talented women"

Manuela Medina's first job was in the Guillermo Echeverri Tunnel. Being a woman in a male-dominated industry was tough, but she decided to make it work. Today, she is Epiroc's only female service technician in Colombia.

"I never would have imagined that my first job, after earning my degree in mechatronic systems technology at Pascual Bravo University, would be as Boomer face drill rig operator at Gaviria Guillermo Echeverri Tunnel, set to be the longest in Colombia and across the Americas. I began as an intern, hired by Consorcio Antioquia al Mar, focusing on learning the Boomer. Following training with a simulator and six months of guidance, I transitioned to operating the boomer, drilling for blasting. It was challenging and a significant responsibility, especially as a woman in the mining and construction industry. However, the Epiroc service technicians were supportive, recognizing my talent. Encouraged by their belief in me, I embraced the challenge wholeheartedly, determined to break stereotypes in mining. I worked as an operator in the tunnel for three years, and I loved the opportunity. It was demanding and a significant responsibility, especially as a woman in the construction industry.



MANUELA MEDINA

Job: Service Technician
Age: 28
Joined the company: 2022
Best part of the job: "The continuous learning process and the fact that I am working in the mining industry."

Today, I am proud to be Epiroc's only female technician in Colombia. Of course, I think there should be many more, and I hope I can inspire other talented women to join the industry. My previous role as an operator cleared the way for my current position as a service technician at Epiroc in Colombia, which consists of overseeing the result and ensuring that the drills and tools function properly for the operation to advance. I also engage more with customers through on-site technician visits. Reflecting on my journey so far, I genuinely appreciate both roles. For me, the most valuable aspect of my work, regardless of the role, is the continuous learning experience. I look forward to continuing to grow within the company.

On weekends, I retreat to my parents' farm. There, I help milk the cows, I enjoy delicious meals, indulge in music, and watch plenty of movies. I just love to be in the calm farm environment; it is a huge contrast to my professional life. However, as Sunday approaches, I am ready for another stimulating week, fully charged with new energy." ×



Having started out as an intern, Manuela Medina has taken on a number of challenges during her time at Epiroc. Today, she works as a service technician, overseeing results and ensuring that the drills and tools function properly.

Simon Kamm Pedro Guimarães





The SmartROC D60 drill rig, which managed to drill up to 40 holes per hour, was crucial to the success when foundations for 21 000 solar panels were constructed for the Parque Solar Calhariz Novo, on the outskirts of Lisbon.

SmartROC rigs speed up solar project

Portuguese company CJR Renewables used Epiroc SmartROC drilling rigs to build a photovoltaic park near Lisbon, achieving exceptional speed and accuracy while minimizing environmental impact.

NESTLED ON A HILLSIDE overlooking the municipality of Vila Franca de Xira, on the outskirts of Lisbon, the 13 MW photovoltaic park Parque Solar Calhariz Novo offers stunning views of the 14 192-hectare Tagus Estuary Nature Reserve, a vital ecological area renowned for its biodiversity and critical habitats for numerous bird species. Established in 1976, the reserve includes estuarine waters, mudflats, islets, salt marshes, and alluvial agricultural lands.

The 9 000-square-meter site was selected to maximize sunlight, but rocky terrain and steep slopes (up to 22 percent) presented challenges for CJR, particularly for drilling foundations for the 21 000 solar panels.

The Epiroc SmartROC D60 drill rig, a new addition to CJR's fleet, arrived at the site in mid-March. After assembly and testing, it began full-scale operations in early May. "The exceptional efficiency and precision of the SmartROC D60 has been crucial," noted **João Duarte**, the project's senior drilling supervisor, highlighting that thanks to the rig's strong performance, CJR managed to complete 85 percent of the 9 853 projected drill holes within two weeks.



Nuno Carvalho
Executive Director, CJR Renewables

DUARTE PRAISED THE SmartROC D60 for its ability to drill up to 40 holes per hour, with hole depth ranging from 1 200 to 1 305 millimeters. With 10.5 hours of daily operations, this translates to an average of 410 holes per day, which he deemed a "remarkable feat given the challenging terrain." Duarte stated that this SmartROC model is typically reserved for quarries and mines, because of its power, but that it proved "ideal for surface drilling on smaller projects like this."

Rui Faria, the company's equipment and operations manager, emphasized that CJR chose the SmartROC D60 for its larger drilling diameter, ability to handle varying depths, and superior fuel efficiency. He also praised the rig's intelligent features for "unmatched drilling precision and speed."

Nuno Carvalho, CJR's executive director, emphasized that integrating sustainable practices in the company's construction projects, both in Portugal and elsewhere, is a key part of its global strategy. This means that all projects include mandatory sustainability measures, such as efficient waste management, promotion of environmental practices to protect wildlife and flora, and other actions aligned with sustainability and environmental concerns.

He stated that the Novo Calhandriz project integrates solar energy with sustainable practices by hiring local labor and sourcing regional materials, benefiting the local community and economy. Carvalho emphasized that during its construction, CJR also minimized environmental impact through waste management, habitat protection, water and emission control, and noise reduction. He noted that Epiroc SmartROC drills were chosen for their energy efficiency, reducing environmental impact and CO_2 emissions, while also minimizing waste by optimizing resource use during drilling.

Gustaf Höök Epiroc

Epiroc has selected nine relevant UN Sustainable Development Goals, connecting them to the company's own goals. In each issue, we highlight one of them.





Collaboration in all forms is a cornerstone for Epiroc, whether it is with universities, customers or other companies.

Partnership is the new leadership

The global Sustainable Development Goals (SDG) formulated by the UN guide our sustainability work. We take a closer look at Epiroc's approach to SDG 17.

THE WORLD NEEDS metals and minerals for the energy transition, and there are three strong technology trends shaping the mining industry: digitalization, automation, and electrification. Epiroc is a leader in all three, but complex solutions often require collaboration, something that aligns with SDG 17: *Strengthen the means of implementation and revitalize the global partnership for sustainable development*.



Jonas Albertson
Chief Technology Officer, Epiroc

"When trying to maintain productivity, our customers are facing new challenges, due to factors such as deeper mines, lower ore grades, and legislative demands. This calls for even safer and more efficient solutions," says **Jonas Albertson**, Epiroc's Chief Technology Officer.

In this new landscape, partnership is the new leadership, a phrase often used by Helena Hedblom, Epiroc's President and CEO. It's vital to come up with cutting-edge solutions, and fast. This, in turn, is very much in line with Epiroc's long history of collaboration.

"Innovation, collaboration and commitment are part of our DNA. These are good traits to have when forming partnerships. And in a time of rapid shifts in technology, we need to collaborate more than ever," says Jonas Albertson.

PARTNERSHIPS INCLUDE developing new solutions in close collaboration with customers, but also with other companies, such as Northvolt and ABB. In addition, Epiroc partners with academia, Örebro University and Luleå University of Technology being prime examples.

"All this makes us well-equipped to develop productive and safe solutions," concludes Albertson.

More www.epirocgroup.com/un-sustainable-goals

BLAST FROM THE PAST
YEAR 2013

Innovative products and a wide array of customers: Epiroc is a new company with a long and rich history dating all the way back to 1873. In each issue of Mining & Construction, we look into the review mirror for a glimpse of the past.

Epiroc
Shutterstock

The Church of Saint Peter near the city of Antioch in southern Türkiye, believed to be one of the very first Christian meeting places, was spectacularly saved for future generations with the aid of modern rock bolting technology.

Portfolio:
Church of Saint Peter



FROM A DISTANCE, the cave in the side of Turkey's Mount Starius, close to the Syrian border, looks no different to the many others that are found in this part of ancient Europe. But this one is no ordinary cave. It is believed to be one of the first founding churches of the Christian faith and a place where none other than the first apostle, St. Peter, once preached the gospel.

What is known for sure is that the site, which now has walls, colonnades and an altar, was established as the Church of St. Peter in the 4th century. Today, it is a museum and one of the most popular tourist attractions in the country, but was also subjected to frequent rockfalls which threatened to destroy the church for all time.

To save and protect this iconic site, a spectacular rescue operation was carried out in 2013 to eliminate the immediate risk of more rockfall and to secure the mountainside for as long as possible. For this work, Turkish contractor Kuzey Dagcılık used professional mountaineers armed with modern rock stabilization technology from Epiroc (Atlas Copco). Suspended from climbing ropes high on the mountainside, they drilled a series of 48-millimeter holes into the rock face using stabilizer bolts on the rock drills to prevent deviation. Swellex rock bolts were then hoisted up the rock face and inserted in the holes. Finally, a Swellex pump was hoisted up and used to inflate the bolts.

More www.bit.ly/unescosaintpeter

AROUND THE WORLD IN BRIEF

Want to keep track of what's happening in the mining and construction industry? Visit miningandconstruction.com for links to industry news and other interesting reading.



ANGLO AMERICAN

Landscaped hydraulic dewatered stacking (HDS) tailings at Anglo American's El Soldado mine.

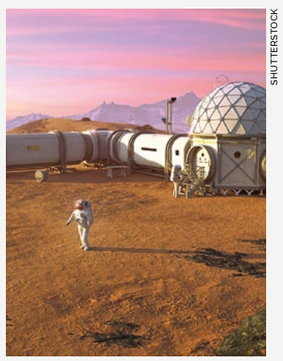
Chile increases efforts to adapt to and combat climate change

CHILE'S MINING SECTOR is positioning itself as a leader in climate adaptation, mining.com reports. Chile faces significant climate challenges, primarily due to rising temperatures and increasing frequency of extreme weather events. The impact is particularly critical for the mining industry, which is crucial to the country's economy but heavily dependent on water and stable weather patterns.

Parts of Chile have experienced a temperature increase of 1–2°C, well above the continental average, and water availability has decreased by 37 percent over the past 30 years. This is combined with the intensification of the El Niño/La Niña phenomena, causing heavy rainfall and disruptive floods. To adapt, the mining sector is focusing on infrastructure resilience, water management, innovation and sustainability frameworks, and advanced mining techniques.

AI and space tech enhance mineral exploration

INNOVATIONS IN SPACE TECHNOLOGY, 3D multi-physics, and AI are enhancing predictive capabilities and driving sustainable outcomes in mineral exploration, according to *mqworld.com*. For example, the ExoSphere solution from Fleet Space Technologies enables real-time direct-to-satellite connectivity, edge computing, and AI-powered targeting. This may be crucial for discovering the minerals needed to scale clean energy solutions.



SHUTTERSTOCK



Vis Reddy
Chairman, SRK Consulting, South Africa

Future mining in Africa

What role do you think Africa will play in the future of mineral production?

"Africa has historically been rich in sought-after commodities such as gold, coal, and iron ore. However, there's a significant shift toward exploring for commodities that are essential for a low-carbon future, such as copper, cobalt, and lithium."

What are the success factors to achieve sustainable mining?

"Here at SRK, we try to guide our clients to work in a responsible and sustainable manner. The goal used to be solely to maximize profitability. That is changing, and ESG principles are being integrated across the value chain to balance risk and reward. For example, companies look at the long-term environmental impact and how it can be mitigated, as well as the social aspects of protecting livelihoods and upgrading local communities."

What challenges are there to overcome?

"We are far from where we should be, but most of the mining companies recognize the need for action and are committed to, for example, reaching net-zero emissions. However, there are technical and political challenges to overcome to meet current target dates, and I am not sure whether some of these timelines are realistic."

More www.bit.ly/africamineral



Pinpointed

1 Space mining startup aims for asteroid
Huntington Beach, CA, USA

California startup company AstroForge plans to launch the probe Vestri in 2025, *space.com* reports, with the aim of docking with a metallic near-Earth asteroid. The mission, if successful, will be the first private mission to land on a body outside the Earth-Moon system. The company plans to focus on metals, unlike some previous off-Earth mining startups which aimed to find asteroid water. Actual mining in future missions is presumably in the plans.

2 World's largest solar farm announced
Ordos, Inner Mongolia, China

China has announced the construction of the world's largest solar farm, according to *constructionbriefing.com*. The farm will be located in Ordos in Inner Mongolia, covering an area of 809 km² (200 000 acres), and it will produce 8 GW. The construction cost is estimated at nearly USD 11 billion. China is the undisputed world leader in solar energy production, having a third of the total global capacity, with the US and Japan in second and third place.

3 Dominican Republic to create state mining firm
Santo Domingo, Dominican Republic

The Dominican Republic will create a state mining firm, Empresa Minera Dominicana SA (Emidom), as reported by *mining.com*. The aim is to explore, exploit and run economic viability studies on the nation's key mining resources, including rare earth minerals. Emidom is also tasked with managing the Avila mining reserve in southern Pedernales province, which borders with Haiti and in 2018 was declared an area to be explored for possible rare earth projects.

4 Southern African rail revival underway
Lobito, Angola

Interest in Southern Africa's railways is surging, getting global attention and attracting large investments. *mining.com* reports that years of neglect and a lack of funding have left many of Southern Africa's rail lines in disrepair. Now, governments and investors are readying to revive old rail lines and build new ones, for example, in Angola, Congo, Zambia and Tanzania. Much of the demand for freight comes from the Central African Copperbelt that Zambia and Democratic Republic of Congo share.



SHUTTERSTOCK

Maritha Arcos Alexander von Sydow

Next generation surface drill unveiled

The new generation of the SmartROC CL surface drill rig boasts enhanced versatility, low fuel consumption, and a reduced total cost of ownership. Global Product Manager **Mattias Hjerpe** elaborates on its attributes.

Tell us more about the features of the SmartROC CL MKII.

"This is an updated and improved version of one of our most powerful and versatile surface drill rigs. The new generation is equipped with the 50-kW rock drill COP QM50CR. Our goal has been to create a drill that's more reliable and durable than its predecessors. Additionally, we've enhanced the Rig Control System with an intuitive touch screen display and troubleshooting assistance to minimize downtime."

What are the biggest advantages that customers will notice?

"The higher efficiency of the COP QM50CR itself, together with the upgraded Rig Control System, makes a significant contribution to overall energy efficiency. In fact, the SmartROC CL, which uses COPROD technology, consumes up to 45 percent less fuel compared to traditional DTH drilling. This efficiency translates to a low total cost of ownership and reduced CO_2 emissions. Furthermore, the control system fitted to this rig is now the same across all our SmartROC rigs. This means that operators will feel right at home."



Mattias Hjerpe
Global Product Manager, Epiroc

The rig was launched during MINExpo 2024. What were the reactions?

"Our customers were as excited as we are. This launch represents yet another step toward a more sustainable mining and construction industry. Many of our customers need to be able to drill through both hard and soft rock, and now this rig can automatically manage the transition between these geological conditions." ×

More www.epiroc.com/smartroc-cl

SmartROC CL MKII in brief

UPDATED RIG CONTROL SYSTEM (RCS)
Including touch screen, improved drilling controls, and troubleshooting assistance.

COP QM50CR
A reliable and durable rock drill, equally effective in hard and soft rock.

UPDATED 140 DRILL STRING
Drill strings with reduced pressure drop, combining the greater penetration rate and lower fuel consumption of a tophammer with the hole quality and straightness of DTH drilling.



The COP QM50CR helps you to drill efficiently with a high penetration rate and excellent hole straightness.