Mining Africa Magazine

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July-September 2023

Komatsu: Empowering a sustainable future through collaboration Pg.24

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The International Mining and Resources Conference (IMARC) is where the most influential people in the mining industry come together, delivering ideas, inspiration and serving as a meeting ground for the industry. From ground-breaking technology and world-class content to a vivid showcase of all the elements that make the mining industry great, IMARC is an opportunity to learn from more than 500 mining leaders and resource experts with a program covering the entire mining value chain.

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Attend one of the many networking events or simply catch up with industry colleagues on the 18,500m² expo show floor featuring 470+ leading companies. There are thousands of opportunities to network, brainstorm, and knowledge share across the three days at the ICC Sydney from 31 October - 2 November 2023.

IMARC 2023 will also see us celebrate 10 years of IMARC and industry, reflecting on the progress the industry has made, and the new directions that mining companies, METS, Governments, and its value chain partners are embarking on to prepare for the future.

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Registration is now open and FREE for visiting the exhibition

Editor's Note

Welcome to the latest edition of Mining Africa Magazine, your trusted source for insights into the dynamic world of mining across the African continent. In this issue, we find ourselves amidst a backdrop of unprecedented change and opportunity in the African mining industry.

Africa's mineral wealth has fascinated for centuries, now standing as a global mining powerhouse. Mining Africa Magazine has consistently showcased the remarkable stories, innovations, and challenges defining this industry on the continent.

This edition explores technological advancements reshaping mining operations in Africa – from AI and robotics in exploration to eco-friendly practices that honor mining heritage while embracing the future.

A prime example of forward thinking is the Namibia Mining Expo and Conference from August 30th to 31st, a testament to Africa's commitment to mining excellence. This event gathers leaders, policymakers, and innovators to shape the future of African mining.

Our features traverse diverse landscapes, from West Africa's gold-rich soils to Southern Africa's diamond mines, sharing stories of resilience, growth, and ingenuity. We celebrate unsung heroes – communities, environmentalists, and organizations ensuring mining benefits all.

As we celebrate African mining's achievements, we also address challenges like sustainability, community engagement, and regulatory transparency. We spotlight initiatives driving positive change.

Amid global connectivity, Africa's mining industry is interconnected. We explore international partnerships, investments, and the impact of global events on Africa's resource markets.

A heartfelt thank you to contributors, industry experts, and readers who make Mining Africa Magazine possible. Your commitment fuels our dedication to provide valuable insights.

Thank you for joining us on this journey through Africa's mining landscape and the Namibia Mining Expo and Conference. Discover inspiration and innovation within these pages about mining's transformative power in Africa.

Sincerely,

Fortune Chibaya

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Determining drinking water safety is essential

Access to safe drinking water is a privilege not shared by many in Africa. Often, drinking water is contaminated - by damaged infrastructure and distribution systems, breakdowns at treatment facilities, rapid urbanisation and general water pollution – meaning scores of South Africans are obliged to turn to groundwater.

However, to avoid disease and ill health, it is important to ascertain whether this groundwater is fit for human consumption.

Condition monitoring specialist company, WearCheck, recently integrated its sister company – previously Set Point Water Laboratories, now WearCheck Water - into its operations, adding yet another analysis service to the company's repertoire.

WearCheck's extensive range of condition monitoring services also includes the scientific analysis of used oil and other fluids, asset reliability care (ARC), transformer oil testing, lubricant-enabled reliability (LER) services and advanced field services (AFS), (rope testing, technical compliance and non-destructive testing), amongst others.

Thelma Horsfield, general manager of WearCheck Water, explains that the company is ISO 17025:2017 accredited, and tests water from any source. 'We conduct analysis on water from many sources – ranging from drinking water to factory/industrial effluent, and everything in between – to determine the presence and levels of potentially harmful substances, whether the water is used for drinking, agriculture or to be disposed of after an industrial process,' she said.

Horsfield continues, 'Naturally available ground and surface water are invaluable sources of water that should, when being utilised, be closely monitored. The South African Bureau of Standards (SABS) and National Water Act published SANS241: Drinking Water Quality, outlining the minimum requirements for safe drinking water.

WearCheck Water operates two ISO17025-accredited laboratories – one in Cape Town, the other in Johannesburg. Technicians at these laboratories conduct scientific analysis of water samples for a range of clients in different industries from across Africa.

Moses Lelaka, WearCheck's technical water lab manager in Johannesburg, explains some of the quality systems that govern the water-testing process:

'SANS241 sets out the minimum requirements for potable water to be considered safe for human consumption, covering physical quality, chemical components, heavy metals levels, organics and microbiology. Additional determinants for nearby pollutant influences must be added to SANS241. For instance; where there is nearby agriculture, checking for fertiliser contamination should be included.

'However, we find that, while annual testing of SANS241 determinands is followed by water providers, monitoring programmes are often lacking. Daily, weekly, and bi-weekly monitoring, based on the number of people serviced, is often overlooked by SANS241 standards.

'Monitoring is an invaluable tool that signals environmental changes in the water table that can quickly occur due to seasonal changes, rainfall, drought, heavy industry, agriculture, natural disasters, and so much more. Responsible monitoring signals any changes in water quality before any harm to life occurs.'

WearCheck offers water analysis services in every region in Africa where the company has a presence (RSA, Zambia, Zimbabwe, Ghana, Namibia, Mozambique, and the DRC).

For more information, please visit www.wearcheck.co.za, email marketing@wearcheck.co.za

Eriez® Appoints Richard Murray Global Flotation Service Director

Erie, PA – Eric Wasmund, Eriez® Vice President-Flotation, announces the appointment of Richard Murray to Global Flotation Service Director. In his new position, Murray will assume the responsibility of overseeing and expanding Eriez' flotation global aftermarket and service business.

According to Eriez, Murray's role includes key initiatives such as the proactive development of new service products and the optimization of service practices and strategies for flotation equipment on a global scale. In this capacity, he will oversee cross-functional teams deployed across Eriez' 12 global subsidiaries, ensuring cohesive management and streamlined coordination.

Wasmund notes that Murray's previous experience at Metso Outotec has equipped him with a wealth of international expertise that he now brings to Eriez. "Richard's career contributions have had a tangible impact in Australia, South America, South Africa, the Middle East, China, India, and North America, highlighting his outstanding ability to navigate and thrive in diverse regions," says Wasmund.

Eriez President and CEO Lukas Guenthardt adds, "With a proven track record of spearheading successful global business activities, projects, and services, Richard is well-positioned to drive Eriez' global flotation aftermarket and service business to unprecedented heights. We have great confidence in his abilities and eagerly anticipate the valuable contribution he will bring as Eriez continues to expand, evolve, and strengthen its position."

Established in 1942, Eriez is a global leader in separation technologies. Our commitment to innovation has positioned us

Knight Piésold: Empowering Sustainable Solutions in Mining, Power, and Infrastructure Industries Worldwide

Knight Piésold is a global consulting firm that specializes in providing specialist services to the mining, power, water resources, and infrastructure industries. With a history dating back to 1921, Knight Piésold has grown into an employee-owned company with a team of 1,000 professionals operating from 28 offices across 16 countries.

In Namibia, Knight Piésold established its Windhoek head office in 2008 and expanded to Ondangwa in 2009. The company's services encompass engineering design and construction supervision, catering to a diverse range of industries including infrastructure, transportation, water resources, power, building, and mining.

Knight Piésold Namibia's team comprises 25 employees, bolstered by the expertise of neighboring specialists in Knight Piésold's Southern African offices and other global locations. The company holds certifications to ISO 9001 and OHSAS 18001 standards, demonstrating its commitment to quality and safety. Additionally, Knight Piésold Namibia is registered with the Association of Consulting Engineers of Namibia, and all its engineers and technicians are registered with the Engineering Council of Namibia, ensuring compliance with industry standards and regulations.

The firm's multidisciplinary approach and global integration enable it to support clients in identifying and mitigating risks, overcoming challenges, and achieving long-term success in today's complex business environment.

Knight Piésold emphasizes collaboration, professional excellence, and innovation to deliver customized, fit-for-purpose solutions for each project, fostering long-term client relationships and delivering award-winning projects.

Knight Piésold recognizes that every project is unique, and they offer tailored solutions to meet the specific needs of each client. Their range of services encompasses various aspects of project development, including project identification and concept development, environmental and social baseline studies, impact assessments, and adherence to Environmental, Social, and Governance (ESG) standards. They also provide site investigations, project planning, engineering design, closure planning, and dam breach assessments.

In the mining sector, Knight Piésold offers comprehensive services throughout all stages of mine development, from evaluation and permitting to design, construction, and closure. They have extensive experience in different climatic and seismic conditions, offering expertise in areas such as tailings management, waste rock storage, and dam design. The company has pioneered and advanced alternative tailings management technologies, including sub-aqueous systems, drained sub-aerial systems, thickened/paste tailings disposal, and dewatered 'dry stack' tailings systems.

Knight Piésold's expertise in power projects ranges from concept development to detailed design. They have become a leader in engineering cost-effective energy solutions for both private and public sector clients worldwide. The company's commitment to environmental stewardship and sustainability is evident in their approach to waste characterization, tailings, and waste rock management. They prioritize understanding ore deposit geology, mineralogy, geochemistry, and hydrochemistry to develop mining operations that adhere to environmental safety standards.

Overall, Knight Piésold is known for its problem-solving capabilities, innovative thinking, and commitment to creating value for its clients. With a wide range of services, a global network of experts, and a track record of successful projects, Knight Piésold is well-equipped to meet the diverse needs of clients in the mining, power, water resources, and infrastructure sectors.

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Knight Piésold, a global consulting firm providing specialized services to the mining, power, water resources, and infrastructure industries. With offices in Namibia, including Windhoek and Ondangwa, we offer engineering design, construction supervision, and project management services. Our team of experts is dedicated to creating value for our clients at every project stage. With over a century of experience, we operate worldwide with a focus on risk identification, mitigation, and long-term success. We provide tailored solutions for various sectors, including tailings management, mine development, and renewable energy.

Committed to quality and professionalism, we are certified to international standards and registered with industry associations. At Knight Piésold, we strive to make a positive impact on our clients, team, and communities, working collaboratively to deliver successful projects and achieve our clients' goals.

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"Investing in Zambia, Mine to Market, Clean Energy and the Sustainable Development of Future Minerals"

Zambia's largest and most established mining and energy industry event, ZIMEC, is set to once again offer delegates valuable opportunities to network, form partnerships and draw vital insights on the country's dynamic investment landscape. From the 1st to the 2nd of November 2023, leading industry stakeholders will converge at the Garden Court Hotel in Kitwe, at the heart of the Zambian Copperbelt to discuss and explore opportunities for the sustainable development of the mining and energy sectors in Zambia and the region. Delegates attending the event can expect to meet and engage senior government officials, industry experts and top representatives of local and international mining and energy companies. The conference will be co-located with an industry exhibition that has traditionally attracted leading national, regional, and international brands.

Conference deliberations will unpack the timely theme, "Investing in Zambia, Mine to Market, Clean Energy and the Sustainable Developmentof Future Minerals". Speakers and delegates will track mining and energy sector trends, developments, and opportunities both locally and globally with special focus on the fast-growing prospects for critical minerals such as copper and cobalt, found in the Central African Copperbelt covering Zambia and the DRC. This region is widely regarded as the largest and most prolific mineralized sediment-hosted copper province in the world. The event will seek to come up with strategies and collaborative approaches to help leverage this status and advance the ambitious electric vehicle battery value chain plans set out by the governments of Zambia and the DRC.

To reflect the importance of this cross-border approach, the conference will open with a Regional Cooperation Roundtable that will discuss optimising the mine to market value chain to support the energy transition and sustainable development in the region over the next decade. Panellists will be drawn from high-level representatives of regional countries and international partners to cover the policy outlook, investment incentives to support private sector participation and pronouncements on the progress of the Zambia – DRC Battery Manufacturing Partnership.

Other sessions on mining will cover what needs to be in place to promote the exploration and sustainable development of future minerals including attractive tax frameworks, incentives, and the role of hi-tech powered geophysical mapping. Expert speakers will share on Zambia's progress towards the 3 million metric tonnes per annum copper production target, the vital role of finance and investment in mining, developing local content and the ASM sector, value creation and industrialisation along the mine to market value chain as well as the outlook for digital transformation, transport, and infrastructure in mining.

Zambia's clean energy development drive will also come into firm focus during the two-day conference with a flagship session on the energy transition and funding the acceleration. Participants will hear updates on national renewable energy development targets and plans for meeting them through the recent US$2-billion Joint Development Agreement with the U.A.E. and other independent power producer initiatives. Stakeholders will also review the country's Renewable Energy Financing Framework to continue to improve the conditions for private investment and leveraging development finance to both catalyse and crowd-in capital in Zambia's renewable energy sub-sector.

There will also be sessions on Zambia's downstream sector and its role in the national energy mix; a cross cutting look at case studies on Smart Strategic Partnerships to deliver Clean Energy to Mines and discussions on innovation and new opportunities to leverage ESG in both the mining and energy sectors.

We are delighted to announce esteemed sponsors confirmed so far, who are supporting ZIMEC 2023: Silver Sponsor - Copperbelt Energy Corporation, a leading investor, developer, and operator of energy infrastructure in Zambia; Bronze Sponsor – TotalEnergies Zambia, a top oil marketing company and energy business; and Associate Sponsor - GoviEx Uranium, the world class mineral resource company developing the Muntanga project in Zambia.

For more information about the conference, including registration details and the full agenda, please visit https://zimeczambia.com/ . Join the conversation on social media using the hashtag #ZIMEC.

ENERGYValves moves out of the EMVAfrica home to set down its own roots

In May 2023, ENERGYValves, one of EMVAfrica's three divisions (ENERGYMetals and Multi Alloys), relocated to its very own facility in Kyalami Office Park, Midrand, Johannesburg. The move was prompted by ENERGYValves' excellent growth over the past few years which amplified the need for more space to accommodate increased stock holding and resources.

"Our new facility will enhance our operational efficiencies by giving us better access to infrastructure, transportation networks and utilities," says Anesh Prithilall, Valves Business Unit Manager for ENERGYValves. "This investment enables us to acquire new equipment and adopt modern technologies, with increased productivity and competitiveness as a result. Our much larger valve stock holding gives us greater market flexibility while the additional space also enables us to greatly diversify and expand our valve range. Our subsequent ability to handle diverse valve enquiries and large orders for different valve types, materials, and pressure ratings will unlock more avenues of supply to a broader base of potential customers."

In addition to a complete range of world-class quality Globe, Ball, Gate, Butterfly, Check and Safety Relief valves. ENERGYValves' product portfolio also extends to Diaphragm, Needle, Solenoid (electromechanical), Pinch, Needle, Pressure Reducing and Control units for more specialised applications. "Due to our wide valve offering, we can meet virtually any application requirement for industries such as oil & gas, water and waste treatment, mining, power generation, chemical processing, petrochemical, manufacturing, and construction," asserts Prithilall.

He unpacks their products and applications: "Some of the more commonly used valves include Globe valves used for regulation and fluid flow control in pipelines and process systems and Gate valves which are ideal for on/off flow control in systems with low-pressure drop and tight shut-offs. We have a high stock quantity of ball valves, which are very popular and suitable for a wide variety of applications due to their simple design and ability to provide quick shut-off. The quick-operation, cost-effective Butterfly valves are widely used for large-volume fluid handling as well as for protecting equipment and systems from overpressure situations. Check valves are commonly used to allow one-way flow of fluids to prevent backflow in pipelines, while Control valves are used for precise control of flow, pressure, temperature, and other process variables."

Moving to their specialised valves, Prithilall says Needle valves are used for precise flow control and Solenoid valves for automation and remote control. Pinch valves are suitable for handling slurries and abrasive materials and Pressure Reducing valves are

required in certain systems to maintain consistent downstream pressure.

Prithilall points out that the popularity of valves can change over time due to influencing factors such as technological advancements (digitalisation), changes in industrial requirements and emerging applications. According to Prithilall, there is tremendous growth potential and many untapped opportunities in the South and Southern African region. "Continued investment in infrastructure projects such as water supply systems, wastewater treatment plants, power generation facilities, and transportation networks, is driving the demand for valves."

"Furthermore, a growing population coupled with industrialisation will demand more energy. Subsequently, power plant projects, both conventional and renewable, will increase the demand for valves." Prithilall also points out that as valve systems are essential for numerous mining processes such as slurry transport, mineral processing, and ventilation systems, increased mining activities will drive the need for valves.

Prithilall further anticipates growth opportunities in water and wastewater treatment applications where valves also play a critical role. "If the region's oil and gas reserves are discovered or expanded, the demand for valves in the oil & gas industry will likely grow, particularly in applications such as drilling, refining, and distribution. And finally, South Africa, as a gateway to the African continent, offers export opportunities."

The new ENERGYValves premises are situated close to parent company EMVAfrica which, along with ENERGYMetals and Multi Alloys, operates from the same office park. EMVAfrica is a prominent trailblazing ISO 9001:2015 accredited business that proudly holds the distinction of being a leading supplier of top-quality stainless steels and valves to the Southern African industry for 30 years. The ENERGYValves, ENERGYMetals, and Multi Alloys Divisions will continue to complement each other, bringing diverse products and expertise, synergistically enhancing their collective capabilities, and amplifying their 3-S Factor - Stock - Service – Solutions.

"With the advantage of tapping into this vast pool of knowledge and expertise, plus continued support from EMVAfrica, the ENERGYValves brand can now confidently stand on its own, backed by a skilled team who is committed to continue providing quality products and excellent customer service," concludes Prithilall.

Martin Engineering Highlights Safe Conveyor Equipment Design

[Neponset, IL, USA] Conveyors are among the most dynamic and potentially dangerous equipment in bulk handling. The operational basics of belt conveyor systems regarding the hardware installed and the performance required from the components are too often a mystery to many employees. This knowledge gap also creates a safety gap. Since personnel are the single most important resource of any industrial operation, to meet workplace safety standards, the consensus among safety professionals is to design the hazard out of the component or system, which historically yields more cost-effective and durable results.
Designs should be forward-thinking.

This means exceeding compliance standards and enhancing operators' ability to incorporate future upgrades cost-effectively by taking a modular approach. This method alleviates several workplace hazards, minimizes cleanup and maintenance, reduces unscheduled downtime and extends the life of the belt and the system.

Before the drafting phase, designers should:
1. establish the goals of reducing injuries and exposure to hazards (dust, spillage, etc.);
2. increase conveyor uptime and productivity, and;
3. seek more effective approaches to ongoing operating and maintenance challenges.

Combining Safety & Productivity
To meet the demands for greater safety and improved production, some manufacturers have introduced equipment designs that are not only engineered for safer operation and servicing but also reduced maintenance time. An example is the Martin® QC1™ Cleaner HD/XHD STS (Safe-to-Service) primary cleaner and

Martin® Guarding is designed to protect workers from reach-in injuries in unauthorized areas.

the Martin SQC2S™ STS secondary cleaner, designed so the blade cartridge can be pulled away from the belt for safe access and replacement by a single worker.

The same slide-out technology has been applied to impact cradle designs. Systems like the Martin Slider Cradle are engineered so operators can work on the equipment safely, without breaking the plane of motion. External servicing reduces confined space entry and eliminates reach-in maintenance while facilitating faster replacement. The result is greater safety and efficiency, with less downtime.

An example of a safer belt cleaner is the CleanScrape®,

This Martin SQC2S STS secondary cleaner allows for safe external maintenance by a single worker.

which received the Australian

The track-mounted Martin® Slider Cradle can be serviced quickly and safely, with no reach-in maintenance.

Bulk Handling Award in the "Innovative Technology" category for its design and potential benefits. The revolutionary patented design reduces the need for bulky urethane blades altogether. It delivers extended service life, low belt wear, and significantly reduced maintenance, which improves safety and lowers the cost of ownership.

Unlike conventional belt cleaners that are mounted at an angle to the belt, the CleanScrape is installed diagonally across the discharge pulley, forming a three-dimensional curve beneath the discharge area that conforms to the pulley's shape. The novel approach has been so effective that in many operations, previously crucial secondary belt cleaners have become unnecessary, saving further on belt cleaning costs and service time.

Low-Bid Process and Life Cycle Cost
Although the policy is generally not explicitly stated by companies, the "Low-Bid Process" is usually an implied rule that is baked into a company's culture. It encourages bidders to follow a belt conveyor design methodology that gets the maximum load on the conveyor belt with the minimum compliance to regulations using the lowest price materials, components

and manufacturing processes available.
When companies buy on price, the benefits are often short-lived, and costs increase over time, eventually resulting in losses. In contrast, when purchases are made based on the lowest long-term cost (life-cycle cost), benefits usually continue to accrue and costs are lower, resulting in a net savings over time.

Conclusion
Engineering safer conveyors is a long-term strategy. Although design absorbs less than 10 percent of the total budget of a project, Engineering / Procurement / Construction Management (EPCM) services can be as much a 15 percent of the installed cost of a major project, additional upfront engineering and applying a life cycle-cost methodology to the selection and purchase of conveyor components proves beneficial.

The CleanScrape® forms a 3-D curve beneath the discharge that conforms to the pulley's shape.

Safety-minded design at the planning stage reduces injuries by engineering hazards out of the system. The system will likely meet or exceed the demands of modern production and safety regulations, with a longer operational life, fewer stoppages and a lower cost of operation.

martin engineering®

SRK's William Joughin inducted as SAIMM president

A former chairman of SRK Consulting (South Africa) and one of the country's leading rock engineering specialists, William Joughin has been inducted as the new president of the Southern African Institute of Mining and Metallurgy (SAIMM).

The induction took place at the SAIMM's annual general meeting on 17 August 2023, where Joughin presented a customary presidential address; his chosen topic was 'Managing geotechnical uncertainty and risk in mining'.

"It is certainly an honour to be invited to this position, especially given the strong links that have developed between SRK and the SAIMM over the years," he said. He is the fourth SAIMM president from this international consulting network of engineers and scientists. SRK co-founder Oskar Steffen held the post in 1989, while Roger Dixon took on the role in 1998 and Dick Stacey in 2003.

Joughin noted the vital role that the SAIMM plays in providing a forum for professionals from various disciplines in the mining sector to engage with challenging technical issues of the day. As the global economy moves toward a lower carbon future, mining today assumes an important obligation to responsibly generate the minerals that will make this shift possible.

"Southern Africa is already the focus of considerable attention in the search for battery and other metals, and the SAIMM works in support of all those professionals who bring their depth of expertise to this effort," he said. "We also work closely with the wide range of

William Joughin

associations and institutes that represent mining-related disciplines, to develop the skills and insights needed to meet and raise standards."

He said he would take forward the exciting strategic corporate partnerships which the SAIMM is developing with mining companies – to cement their collaboration by closely aligning the skills base of SAIMM members with the current and emerging challenges of the sector.

Joughin's career has seen him at the cutting edge of geotechnical engineering, making important contributions to understanding and quantifying risk within mining operations. His career-long involvement in deep level gold mines – where rock bursts and seismicity were among the key issues – has extended into different commodities, depths and mining methods.

"I have taken an interest in the more challenging aspects of rock mechanics under various conditions, reviewing and investigating some very unusual and difficult cases," he explained. "Since joining SRK in 1998, I have taken a deep interest in the technical and even mathematical aspects of risk, and how mines can quantify and mitigate their specific risks in the geotechnical sphere."

This therefore forms the context for Joughin's presidential address at the SAIMM AGM. He pointed out that high-consequence events – which are rare – are difficult to anticipate and to design for because they involve extraordinary circumstances or conditions.

"In the past, severe unanticipated events may have been treated as natural events or 'acts of God'," he said. "However, society now has much greater expectations and it is essential to have policies and procedures in place that enable appropriate management of these rare, high-consequence risks."

He has published over 50 articles on rock engineering, earning a gold medal from the SAIMM and an Alec Wilson Award from the South Africa National Committee on Tunnelling (SANCOT) for his outstanding papers. Joughin is past president of the South African National Institute of Rock Engineering (SANIRE), as well as past vice president for Africa of the International Society for Rock Mechanics (ISRM).

His contribution to his chosen field has been considerable, including the chairing of four international rock engineering conferences and two schools – events that SAIMM organises in partnership with the SANIRE. He has also had a long involvement with the SAIMM itself, joining initially as a student, and serving as a council member since 2008; he is a member of the publications committee, and has served as treasurer since 2020.

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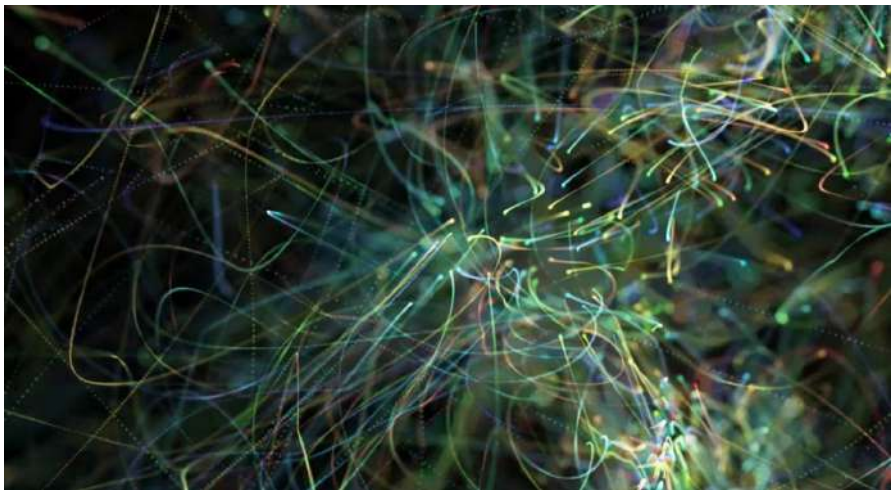

- ABB Ability™ Genix Industrial Analytics and AI Suite is scalable and modular
- Today's digital technologies create vast quantities of data
- The successful companies of the future capitalise on this data quickly and efficiently

Today's digital technologies create vast quantities of data, which is where opportunities for improvement lie. However, much of it goes unused. In fact, the average plant uses only 20% of the data it generates. The successful companies of the future will be those that can capitalise on this data quickly, efficiently, cost-effectively and across the enterprise through an effective data analytics strategy that encompasses site, edge and the cloud.

Data, technology and digital capability need to be brought together to build rapidly deployable analytics and AI/ML applications to increase productivity while decreasing costs and, in turn, improving sustainability and safety compliance.

Clients are afforded the opportunity to unlock the value of contextualised data through IIoT and Industrial AI. Here a prebuilt industry standards based cognitive data model can provide actionable insights to achieve operational performance, asset integrity, energy efficiency, sustainability and safety.

However, bringing together multiple data sources to assist customers to make better informed business decisions is easier said than done. The challenge lies in finding a way to manage and analyse huge volumes of data stored within disparate networks that could be either on the premises or in the cloud. If successful this will result in improved productivity and optimum utilisation of plants and assets, process improvements and cost-savings.

"As a global leader in integrated industrial automation with deep domain expertise, ABB has advanced analytics to help customers accelerate their operational and business performance," says Charles Blackbeard, Business Development Manager, ABB Ability Digital Solutions.

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Its modular nature means it can be structured to meet client needs, protecting existing investments while supporting seamless integration. It can be deployed from edge to fleet, plant, on premise, hybrid, cloud and multi-cloud based on the clients roadmap. ABB also offers an impressive range of business value applications, including system anomaly detection, opportunity loss manager and machine performance analytics.

ABB provides advanced consulting, predictive maintenance, performance optimisation and remote assistance for a range of industries, including oil and gas, chemicals, power generation, water utilities, mining, cement, pulp and paper and marine and ports.

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How Sensor-Based Sorting Can Help Lithium Mining Operations Unlock Untapped Potential and Meet the Rising Demand

The global demand for lithium is soaring, driven by the growing adoption of electric vehicles and grid-scale lithium-ion batteries for energy storage. Some forecasts project the demand to reach as much as 1.5 million metric tons of lithium carbonate equivalent by 2025 – triple what it was in 2021 – and over 3 million tons by 2030.

In the face of such a surge in demand, lithium supply is struggling to keep up. While new projects are set to increase lithium mining capacity in 2023 and 2024, the rise in electric vehicles sales will continue to put the supply under pressure.

These trends translate into a tremendous business potential for mining operations. However, as new projects will struggle to keep up with demand, this potential comes with the challenge of extracting as much lithium ore from all mines as efficiently as possible, while meeting increasingly stringent environmental requirements.

Basalt contamination: the challenge in lithium mining

The main challenge in lithium mining comes from basalt contamination. This high-iron, barren material has a high density very similar to that of spodumene. It means that when dense media separation (DMS) is used as the primary spodumene concentration process, basalt is concentrated with spodumene, contaminating the final product.

This issue can be addressed by selectively mining high grade ore, but contamination is unavoidable, and this approach ultimately results in a substandard product unsuitable for sale at market rates. This contaminated product is usually stockpiled, leaving valuable lithium resources unexploited. The DMS and crushing circuits utilized to produce lithium concentrate from ore are extremely energy intensive, and carrying contamination through the plant decreases productivity and increases costs.

Mining operations under pressure to meet the soaring demand need to maximize the efficiency of their processing plants, using their capacity effectively to extract as much valuable lithium from their mines.

The solution to this challenge is available from TOMRA Mining, the leader in sensor-based sorting with a proven track record in designing and building the largest, high-capacity sorting plants in the world. TOMRA's proven technologies are able to effectively remove basalt contamination before crushing, optimizing the capacity of the processing plant, reducing energy consumption and waste, as well as lowering the environmental impact of the process. They allow mining operations to consistently achieve the required grade of the product and expand their resources to include more iron and basalt contaminated ore bodies.

The solution: unlocking untapped value with sensor-based ore sorting

TOMRA's industry-leading sensor-based sorting solutions rely on color cameras, X-Ray Transmission sensors, and multi-channel scanning lasers to sort the ore prior to the downstream wet processing. The sensors analyze every single particle, identify the ore and waste in milliseconds, and high-speed air jets direct the particles accordingly to the product or waste chutes, processing at a capacity up to 350t/h in a single sorter.

These high-speed sensor solutions are capable of sorting a wide size range – from around 6mm to around 200mm – to maximize the removal of iron and basalt from the feed. With these technologies, it is possible to minimize the unsorted fines that are discarded or stockpiled, and it has been extensively proven that they are effective in consistently reducing the contamination of the ore to less than 4%.

This was the experience of Galaxy Resources at its Mt. Cattlin Mine in Western Australia, where a TOMRA PRO Secondary Laser sorter has

been in operation since 2021 to reduce basalt contamination in the pegmatite-hosted spodumene. Since the first day of operation, it has met and exceeded specifications, consistently achieving less than 4% basalt in the concentrate.

Operational efficiencies can be further improved with connectivity to the cloud-based subscription service TOMRA Insight, which turns the sorters into connected devices that generate valuable process data. Mining operations are able to measure the contamination level in real time, and hence the mining quality. They can also monitor the distribution of the particle sizes, and consequently the efficiency of the upstream crushing and screening equipment. TOMRA Insight also gives visibility on the individual sorter's availability and usage, helping to optimize the process. In addition, it enables the operator to accurately track any faults as they occur and improve the maintenance processes, so that the sorting plant is always operating at its best.

A partnered approach for a tailored solution

TOMRA works in partnership with clients to develop the tailored solution that matches their requirements. It brings its in-depth understanding of the process and expertise, helping clients from the development phase to purchasing and plant integration with quality test work on samples from the mine at its test center and flowsheet guidance. Its solution perfectly integrates the sorting into the overall process stream, for seamless operation. The sorters are specified to match the capacity of the crushing and screening plant, and downstream wet processing plant, maximizing productivity.

This was the approach TOMRA adopted for the design of the world's largest lithium sorting plant for Pilbara Minerals in Australia. It worked closely with the client's metallurgical team, completing extensive testwork at the TOMRA Test Center in Sydney, running sample ores from the mine at capacity on production sorters. Based on the results of the testwork and its experience and ability to provide expert local support, TOMRA was awarded the contract. The involvement of the TOMRA team extended beyond testing and supply of equipment to include assistance with the plant layout and understanding of the implications of sorting on the upstream mining and downstream process of the ore, adding to the efficient operational ramp-up and technical optimization.

TOMRA's close relationship with its clients continues after installation and commissioning of the sorting plant, to keep it operating at its best with tailored service agreements.

With TOMRA's sensor-based ore sorting solutions, mining operations can not only improve the efficiency of their processing plants, but most importantly unlock value from stockpiled materials and even expand their resources, exploiting ore bodies with higher contamination or search for new mining opportunities in areas with higher iron or basalt content.

Komatsu: Empowering a sustainable future through collaboration

For more than a century, Komatsu has been by your side. Our commitment to quality, reliability and unwavering support has made us an indispensable partner to customers throughout the world in construction, mining, forestry, aggregates and industrial machinery.

With a global presence spanning over 150 countries and backed by a workforce of more than 64,000 dedicated individuals, Komatsu delivers products, solutions and insights to the industries we support. To do so, we believe that collaboration is essential.

By partnering closely with our clients and partners, we can gain a deep understanding of their unique needs and challenges. This is at the core of what we refer to as gemba, a

Japanese term meaning the "actual workplace." Visiting and closely observing the way you work is the best way to continually shape products and solutions that not only meet your expectations but exceed them — delivering the highest standards of excellence possible.

"Creating value together" is a promise shared by all Komatsu employees because of a culture built around core principles.

Our purpose

We are committed to creating value through manufacturing and technology innovation to empower a sustainable future where people, businesses and our planet thrive together. This purpose serves as our guiding light, inspiring our teams to push beyond boundaries, embrace challenges and continually strive for more.

Our values

- Ambition: With a "challenging spirit" and

without fear of failure, we innovate and always aspire to do more.

- Perseverance: Even when the work is difficult, we remain committed to our promises and reliably carry them through to completion.
- Collaboration: Creating value comes from teamwork, inclusion, respect, diversity and a win-win approach to all relationships.
- Authenticity: To earn and maintain trust, we always act with sincerity, integrity and honesty, and communicate transparently.

Our commitment

At Komatsu we recognize our responsibility to address environmental, social and governance (ESG) issues. From providing products, services and solutions that prioritize

safety, quality and efficiency to undertaking social contribution activities in the communities in which we operate, Komatsu walks the talk when it comes to making a positive impact.

Komatsu Namibia is an embodiment of our commitment to social responsibility.

Understanding that our role extends beyond profitability, we actively contribute to the communities in which we operate through initiatives such as providing computer equipment to schools, planting trees, establishing gardens and supporting girls' education through the distribution of sanitary packs.

From the time Komatsu was founded, it has worked to solve social issues through our core

business and grow together with society.

Promoting a sustainable future

Sustainability is integrated into the heart of our operations. Remaining true to our founding spirit, we strive to be a valued community partner locally and across the globe, supporting sustainable efforts that reach far beyond Komatsu. To enhance sustainable actions, we focus on CO2 reduction, renewable energy use, water conservation and waste reduction.

By working hand in hand with our customers and partners, we continue to push boundaries, addressing social challenges and creating value together.

HK Mining Solutions: Level-2 B-BBEEE solutions provider

HYDAC, along with economic empowerment partner, Uven Moodley, has established a 51% black-owned company dedicated to delivering solutions to South Africa's mining industry. The new company's MD and B-BBEE partner, Uven Moodley explains.

In 2022, HYDAC Technology's German owners, along with HYDAC South Africa, decided to adopt transformational change in South Africa by looking for a Black Economic Empowerment partner. The company that was formed, HK Mining Solutions, is 51% owned by Moodley and this business will be ring-fenced for the mining industry.

In their search for a partner, HYDAC Technology's German owners were looking for an individual that could add value at every level in their partnership and are confident that Moodley fits this mould perfectly with his experience.

HK Mining Solutions is equipped to be able to offer countrywide services to South Africa's mining industry. "In terms of an overseas OEM being in a minority partnership with a local BEE entity, I think HK Mining is unique in the hydraulics industry," says Moodley, adding that the company will initially be registered as an EME (Exempted Micro Enterprise), with views to rapidly growing into a QSE (Qualifying Small Enterprise). He believes that with a partner of HYDAC's global stature and presence in countries that are strong in mining, HK Mining Solutions will be able to add value and improve reliability of mining operations to the local mining industry, leveraging their local and international team expertise.

He adds that one of the barriers

for B-BBEE companies is finance, however with the strength of a partner like HYDAC, HK Mining will bring comfort to mining houses in terms of project execution due to financial backing.

Uven Moodley has been part of the Engineering industry for 30 years. He started his career in a clerical position, then through a bursary, he became a diploma-qualified Mechanical Engineer. He has since held positions at engineering, management, director and shareholder levels in several successful companies.

In 2018 he became part of the newly formed management team of HYDAC Technology "I feel I have circled back to engineering, where my passion lies, which aligns with HYDAC's core business: turnkey mobile and industrial hydraulics, along with lubrication and filtration solutions as well as diesel and process filtration. And now with HK Mining Solutions we are looking to extend our scope and range to mining specific customers," says Moodley.

He adds that he will be ably supported by general manager, Eddie Jacobs, who has been involved in the hydraulic industry for over 20 years. "Eddie has vast hydraulic knowledge and experience. He is an industry expert in mining, having built a career developing and implementing new turnkey hydraulic systems and refurbishing and upgrading existing ones."

HK Mining Solutions also has shared services, including engineering design offices, assembly, and refurbishment workshops. In addition, we have the support of HYDAC global ,based in Germany.

As part of HK Mining's growth strategy they will be looking at expanding their footprint into mining areas by either direct presence or partnering with local complementary engineering companies whilst leveraging off HYDAC Technologies' shared services amongst other engineering and workshops," concludes Moodley.

UMS bridges the gap between the front-end and construction on project in Brazil

Specialist underground mining and metallurgical processing services company, UMS Group (UMS), is proving the success of its integrated partnership business model on the Ero Copper Caraíba Operations Pilar Underground Mine Deepening Project in the state of Bahia in Brazil. UMS has drawn on expertise from its multi-disciplinary businesses to provide engineering design, procurement and contracting services for a new underground vertical shaft system.

Robert Hull, COO of UMS Group, says that the Pilar Mine project demonstrates how UMS can add true value through close collaboration with the client across all stages of a project, from the front-end through to construction, and bringing production forward compared to a conventional project.

Introduction

Ero Brasil (previously Mineração Caraíba S.A. or MCSA) has been operating the Pilar Mine, part of the company's Caraíba operations, for nearly 50 years, first as an open pit mine, and then as an underground mine for the last 25 years. Open stoping is the preferred mining method with underground access via a switch-back ramp which is currently used for ingress/egress of personnel and equipment and the hauling of broken ore from the stopes to an underground crusher station, before hoisting of ore via a shallow vertical shaft to surface. On surface the ore reports to the concentrator via a secondary crusher station and stockpiles.

Since the acquisition by the Toronto and New York Stock Exchange dual-listed Ero Copper Corp., there has been a significant investment in exploration at the mine. In 2021, UMS was approached to further optimise shaft sizing for accessing the confirmed and open ore body located 1 500 metres and more below surface, as quickly as possible.

UMS's engineering technical services arm initiated a trade-off study and, working with the client, determined the optimal design for the size of ore body and production goals would be a four-compartment vertical shaft, 6.3 metres in diameter with two double-drum winders – one dedicated to ore/waste hoisting and the second dedicated to personnel raising/lowering. With this design, the mine would effectively meet its desired production of 2.2 Mtpa (million tonnes per annum).

With support from the client, UMS's engineering and contracting teams immediately commenced with engineering design, capital cost estimation and project schedule of the shaft system including the procurement phase, which formed an integral component for the broader feasibility study conducted by NCL of Chile, including the deeper underground mine design and optimised development/ production schedule.

Communication and logistics

Brad Rip, Project Director at UMS, says that UMS began working on the feasibility study just as South Africa went into the COVID-19-induced 'working from home' phases. With UMS having previously adopted digital communication technology, this provided a crucial platform for cross-team and cross-continental collaboration that enabled the project to continue regardless of locations and time zones. This proved invaluable beyond the pandemic as all progress meetings and document sharing are still managed digitally, bringing together people from the site, the Johannesburg office, the owner's team in Brazil, and fabricators in South Africa and Brazil.

By mid-2022, a Brazilian civil contractor had been appointed, as well as other long-lead suppliers such as the steel fabricator for the headframe and other steelwork including the winder house.

In order to de-risk fabrication requirements, UMS and the client agreed that all critical and specialist equipment such as the shaft drill-rig, loaders, winders, hoisting ropes, rope attachments and safety devices were sourced from suppliers in South Africa who had experience in fabricating these items. This meant shipping the items to the port of Salvador in Brazil, before transferring by truck some 500 km to the Pilar Mine site.

"Although Brazil is a well-established mining country, the majority are surface mines and there is no locally available specialist equipment for shaft sinking, so logistics management has been a significant part of the project. This has proved quite successful with the ERO Brasil Commercial Department being a key player in ensuring the importation of equipment has gone as smoothly as possible," says Rip.

Latest developments

By the end of 2022 and into the first quarter of 2023, UMS started to mobilise on site, while the first shipping consignment, comprising the personnel winder which will also serve as the kibble winder, 16 containers and 20 break-bulk items arrived on site. With the structural civils at an advanced stage by this time, the installation commenced almost immediately. At the same time, steel erection commenced with the headframe and winder-house assembly, and the site began to take on a construction site appearance.

At the time of writing, the stage winder has arrived on site as well as numerous other items of specialist equipment such as the drill-rig and loading units that will temporarily be used for shaft sinking. Once it has been decommissioned, this stage winder will be returned to South Africa or to UMS' next project and will be replaced with a new rock hoist winder to be procured by the client.

Rip reports that the first blast at the bottom of the collar took place in mid-April this year and the UMS team has been building up to get the drill, blast, muck, and support cycle up to the desired cycle-time.

Meanwhile, the engineering and procurement team in South Africa is continuing to work on the design and tenders for the underground rock (ore and waste) handling systems. It is the intention to procure the equipment including rock breakers, feeders, crushers, conveyors, and fabricated bulkheads from established Brazilian suppliers and fabricators and to appoint Brazilian electro-mechanical erectors to install the systems.

He explains that because the underground mine has been in operation for some 25 years, there is already a trackless switch-back ramp that goes down to nearly 1 000 metres below surface. This has provided the opportunity to raise-bore a vertical hole in the centre of the shaft from certain points underground to the surface to expedite the shaft sinking process through a slipe-and-line method. He adds that UMS has however allowed for a rapid transition to conventional blind sinking should this be required so as not to delay the project.

Local presence and collaboration

Hull says that to facilitate this project, and future ones in South America, UMS has established a local company, UMS Brazil, and appointed local staff including a country manager, Bruno Paladino. "Bruno has been instrumental in delivering this project and helping us quickly get to grips with the Brazilian legal, commercial, and financial systems."

"Everyone involved has pulled together to get the job done, going over and above what is required of them. We are also grateful to the owner's team for their assistance in helping us navigate the logistical challenges, the local business modus operandi, and the country's safety legislation. Collaboration is key to the success of this project, and we are pleased to have been very warmly welcomed in Brazil by all parties involved as well as the community and contractors," says Hull.

UMS is working closely with the client to transfer skills to local contractors and suppliers, many of whom are working on a shaft sinking project for the first time.

Expanding UMS's footprint in South America

"We are fast establishing a track record in Brazil, familiarising ourselves with local business policies, and building relationships with local suppliers," comments Hull. "We now have the capabilities to expand further into Brazil as well as into other South American countries in partnership with other companies looking to expand their mining operations underground.

UMS has recently acquired two large deep level winders in Chile to add to its global growing fleet of winders. The winders are well suited to South American sinking conditions and can be deployed quickly within the region. The winders have the ability to sink to depths of over 1500 meters.

"We are in a unique position that we can bridge the gap between the front-end engineering and design and construction of a project to get it delivered quicker for the client", concludes Hull.

Zambia's Copper Industry Shines Bright: A Look at the Country's Mining Boom in 2023

In 2023, Zambia's copper mining industry experienced a resurgence, attracting significant interest from investors worldwide. The country has been making waves in the industry since President Hakainde Hichilema came to power in August 2021, with his pro-business policies and efforts to improve the investment climate.

According to reports, mining executives and investors have been impressed with President Hichilema's approach, describing him as a breath of fresh air. Neal Froneman, CEO of Sibanye-Stillwater, praised Hichilema's focus on commercial realities, saying, "Zambia is looking very good. President Hichilema is a professional; he's doing exactly the right things."

Froneman's company, which has diversified into metals other than gold, is interested in Zambia's copper assets. While Froneman did not confirm that Sibanye-Stillwater would be acquiring a copper asset in Zambia, he did say that the country's deep underground mining experience, combined with its transparent mining cadastre and clear legislation, made it an attractive destination for mining investment.

Other mining executives and investors have echoed Froneman's sentiments, noting that Zambia's government is accessible and supportive of mining, and that the country's mining cadastre is impressive in its transparency. Peter Major, director of mining at Modern Corporate Solutions, is reportedly raising funds for a zinc project in central Zambia

and has praised the country's accessibility and lack of black economic empowerment requirements.

The renewed interest in Zambia's copper mining industry comes as demand for the metal continues to rise, driven by the global clean energy transition. Copper is a vital component in renewable energy infrastructure, such as wind turbines and solar panels, as well as electric vehicles.

Zambia is Africa's second-largest copper producer, behind only the Democratic Republic of Congo. The country's copper mining industry has faced challenges in recent years, including low prices and a tax regime that was seen as unfriendly to investors. However, with President Hichilema's pro-business policies and efforts to improve the investment climate, the industry is seeing a turnaround.

In addition to the interest from Sibanye-Stillwater and Modern Corporate Solutions, other mining companies are reportedly eyeing Zambia's copper assets. The increased interest in the industry is expected to lead to increased investment and job creation in the country, which will have positive ripple effects throughout the economy.

As Zambia's copper mining industry continues to attract attention and investment, the country is poised to become a major player in the global copper market. President Hichilema's pro-business policies and transparent mining cadastre have created a welcoming environment for mining investment, and investors have taken notice. With rising demand for copper, Zambia's mining industry is well-positioned to thrive in the coming years.

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Going the Extra Mile

Controversy and Hope: The Current State of Diamond Mining in the Democratic Republic of Congo

In the heart of the Democratic Republic of Congo, diamond mining is a contentious issue. The mining of diamonds is the country's largest source of income, but it has come under criticism from human rights organizations for the use of child labour and other exploitative practices.

Recently, the Congolese government has taken steps to improve the diamond mining industry. In a bid to curb the use of child labour, the government has launched a new program that aims to provide better education and job opportunities to young people in the region. The government has also increased inspections of mines and implemented stricter regulations to prevent the trade of conflict diamonds, which are used to fund armed groups in the region.

The government's efforts have been praised by some advocacy groups, but others remain sceptical. The International Campaign to Ban Landmines has criticized the government for not doing enough to address human rights abuses in the diamond industry. The group argues that the government's reforms do not go far enough and that more needs to be done to protect the rights of workers in the diamond mines.

Despite the controversy surrounding the diamond industry in the DRC, many companies continue to invest in the region. The country is home to some of the world's largest diamond mines, including the famous Mbuji-Mayi mine. Companies such as De Beers, Rio Tinto, and BHP Billiton all have operations in the DRC and are working with the government to improve the industry's practices.

The demand for diamonds continues to grow, with the global diamond market projected to reach $87 billion by 2023. With this growth comes increased pressure on companies to ensure that their diamonds are ethically sourced. Consumers are becoming more aware of the issues surrounding the diamond industry and are demanding transparency from companies.

In response, many companies are implementing measures to ensure that their diamonds are conflict-free and ethically sourced. This includes working with local communities to improve working conditions and providing education and training to workers in the mines.

In conclusion, the Congolese diamond industry remains a complex and controversial issue. While the government has taken steps to improve the industry's practices, there is still much work to be done to ensure that the rights of workers are protected. The industry's importance to the country's economy cannot be overstated, but it must be managed in a way that benefits all parties involved, including workers, companies, and local communities.

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Zimbabwe Positioned to Become Key Lithium Mining Player in Africa

Zimbabwe is set to become a significant player in the global lithium market due to the country's vast lithium reserves. The Zimbabwean government has announced plans to boost lithium production as part of its economic recovery strategy, with lithium mining poised to contribute significantly to the country's GDP in the coming years.

The country's lithium reserves are located in Bikita, a small town in the southern part of the country. Bikita Minerals is the largest lithium producer in Zimbabwe and is responsible for over 80% of the country's lithium output. The company has been operating since 1951 and has consistently produced high-grade lithium concentrate.

Zimbabwe is well-positioned to take advantage of the growing demand for lithium, which is a key component in the manufacture of batteries for electric vehicles and other energy storage applications. The global demand for lithium is expected to triple by 2025, driven by the rapid growth of the electric vehicle market.

To capitalize on this demand, the Zimbabwean government has set up the Zimbabwe Lithium Company (ZLC), which is responsible for overseeing lithium mining and development in the country. The ZLC is also responsible for attracting foreign investment into the country's lithium industry.

One of the companies that have expressed interest in investing in Zimbabwe's lithium industry is the Australian mining firm Prospect Resources. The company's Arcadia Lithium Project, located near Harare, has been described as one of the largest hard rock lithium deposits in the world.

Prospect Resources has already invested over $165 million in the project, and construction is underway. The company expects to produce up to 212,000 tonnes of spodumene concentrate per year, which will be exported to markets around the world.

The Zimbabwean government has also announced plans to establish a lithium-ion battery manufacturing plant in the country, which will further boost the lithium industry's growth. The plant will be built in collaboration with a Chinese company, and it is expected to create over 10,000 jobs and generate over $1 billion in revenue for the country.

Overall, Zimbabwe is poised to become a key player in the global lithium market, thanks to its vast reserves and the government's efforts to attract foreign investment and develop the industry. With the global demand for lithium set to soar in the coming years, Zimbabwe's lithium industry could be a major contributor to the country's economic growth and development.

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Three STEINERT KSS sorting systems extend the life of mine in Mexico

In 2018 an industrial mineral mine in central Mexico installed its first Steinert ore sorter to improve the run of mine grade, which had gradually been decreasing with the aging of the mine. This first successful installation was followed by two more Steinert multi sensor sorters which are now processing most of the medium- to low-grade ROM, producing a high-grade product, which can be sold directly to the market. This ore sorting plant has thus enabled the mine to extend its resources to include low-grade areas which were previously below cut-off grade. Further expansions of the ore sorting plant are planned.

STEINERT has developed a unique concept, called "multi-sensor sorting or in short STEINERT KSS". The STEINERT KSS sorting system applies that concept allowing the combination of one of the three main sensors (X-ray Transmission, X-ray Fluorescence, and NIR) with all the three additional sensors (Induction, 3D laser, and Color).

The main combination for mining is the X-ray transmission sensor added by a color, a 3D laser, and an induction sensor. This approach gives customers enormous flexibility to treat very difficult minerals like fluorspar, iron ore, polymetallic ores, gold ore, and others. The sensorsare fine-tuned to detect to many physical properties, such as density, size, volume, brightness, color, inductivity, and conductivity. In this case, the main differentiating properties are density, size and color.

One machine, many solutions

Ore sorting is gaining acceptance in the mining industry with more and more sorting plant installations worldwide. This beneficiation technology can be applied as ROM pre concentration, to generate a higher-grade and consistent grade mill-feed. Many installations process low-grade stockpiles to recovery of valuable minerals. The main advantages of waste rock sorting are cost reduction in transport, reduced milling cost, less fines/slimes disposal, and savings on water consumption.

Steinert's Mexican client is continuously facing challenges of inconsistent grades due to waste rock dilution in their ROM ore. The sorters can be set to produce various grades of products depending on market demand for A-grade product at a premium price or lower-grade products.

Sensor sorting contributes to responsible mining

Nowadays there is an increasing emphasis on responsible mining relating to sustainability, preservation, and rehabilitation of the environment, as well prioritizing a fair division of economic and financial benefits for all stakeholder. Large mining groups are rethinking their traditional mining models by applying innovative technologies to adress responsible mining issues and also to improve their competitiveness.

The Sensor-Based Sorting (SBS) technology can play a significant part of this innovation process. The use of SBS technology provides better utilization of the ore bodies, extending reserves into lower grade areas, thereby extending the mine lifespan and extending the utilization of expensive catital such as the mine and process plant

infrastructure. By eliminating waste rock from downstream processes, results in the reduction of energy, water consumption and chemical reagents. It also has a direct impact on tailings generation, once gangue is eliminated on coarser size fractions. All these benefitis are contributing to the current social and sustainability demands of the mining industry.

For the transformation of the mineral sector, innovation must form the fundamental basis for the long-awaited change. The digital revolution is already a reality, the concept of Industry 4.0 is increasingly used in the mining sector, and new technologies for ore treatment are progressively more accepted, especially dry processing techniques such as SBS.

Ore sorted by properties: density and color.

When the going gets tough, Dunlop UsFlex keeps going

Battered by heavy, often razor-sharp rocks slamming into and tumbling along its surface, cutting and gouging into the rubber, it is easy to understand why even the heaviest of industrial conveyor belts used on heavy quarrying and mining applications generally only last a few months. Such lifetimes can easily be even shorter when rocks or other foreign objects become trapped, pierce the outer cover and rip through the carcass like a hot knife through butter. A surprising number of operators regard repeated belt repairs and replacements on primary applications as an occupational hazard. What makes this so surprising is that there is a readily available belt that is proven that it can take such operating conditions in its stride so that the months turn into years and it just keeps running and running. I refer, of course, to the now legendary Dunlop UsFlex range of belts.

What usually happens now is that a long stream of technical features and benefits are fired at you like bullets out of a machine gun. But not this time. Instead, I want to tell you about some real-life experiences that testify to the legend that is Dunlop UsFlex. For example, a colleague visiting a large mine in Ghana discovered that his customer had just replaced the Dunlop UsFlex 1000/2 14+4 RE belts that had been running for 4 years with a new set of UsFlex belts. When asked why, the maintenance manager proudly explained that the reason he replaced the belts was NOT because they were worn out. In fact the opposite was true because the belts still had plenty of working life left in them. However, the customer decided to replace them because otherwise the mine's financial management would cut his budget. The used UsFlex

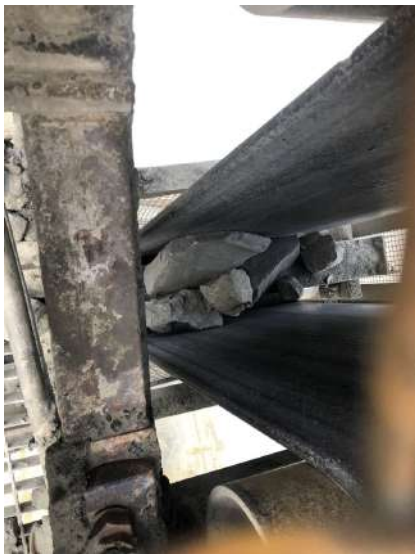
Dunlop UsFlex – the belts that can handle anything.

belts were still in such excellent condition they were put into stock as emergency spares. So in short, the customer replaced the belts because they were too good!

Stronger than steel?

It is not difficult to understand why Dunlop UsFlex belts last so long when you hear about amazing tales of strength like this one that recently occurred on a primary conveyor in a major granite quarry in Scotland. Several large pieces of granite became jammed against the tail pulley (see photo). The force was so strong that it dislocated the complete steel construction. Amazingly, the Dunlop UsFlex 1000/2 belt did not break. Instead, it simply kept on running.

These kind of experiences are nothing new. They have been happening for years. Dunlop UsFlex continually proves itself to be the toughest belt out there. True, they are not cheap to buy but they *are* the cheapest to run. Surely, the question is not whether you can afford them but whether can you afford NOT to use them?



About the author

After spending 23 years in logistics management, Leslie David has specialised in conveyor belting for over 17 years. During that time, he has become one of the most published authors on conveyor belt technology in the world.

Leslie David

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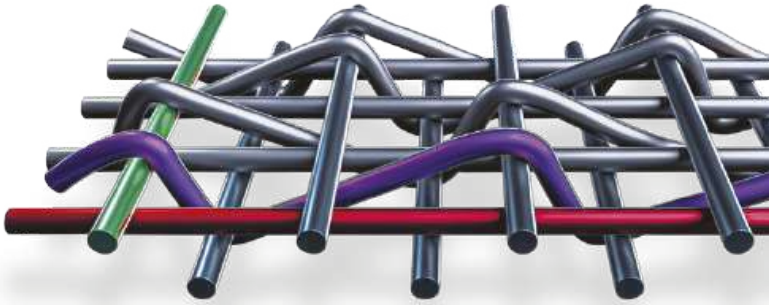
HEAVIER AND THICKER BELT IS NOT A SOLUTION

UsFlex provides impact resistance up to three times greater than that of conventional plied belting. This unequaled toughness means the belt will not be easily damaged in the loading and conveying of large, sharp material. As a result, UsFlex will provide the longest belt life in the harshest conditions!

This revolutionary product owes its outstanding impact and tear resistant characteristics to an innovative woven straight-warp carcass that is unique to Dunlop. This consists of heavy strands of polyester running lengthwise and heavy nylon strands running crosswise held in position by a strong yarn. The strands are completely straight in both directions and not interlocked as in a conventional belt carcass. This allows the weft to float free from the warp, thereby minimising the peak point of impact because the energy is absorbed over a larger area, providing maximum protection to the carcass.

Scan & learn more about UsFlex!



Straight-warp construction

Fill | Binder Warp | Classic Straight Warp

THE WHOLE LIFE COST

We're not just selling belts; we're delivering unparalleled performance that translates into longer operational lifetimes. By calculating the 'whole life cost' of our belts, you'll realize that the initial investment is a fraction of what you save in extended operational lifetimes and minimized maintenance costs.

INVEST WISELY IN THE FUTURE OF YOUR OPERATIONS

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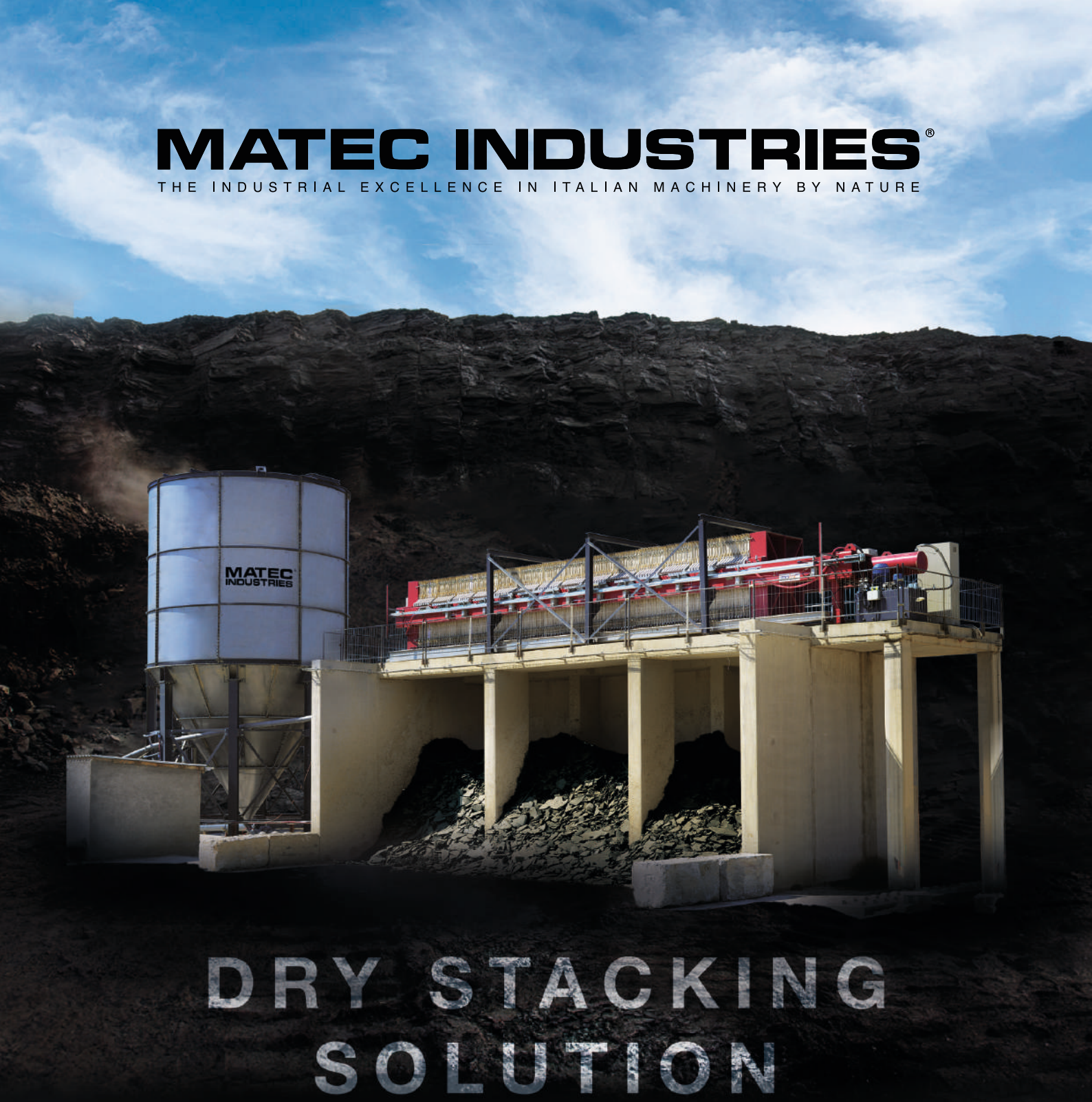
THE INDUSTRIAL EXCELLENCE IN ITALIAN MACHINERY BY NATURE



DRY STACKING SOLUTION

THE (BEST) FILTER PRESSES FOR MINING TAILINGS TREATMENT

Remove The Tailings Dam | Minimize Environmental Impact

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