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Editor’s Note

Mining Indaba is the largest and most established mining investment event in Africa. It is held annually in South Africa, where it connects investors, mining companies, governments, and other stakeholders from all over the continent to drive development and growth of the African mining industry. In this issue, we explore the big topics driving the sector - gold and diamond production, safety in mines, and more - as well as how Mining Indaba plays a role in facilitating growth for the African mining sector.

Mining Indaba South Africa is an annual conference that brings together mining companies, investors, and other stakeholders to discuss the latest trends in the industry. This year’s event will be held from February 4-7 at the Cape Town International Convention Centre.

Delegates from all over the world will be in attendance, including representatives from major diamond and gold producers such as De Beers, AngloGold Ashanti, and Gold Fields. The conference will also feature experts from international organizations like the World Bank and the International Monetary Fund.

The theme of this year’s Mining Indaba is “Sustaining Growth Through Innovation and Collaboration.” Topics of discussion will include new technologies for extractive industries, responsible sourcing of minerals, and environmental sustainability. With over 1,000 exhibitors and 4,000 delegates expected to attend, Mining Indaba is Africa’s largest mining conference. If you’re interested in learning more about the African mining sector or doing business in this growing market, this is an event you won’t want to miss.

Have a great Read.

Nkosi M

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Strata Worldwide Celebrates 30 Years in Business

Strata Worldwide is celebrating 30 years in business. Founded in 1992, the company has spent decades developing and supplying products and technologies that are designed and built for the rugged, highly mobile working environments found in mining, tunneling, and maritime ports.

From the global headquarters in Georgia, USA, to offices and manufacturing facilities throughout North America, South Africa, Europe and Australia, Strata has built upon a product portfolio that includes the best in proximity detection and collision avoidance technologies, a choice selection of underground communication and data networks, emergency refuge solutions and a range of ground control and roof support products. After three decades of success in mining, the company has brought their leading-edge technologies to underground tunneling operations as well as above-ground environments such as marine port facilities.

“As we celebrate this milestone, it’s important to acknowledge that we have achieved this success through the hard work, passion, and dedication of our team members,” said Mike Berube, Strata Worldwide CEO. “We employ the best in the industry around the world, and we’re proud of the important work they’re doing in the development and implementation of life-saving technologies.”

“Strata is a world leader in response and prevention in hazardous working conditions, above and below ground. Our innovation, technology, and people have all focused on what matters most, a safe and productive working environment.”

Berube continues to say that Strata is also committed to supporting the collective efforts of underground companies and organizations, to promote the industries and their achievements and attract new and diverse talent.

This year, Strata has launched a new sponsor relationship with OutRide, an organization that works with schools across the United States to create cycling programs for kids. Outride’s mission is to harness the benefits of cycling for the cognitive, socio-emotional, and physical well-being of youth and cultivate inclusive cycling communities.

Strata will be supporting multiple programs within OutRide including research, school programs and individual athletes. In 2023, they will be sponsoring an amazing young man named Jack, who lost his leg to cancer as a young boy but never gave up riding. He is looking forward to his first full season as an athlete with OutRide, competing in NICA, cross-country mountain biking, and gravel bike racing.

To commemorate this milestone, Strata invites you to visit a new website built in dedication to its 30-year anniversary celebration. https://30years.strataworldwide.com

Discover more about Strata Worldwide

Find more information about Strata Worldwide’s products, mission, and vision for the future at strataworldwide.com.
Eriez® Expands In-House Laboratory Capabilities to Include Fire Assays

Eriez® has recently completed the construction and commissioning of a new state-of-the-art fire assay laboratory to support flotation testing at its world headquarters in Erie, Pennsylvania. This new facility includes all required equipment for fusion, cupellation, parting, weighing, and assaying, as well as innovative systems to enhance worker safety and environmental compliance.

Erich Dohm, Eriez Flotation Senior Manager-USA Operations, says, “The addition of fire assay capabilities further establishes our position as an innovative global partner in minerals processing and flotation. This investment was made as part of our commitment to enhancing support for our precious metals flotation customers in addition to existing capabilities for base metals and industrial minerals projects.” He adds, “Our customers will see a tremendous benefit in the development of new precious metal projects incorporating our advanced flotation technologies, such as the HydroFloat® and StackCell®.”

According to Eriez, the new fire assay laboratory will enable full execution of all aspects of precious metals flotation projects, with next-day assays available to guide flotation investigations. Dohm says, “This will allow our team of flotation experts to complete projects under a tight deadline without risking delays from external commercial laboratories.”

Eriez’ in-house analytical capabilities also include x-ray fluorescence (XRF), inductively coupled plasma (ICP), atomic absorption (AA), combustion furnace (sulfur), and particle size by laser diffraction. Dohm says, “Our full-service metallurgical and analytical laboratory facilitates strong customer partnerships, from initial flowsheet development at pre-feasibility stages through troubleshooting and optimization of existing mill circuits.”

For more information about Eriez laboratory testing, visit erieznews.com/nr602.

Established in 1942, Eriez is a global leader in separation technologies. Our commitment to innovation has positioned us as a driving market force in several key technology areas, including magnetic separation, flotation, metal detection and material handling equipment. The company’s 900+ employees are dedicated to providing trusted technical solutions to the mining, food, recycling, packaging, aggregate and other processing industries. Headquartered in Erie, Pennsylvania, USA, Eriez designs, manufactures, and markets on six continents through 12 wholly owned international subsidiaries and an extensive sales representative network. For more information, visit www.eriez.com.
IMDEX Limited have entered into a binding agreement to purchase Devico AS

In 1988, Viktor Tokle, together with his wife Bodil, founded Devico and ran it out of his garage. Over the 35 years since its founding, Devico has come a very long way, and has grown from Viktor's garage to an international conglomerate with 21 companies in 15 different countries, totaling approximately 200 employees, and close to USD 50 million in annual sales. We are the undisputed number 1 global provider of directional drilling services in the mineral exploration space, the number 2 provider of borehole surveying solutions in the same sector, and are also now internationally regarded as a leading supplier to the civil construction industry. We have had tremendous growth over the last few years, with great new products added (and about to be added) to our product portfolio, always with a strong customer focus.

Viktor and his family have remained the majority owners of Devico over all these years, ensuring stability and support for growing both our technology and our people. With the size that Devico has reached, and the complexity involved in its operation, Viktor and his family concluded that it was time to find another owner for Devico. An owner that could help take Devico to the next level and allow it to continue its mission to be the world leader in directional core drilling, borehole surveying and associated software.

Little did we know when we started the sales process that the company chosen in the end would be our largest competitor, IMDEX Limited. On January 18th 2023, IMDEX entered into a binding agreement to purchase Devico. The intent is that the transaction will be finalized by the end of February 2023.

Several highly qualified companies were also interested in, and made an offer for, purchasing Devico.

However, IMDEX was chosen as the best fit and the best way forward to reach the goals that we have set as a company.

Over the last couple of months we have spent significant time with the management team at IMDEX to understand their intent and how they want to integrate the two companies. It has become clear that the Management and Board of Directors of IMDEX have great respect for Devico and what we have achieved. Based on our interactions and what we have learned in this process, I truly feel that there is also a great cultural fit, with people that are just as passionate about bringing the best technology and services to the mining industry that we are. Our companies complement each other, both geographically, and with products and services. Together we will be the undisputed number one technology company of its kind in the world!

I am sure many of you, our customers and associates, are wondering what this means to you and what changes may come, and the simple answer is that not much will change in the beginning. Imex intends to keep the Devico brand name and we will operate with “business as usual” in the foreseeable future.

Devico AS, Industriveien 43A, 7080 Heimdal, Norway devico.no

Devico would not have been what it is today without the great people that make up our organization, nor our past and current client base. It is our highest concern to make sure that our people are taken care of through this process and that our clients high level of support that they are accustomed to, is maintained. If you have any concerns, please don't hesitate to raise these with your direct Devico contact.
thyssenkrupp Uhde optimises safety, reduces operational costs with turnkey condensation and recovery solution

thyssenkrupp Uhde has successfully supplied and commissioned a Drop Tank and Rail Loading Condenser Unit at Richards Bay harbour which has contributed to reduced operational costs and optimised safety for a key customer.

The scope of the project was to reduce levels of flaring NH₃ vapours during the loading process by means of condensation and recovery from non-condensable components present in rail tanker vents. Chief Process Engineer for thyssenkrupp Uhde, Dr. Spiro Comitis, explains: “The Drop Tank part of the project is used to drain the last volume from the main storage tanks that cannot be pumped out due to the properties of NH₃. The condenser portion of the project recovers ammonia vapour directly from rail tanker vents during filling operations, which limits flaring episodes of ammonia product. This new condenser system reduces the burden on the existing storage tanks refrigeration system by separating the non-condensable components directly from rail tanker vents before entering storage, subsequently lowering operational costs and optimising flaring.”

Spiro points out the importance of this project in ensuring statutory inspections are achieved safely and timeously, owing to the implementation of the drop-tank.

Renowned for its EPC (Engineering, Procurement and Construction) capabilities and expertise, thyssenkrupp Uhde completed the concept development (FEL1) and basic engineering (FEL2) to assist in defining the final scope and budget. All necessary engineering was completed at thyssenkrupp Uhde’s home office. “We deployed a full management team to site to ensure that four key project objectives - schedule, quality, safety and costs - are achieved,” notes André van Zyl the tk Uhde project Manager. “We also collaborated with sub-contractors and suppliers who share our quality and safety ethos.”

The customer gave thyssenkrupp Uhde the green light to commence with the project in October 2019 with scope of supply starting at the same time. Installation began in November 2021 and commissioning, which was conducted jointly by thyssenkrupp Uhde and the customer’s technical NH₃ specialist, kicked off in October 2022, with project completion one month later. André affirms that the thyssenkrupp Uhde team will continue to assist the customer as required from an engineering and construction point of view.
Industrial cybersecurity challenge in Africa for 2023: defences in energy and mining need to be strengthened

Throughout 2022 (https://bit.ly/3wQqhGM), 40% of industrial control system (ICS) computers globally were attacked with malware. In Africa, the figure sits at 47% according to Kaspersky (www.Kaspersky.co.za) ICS CERT*. For countries monitored on the African continent, the three countries which experienced the most attacks on ICS infrastructure were Ethiopia (62%), Algeria (59%), and Burundi (57%). Among others, they are followed by Rwanda (46%), Kenya (41%), Nigeria and Zimbabwe (both stand at 40%), Ghana (39%), Zambia (38%) and South Africa and Uganda (both stand at 36%). This is a high growth threat landscape in Africa that no public or private sector entity, especially in critical sectors like energy and mining, can ignore.

“One infected USB drive or a single spear-phishing email is all it takes for cyber criminals to bridge the air gap and penetrate an isolated ICS network. Traditional security is not adequate to protect industrial environments from rapidly evolving cyber threats. As attacks against critical infrastructure increase, choosing the right approach to secure systems has never been more important,” says Brandon Muller, Kaspersky tech expert and consultant in the Middle East and African region.

Think of an ICS as a collection of personnel, hardware, and software that can affect or influence the safe, secure, and reliable operation of an industrial process. IT is one component of this environment with operational technology (OT) another key element. While traditional cybersecurity solutions focus on data-oriented businesses, ICS protection is geared towards OT security where it is all about cyber-physical companies such as utilities, mining, manufacturing, and so on.

Effective OT cybersecurity measures must therefore include industrial endpoint protection to prevent accidental infections and make motivated intrusion more difficult, OT network monitoring and anomaly detection to identify malicious actions on the level of programmable logic controllers, and dedicated expert services to investigate the infrastructure, conduct expert analytics, or mitigate the impact of an incident.

“However, despite all the innovations in modern cybersecurity solutions, human error still plays a significant role in compromising ICS systems. As such, it needs
to be managed much more proactively than what is currently happening. This requires utility companies, mines, and others operating in the industrial environment to look at building a Human Firewall,” adds Muller.

One of the best ways to achieve this is through the right security awareness and training solutions that go beyond basic training. Instead, it is about delivering training that is easily digestible, practical, and memorable so it will always stay top of mind. Companies must provide training to ensure staff are armed with the very latest skills and knowledge, especially given how quickly cyber incidents evolve.

Beyond the Human Firewall, there are sector-specific interventions to consider. For instance, modern electrical power systems are complex environments requiring protection, automation, and control solutions covering all areas of electric power facility operation. Notwithstanding the technical challenges of securing this environment, organisational issues must also be considered. For instance, a lack of guides defining actions to be taken when suspicious activity is detected within automated systems. There is also a lack of documents and practices relating to the investigation of disturbances in technological environments including malicious influence on control systems.

Mines are also hotbeds for potential attacks especially at a time when Industry 4.0 digital technologies link key operational systems to data analytics and cloud environments. Mines are confronted by escalating cybersecurity threats but lack the in-house skills to adequately protect their OT and ICS environments. Combining ICS cybersecurity solutions with ongoing user education and training are non-negotiables especially when human lives are at risk.

“It is a holistic approach towards ICS cybersecurity that incorporates hardware, software, and user awareness training components that will result in a hardened defensive posture around all aspects of OT security processes,” says Muller.

For more information on Kaspersky’s product offering for Industrial Cybersecurity, visit: https://ICS.Kaspersky.com/

Kaspersky Industrial CyberSecurity is a portfolio of products and services specially designed by Kaspersky to secure Operational Technology layers and elements of industrial enterprises. Aimed to provide a holistic approach to industrial cybersecurity, Kaspersky Industrial CyberSecurity brings value on any stage of the OT security process – from cybersecurity assessment and training to advanced technologies and incident response.

Reference:

*Kaspersky Industrial Control Systems Emergency Response Team
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Mineral: Chalcopyrite
Particle Size: 800 x 150µm
Mineral Expression: 1% of Surface Area
Copper Recovery: >90%

>600µm particles recovered using HydroFloat CPF
A South African court has allowed a group of UN-appointed experts to intervene in a class action lawsuit against a mining company based in Zambia, the UN human rights office, OHCHR, reported on Thursday.

The lawsuit against mining giant Anglo American was filed on behalf of women and children in Zambia’s central Kabwe District, who are the alleged victims of lead poisoning.

The UN experts - whose mandates cover issues such as toxic pollution and human rights, business and human rights, and discrimination against women and girls – had sought to intervene in the case.

**Duty of care**

The South Gauteng High Court in Johannesburg will this week hear arguments on whether the merits of the damages claim by the victims can be considered.

The applicants allege that Anglo American South Africa, through its prior involvement in the activities of the local lead mine in Kabwe, assumed a duty of care towards residents, especially protection against lead exposure.

“Lead is a cumulative toxicant that affects multiple body systems and is particularly harmful to young children,” the UN experts said.

‘Profound’ health effects

Furthermore, the World Health Organization (WHO) has identified it as one of 10 chemicals of major public health concern, needing action by countries to protect the health of workers, children and women of reproductive age.

“According to the WHO, there is no level of exposure to lead that is known to be without harmful effects,” they added.

“Young children can suffer profound and permanent adverse health effects and disabilities, including in the development of the brain and the nervous system. Pregnant women’s exposure to lead can cause miscarriage, stillbirth, and premature birth and low birth weight.”

**Contrary to commitment**

The Court will consider arguments based on international human rights law, including the UN Guiding Principles on Business and Human Rights, said the experts.

The guidelines commit businesses to respect human rights, whilst addressing the adverse human rights impacts linked to business activity with which they are involved.

They also highlight the importance of access to remedies in case of violations.

The experts argued that Anglo American was acting contrary to its professed commitments to human rights in business when it opposes the Court even considering this class action.

“Anglo American South Africa has voluntarily committed itself to follow the Guiding Principles, including the commitment to support access to justice where human rights impacts have occurred and to co-operate in processes designed to establish whether there is culpability for those impacts,” they said.

The 13 experts were appointed by the UN Human Rights Council in Geneva and serve in their individual capacities.

They are not UN staff and do not receive a salary for their work.
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Magna Tyres keeps companies on the move with the best OTR tyre solutions. We pride ourselves to be a customer-first company with an open culture. That means we value long-term relationships more than short-term success and with our “always on” attitude, we are here to help you. That means doing business with us is like being part of the family. Our customer-first and “can do” mentality sets us apart from the rest. We tend to do things differently than you are used to. How? Our employees make a difference and go the extra mile for you. We try harder, it’s as simple as that. What does that mean for you? Personal contact, swift processes and short lines of communication. All with the aim to serve you best. Once you do business with us you’ll likely stay committed to us, because we stay committed to you! Magna OTR tyres are especially developed to fit a broad range of mining and earthmoving vehicles such as ADT’s, RDT’s, wheel loaders, hauler trucks and more. The large variety of tread patterns...
Magna Tyres keeps companies on the move with the best OTR tyre solutions. We pride ourselves to be a customer-first company with an open culture. That means we value long-term relationships more than short-term success and with our “always on” attitude, we are here to help you. That means doing business with us, is like being part of the family. Our customer-first and “can do” mentality sets us apart from the rest. We tend to do things differently than you are used to. How? Our employees make a difference and go the extra mile for you. We try harder, it’s as simple as that. What does that mean for you? Personal contact, swift processes and short lines of communication. All with the aim to serve you best. Once you do business with us you’ll likely stay committed to us, because we stay committed to you! Magna OTR tyres are especially developed to fit a broad range of mining and earthmoving vehicles such as ADT’s, RDT’s, wheel loaders, hauler trucks and more. The large variety of tread patterns and tread depths in our mining and earthmover tyre range makes sure there’s always a Magna solution for your needs! Why choose Magna Tyres? Our tyres are known for their outstanding performance in challenging conditions while maintaining a low degradation rate. This results in a very low cost of ownership and impressed customers throughout the world. That is what we mean when we say it’s not just a tyre, it’s a Magna! Downtime is costly and a no go. That is why our sales offices and warehouses throughout the world maintain a large local stock. This allows us to fulfil your needs quickly whatever you need and whenever you need it. We keep you on the move, always! We won’t let you go until you are satisfied…That’s a promise!

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SKF prediction model development successfully audited by DNV

The SKF Generalized Bearing Life Model (GBLM) concept and the process leading to extensions of its applicability to special bearing design features and materials has been successfully audited by the independent certification body DNV. This provides an independent proof that SKF solutions contribute to improved reliability.

Calculating life expectancy and reliability of components are key when designing and building rotating machinery. Knowing the probability of failure and how to mitigate these will be even more important, not least since energy and raw material use is determined during the entire lifetime of the machine.

SKF supports customers in this challenge by developing products for increased reliability. To be able to quantify these benefits, as well as the risks of failure in applications such as machine tools and wind turbines, SKF developed the Generalized Bearing Life Model (GBLM). The GBLM quantifies both the risk of traditional failures from sub-surface fatigue and the risk of surface-initiated failures.

DNV, one of the most important independent certification bodies in the world, has audited the quality process in general and provided a statement of compliance to the SKF GBLM concept in particular. In their statement, DNV confirms that the GBLM “can replace the corresponding ISO standards”. This means that by using the GBLM calculation model, customers get a better way to evaluate the reliability of their designed rotating machinery. It also provides an independent and quantifiable proof that new solutions developed by SKF will lead to significantly improved reliability.

Bernie van Leeuwen, Director Research and Technology Development, says: “At SKF, we are convinced that the GBLM is the best way to calculate reliability. And with the certification from DNV, our customer can now rely on the fact that the GBLM is independently quality assured and that SKF solutions really contribute to increased reliability.”

Osino Resources Corp. (TSXV:OSI) (FSE:RSR1) (OTCQX:OSIIF) ("Osino" or "the Company") is pleased to provide an update on the definitive feasibility study for Osino’s Twin Hills Gold Project ("Twin Hills" or "the Project"). The DFS is being consolidated by Lycopodium Minerals Africa (Pty) Ltd. ("Lycopodium") in accordance with National Instrument 43-101—Standards of Disclosure for Mineral Projects ("NI 43-101"), with input from several other consultants and Osino. It is expected to be released around mid-2023.

Heye Daun, Osino’s co-founder and President & CEO commented: "For the DFS, Osino is making use of two EPCM (Engineering, Procurement & Construction Management) contractors, Lycopodium and DRA/Senet, who both have an extensive and successful track record of delivering gold projects in Africa. Their experience has proven to be highly beneficial in ensuring that risks identified in earlier stages of project development are being mitigated during the DFS. The DFS will further de-risk the Project and showcase its potential as one of the top-tier, near-term, undeveloped gold projects in Africa. In parallel to the technical work underway, we are advancing financing discussions with potential financiers as we get closer to making a formal construction decision.

Overview of DFS Work Completed or in Progress

The Twin Hills Gold Project is located within Namibia’s prospective Damara sedimentary mineral belt, in proximity to and along strike of the producing, open-pit Navachab and Otjikoto gold mines. Twin Hills is amenable to conventional open-pit gold mining and conventional, whole-ore CIL metallurgical processing.

Work commenced on the DFS in October 2022, with the following consultants appointed and actively working on the major packages included in the DFS:

- Lycopodium – responsible for overall compilation of the Technical Report including capital and operating cost estimates for the overall project; they are also directly responsible for preparation of DFS designs and cost estimates for the process plant.
- DRA – responsible for infrastructure design, cost estimation and coordination of specialized consultants.
- Qubeka Mining Consultants – responsible for the optimisation, design, scheduling and cost estimates for the open pit mining operation.
- Knight Piésold - responsible for the design and cost estimation of the filtered tailings storage facility (TSF), as well as extending the hydrogeological model of the project.
- Other subordinate consultants include CSA Global (resource estimation), SRK (geotechnical and geophysical), ECC (environmental), SLR (hydrocensus updates), FLSmidth, Paterson & Cooke, BOKELA and STL (tailings filtration testwork), GSFA (bulk power supply), Kuchling & Associates (bulk water supply), Dornier Suntrace (renewable power supply), and Collis & Associates (sustainability).

The latest mineral resource and reserve estimates, production and financial results and key valuation metrics determined during the PFS were previously reported in a Technical Report filed on October 26, 2022.

Open Pit Mine Optimisation, Design and Production Planning

The orebody will be mined as a conventional shovel and truck...
operation, with bulk mining augmented by more selective mining in areas with narrow ore zones. The mining operation, except for the mine technical services function, will be outsourced to mining contractors.

The project is planned as a multi-pit mining operation with seven pushbacks in the Central Twin Hills / Bulge pits, and the three separate satellite pits (Clouds, Clouds West and Twin Hills West). The pit will be mined to facilitate grade maximisation to the plant in the early years, and waste stripping is deferred into the future. Production schedules have been optimised to reduce the quantity of waste rock pre-stripped, as well as the maximum annual mining tonnages and stockpile capacity. The processing plant will continue running on low-grade ore stockpiles after the end of full-grade ore mining, so long as positive cash flows are generated.

Figure 1: Design, Layout and Location of Process Plant, Pit and Waste Rock Dumps (Grid spacing = 1000m)

Metallurgical Testwork

During the PFS, it was established that tailings filter cake produced on belt filters may be difficult to convey and store on a filtered tailings storage facility due to high moisture content. Multiple laboratories are carrying out vacuum and pressure filtration tests to determine the optimal tailings filtration route. Early indications are that pressure filtration may result in a substantially reduced water consumption, albeit at higher capital cost. This trade-off is under investigation.

Plant Mineral Processing

As per the PFS, the Twin Hills process plant will have name-plate capacity of 5.0 Mtpa of ore. The process is based on conventional methods well proven in the industry. Gold recovery will be achieved using a 3-stage crushing, ball milling, gravity, pre-oxidation, CIL, cyanide detoxification and tailings thickening and filtration process plant flowsheet.

The following activities or deliverables have been produced for the process:

- A standard Primary Crusher /Coarse Ore Stockpile/Secondary and Tertiary Crushing/Covered Fine Ore Stockpile/Ball Mill circuit was selected in preference to other alternatives.
- Mass balance, process design criteria, block flow and process flow diagrams incl. mechanical equipment lists etc. are being prepared.
- Data sheets, specifications and requests for quotation to vendors have gone out with capital and operating cost estimates expected to be compiled during February and March 2023.

Site Location and Infrastructure

In March 2022 Osino signed a power-supply agreement (“PSA”) with Namibia’s parastatal power utility NamPower (Pty) Ltd (“NamPower”). Osino intends to fast track the development of a substation and transmission infrastructure in line with the project development timeframe.

The average power demand for the plant will be about 25 MW, up from 16MW in the PFS, which will be supplied via a 25km high voltage power line to be constructed from the new Erongo substation, which is currently under construction by NamPower to connect to the Twin Hills mine switchyard. The Erongo substation has more than
sufficient capacity for all of Twin Hills power demand.

To supplement the grid power, Osino has appointed a specialist consultant to investigate the feasibility of a large-scale photovoltaic (“PV”) solar power installation, potentially including a battery energy storage system (“BESS”) on-site to at least 30% of the Twin Hills power demand. Although grid power is reliable and competitively priced in Namibia, the PFS renewable energy studies indicated the substantial energy savings could be made by maximizing PV in the mine supply energy mix.

The infrastructure portion of the DFS also includes:

- Competitive quotations for the TSF.
- Geotechnical test pits and borehole drilling of the open pit, process plant, TSF and infrastructure locations.
- Confirmation of battery limits between DRA, Lycopodium and other consultants.
- Process design documents for the filtered tailings conveyor.
- Estimation of operating and maintenance complement and building requirements for the whole operation.
- Operational Readiness (“OR”) gap analysis and development of a high level OR plan.
- Coordination of bulk power and water supply, renewable power and sustainable construction investigations.

The infrastructure for the Project includes core sheds, mine planning and technical services facilities, maintenance workshops, refuelling facilities, explosive magazine, administration buildings, assay laboratory, stores, access roads, stockpiles, stormwater dams, water supply, power supply, sewerage treatment, construction camp and waste management.

**Hydrogeological Modelling and Water Supply Studies**

Approximately 80% of the water contained in CIL tailings will be recycled at the plant and the remaining water will be lost in the filtered tailings cake. Additional water will be used for dust suppression. The site operation will require water from external sources such as fresh water, groundwater or other recycled sources.

The Twin Hills water supply strategy is currently based on sustainable groundwater sourced from aquifers within Osino’s own project area, augmented by additional supply from external, but nearby aquifers, recycling of grey water from local sources and the development of innovative surface & groundwater storage and aquifer recharge schemes which are currently under investigation.

If the tailings filtration studies currently underway are successful, it is anticipated that the Twin Hills make-up water requirement will decrease substantially. Other water related studies include:

- Update of the mine and process plant water balance, taking account of open pit dewatering.
- Groundwater borehole pumping along the Karibib marble for mine production.
- Additional site borehole drilling along strike of the marble formation to expand the existing known aquifer close to site, with a view to demonstrating additional water supply.
- Potential upgrade of the Karibib wastewater plant and pumping to the Twin Hills site.
- Khan River and Okawayo flood attenuation dams to also aid with artificial groundwater recharge.
- A managed aquifer recharge scheme designed to replenish the marble aquifers with surface water, and promote sustainability of abstraction.
- Pump testing and preliminary designs to bring additional water from the known, but unutilized Kranzberg aquifer which is about 30 km away from Twin Hills.

It is expected that the DFS will demonstrate sufficient water supplies for the Twin Hill project with a comfortable margin of safety to allow for sustainable abstraction and to take into account the expected rainfall variation in the region.

**Environmental Permitting**

There were no major flaws found in the Environmental Impact Assessment (“EIA”) submitted to the Ministry of Environment Fisheries and Tourism (“MEFT”) and the Twin Hills project was granted an Environmental Clearance Certificate (“ECC”) which is valid for a period of three years, before an application for routine renewal is required. From February the
technical team will begin applications for all secondary permits required for the project. For further information please refer to press release dated January 27, 2023.

**Sustainability**

Planning for responsible mining is a cornerstone to Osino’s beliefs. In support of the DFS, and Osino’s goal to develop a mine that builds value for all stakeholders, a broad range of sustainability initiatives are being implemented. Their objective is to build value across all forms of capital (natural, human, intellectual, manufactured, financial and social) by minimising negative impacts and maximising positive contributions. Key initiatives are listed below.

**Governance:**
- Sustainability management competencies, policies and procedures are being expanded.
- Osino’s sustainability strategy is being revised to transition the company and the Twin Hills Gold Project from planning, design and construction, through to operations.

**Social:**
- Health and safety practices are already well-established and will continue to be expanded.
- Employee welfare, relationships, diversity, equal-opportunity and non-discrimination practices are prioritised.
- Stakeholder and community initiatives that are in place or are being developed include:
  - Community engagements take place regularly and a formal engagement plan is being developed.
  - A public grievance mechanism is being launched.
  - Plans for local job creation, skills development and procurement will be put in place.
  - Community development and impact management plans are scheduled for development.
  - The production of a comprehensive employee housing strategy and plan is underway.
  - The Twin Hills Trust funds community projects to help address development priorities.
  - A broader community development plan will be developed.

**Environment:**
- The mine layout will minimise biodiversity impacts.
- Broader land-management and conservation initiatives for the surrounding land are being investigated.
- Buildings will be designed to minimise heating, cooling and lighting requirements (reducing Scope 1 and 2 greenhouse gas emissions).
  - The use of local and low-im-
The main project development and construction decision is made. A formal commencement will follow once project finance presentation of Operational Readiness as well as definition of project execution. Their responsibilities will commence the end of the FEED contract team will be appointed before the submission of DFS. An Owner’s Project team will be appointed before the end of the FEED contract. Their responsibilities will include coordination of project implementation as well as detailed planning and early implementation of Operational Readiness activities.

Project implementation will commence once project finance becomes available and a formal construction decision is made. The main project development contract to put in place will be for design, procurement and construction of the process plant and associated infrastructure. Osino currently intends to implement an EPCM (engineering, procurement and construction management) contract.

Closing of Somerschield Transaction
Osino has now also completed the acquisition of the minority interest for the remaining 3% of the shares in the capital of Osino Gold Exploration and Mining (Proprietary) Limited ("Osino GEM"), a subsidiary of the Company, as announced on August 16, 2022 from Somerschield Investments Close Corporation ("Somerschield"). Osino acquired the remaining 3% of GEM for a deemed value of C$1,870,000 satisfied by issuance of 1,700,000 common shares of the Company (the "Shares"). The Shares are subject to resale restrictions agreed between the parties over a 24-month period from the date of issuance, and are subject to a statutory four month hold from the date of issuance. No finders fees were payable in respect of the transaction.

Qualified Person’s Statement
David Underwood, BSc. (Hons) is Vice President Exploration of Osino Resources Corp. and has reviewed and approved the scientific and technical information in this news release and is a registered Professional Natural Scientist with the South African Council for Natural Scientific Professions (Pr. Sci. Nat. No.400323/11) and a Qualified Person for the purposes of National Instrument 43-101.

About Osino Resources
Osino is a Canadian gold mine developer and explorer focused on the fast-tracked development of our PFS-stage Twin Hills Gold Project (“Twin Hills”) in central Namibia. Since its grassroots discovery by Osino in August 2019 the Company has completed more than 250,000m of drilling at Twin Hills and in September 2022 released a pre-feasibility study ("PFS") which outlines a 13-year open-pit mine life with an average annual gold production rate of 169k oz per annum at all-in sustaining costs of US$930/oz in the 10 years of operation. This is based on 2.15 Moz in reserves.

Osino also has a commanding ground position of approximately 8,000km2 located within Namibia’s prospective Damara sedimentary mineral belt, mostly in proximity to and along strike of the producing Navachab and Otjikoto Gold Mines. The Company has an active exploration program targeting gold mineralization that fits the broad orogenic gold model.

Our core projects are favorably located north and north-west of Namibia’s capital city Windhoek. By virtue of their location, the projects benefit significantly from Namibia’s well-established infrastructure with paved highways, railway, power and water in close proximity. Namibia is mining-friendly and lauded as one of the continent’s most politically and socially stable jurisdictions.

Proposed Project Development Plan
The DFS will generate cost estimates with an accuracy range of approximately ± 15% based on further development of the PFS engineering designs.

A four-month front-end engineering design (“FEED”) package will begin working prior to the end of the DFS. An Owner’s Project team will be appointed before the end of the FEED contract. Their responsibilities will include coordination of project implementation as well as detailed planning and early implementation of Operational Readiness activities.

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Osino set up the Twin Hills Trust to manage the company’s corporate social investment (CSI) activities.

Building value for all

Osino is a Canadian gold exploration and development company with a strong sustainability ethos. The company is making great strides in advancing its exciting Twin Hills project near Karibib.

www.osinoresources.com

Osino’s responsible mining priorities:
- Embedding sustainability in the organisation
- Employee health, safety and well-being
- Community relations and development
- Environmental stewardship

Osino set up the Twin Hills Trust to manage the company’s corporate social investment (CSI) activities.
Mines and Money Miami

February 23rd & 24th, 2023

James L. Knight Center, Miami, FL

www.minesandmoney.com/miami

Europe’s premier mining investment event comes to Miami

For more than 20 years, Mines and Money has introduced tens of thousands of investors to 2,000+ publicly traded companies via live and interactive executive management presentations.

In May of 2021, Mines and Money Connect was launched as Europe’s newest mining investment event to welcome investors, miners and financiers in a business focused event, with the core goal of connecting mining investments and deal-making.

In February of 2023, Mines and Money Miami will welcome investors, mining corporates and financiers to a wholly business focused event, with the same core goal – that of developing and fostering mining investments and deal-making, bringing attendees together to participate in hundreds of lucrative meetings and two invaluable networking days.

Combining the advantages of a relevant agenda with a packed meeting and networking arena, a tried and trusted meeting planner and a social networking agenda, this event attracts qualified institutional and professional investors actively looking to find investment partners.

- 60 mining companies: Access 60 mining company CEOs, from a range of ASX, TSX, NYSE and private companies
- 250 investors: Access 250 investors from across EMEA & North America attending and actively seeking meetings with mining companies that interest them
- Concierge support: The Mines and Money Miami concierge team will plan your agenda for you, scheduling pre-arranged meetings for you with the mining corporates most relevant to you or your firm both pre-event and onsite to ensure your meeting schedules run smoothly
- Pre-booked meetings between mining companies and qualified EMEA & US based investors

Mines and Money Miami is designed to give investors, brokers and fund managers a better understanding of current investment opportunities in mining.

Whether you are an investor looking for exciting new projects, or a mining company hoping to raise capital and make new connections, this is a must-attend for investors and participants in the global mining industry.

Quick reference links and information

Dates: February 23rd & 24th, 2023
Location: James L. Knight Center, Miami, FL
Website: www.minesandmoney.com/miami
Ticket Link: https://minesandmoney.com/americas/register
Phone +61 3 9008 5946
Email: connect@minesandmoney.com
LinkedIn: https://www.linkedin.com/company/3139641/admin/
Twitter: https://twitter.com/MinesAndMoney
YouTube: https://www.youtube.com/@MinesandMoney
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Mines and Money is the leading international event series connecting sophisticated investors from around the world with mining company management teams, both online and in person.

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Unlocking the power of data to drive sustainability in the mining sector

Seequent’s cloud-based geological data management platform is the latest in its suite of solutions that unlock mining data value.

Momentum towards a just energy transition and achieving net-zero by 2050 is in full swing, but explorers and miners face challenges. Creating a green, sustainable future is massive, but technology associated with the fourth industrial revolution will help build digital transformation roadmaps to achieve ambitious net-zero targets.

This is how Seequent, the Bentley Subsurface company, fits into the picture. Its exploration suite of solutions, which include MX Deposit, Leapfrog, Central and Imago, enables mining to collaborate and work with higher volumes of data. A comprehensive understanding of geology is crucial to ensure viability and sustainability, but these projects are complex and multi-layered and require multidisciplinary teams to garner insights from the same reliable source. Raw and interpreted data must be centralised, secure and accessible.

The data used to understand geology are core samples and chips, and quality photographs of these are insurance against sample deterioration or loss. Until now, handling, storing and sharing these images were difficult and prone to error. Geologists copied images to their laptops for meetings, but could not access broader data should the need arise.

Technology has streamlined and organised this process. Images can be shared anywhere in the world at the touch of a button. This also helps to reduce a company’s carbon footprint, because fewer geologists need to visit a site as often, and decisions regarding a drill programme can be made remotely. This contributes to better ESG.

Cloud technology and connected, collaborative tools also reduce the environmental impact through faster real-time decision-making that simplifies exploration. Drilling is targeted, which reduces costs and improves sustainability.

Obtaining and storing drill samples are expensive. Image data is increasingly important in geosciences, including core photos, hyperspectral, aerial and drone photos, and from handheld devices.

Technology can improve image quality, even with poorly taken photos. The massive task of cataloguing images is automated and connected to other processes such as 3D modelling.

As technology improves the amount of data increases exponentially and this must be properly stored, ordered and managed to remain useful.

What is Imago?

Imago is cloud-based geological data management software that extracts the most value from core and chip photography, supporting the geological process from exploration to grade control, because it is data and insight driven, giving access to information where and when needed, allowing faster, better decision making.
Imago migrates historic images into a single-source-of-truth library. It supports high-quality future photography and becomes a database aligned for machine learning and AI. It also integrates with geological tools like Leapfrog, MX Deposit, Oasis montaj and Target.

Companies can export image-textured meshes inside their modelling tools, view core trays or linearised downhole images alongside drill-houses, and quickly zoom in and out of a particular depth.

Imago is also relevant to industries such as civil and energy. It standardises the quality of images, name and catalogue them before uploading to the Imago Portal.
There are many important factors that determine the performance of wear parts and liners in a grinding mill. Two key factors are their design and the materials they are made from. ME Elecmetal analyzes customer applications to determine the ideal combination of design and materials to achieve optimal wear performance and throughput in both high-impact and high-abrasion applications, whether it is a SAG, AG, ball, rod or tower mill.

ME Elecmetal's innovative liner designs and materials deliver proven, world class performance, while minimizing costly relines and downtime.

ME Elecmetal wear parts are manufactured according to the highest quality standards using state-of-the-art technology and engineering, resulting in the most reliable, lowest 'total cost of ownership' solutions for customers.

ME Elecmetal is always working on the next generation of alloys to increase wear performance and grinding efficiency. The company analyzes customer's operating conditions, and production goals, cross references them with its global benchmarking database to develop optimized solutions. Then, the ME Elecmetal team works in step with customers to implement and validate the solution.

ME Elecmetal offers a wide range of complementary services including condition monitoring to further improve efficiency and provide customers with real time information. We work closely with operations and plant maintenance teams to monitor wear performance and production rates, customizing each liner for the best possible performance. All variables are considered in this analysis — from the characteristics of the ore, to the customer's operating strategies, to their production goals.
Innovative Grinding Solutions

ME Elecmetal … Always here when you need us

ME Elecmetal offers more than mill liners — We offer innovation, support, custom designs and valuable tools to develop a total grinding solution specific to your needs. We are your trusted partner at every stage of the optimization process to provide valuable insight based on over 100 years of experience and advanced technologies. We will help you optimize your process, reduce downtime and increase productivity, resulting in higher profits. One more thing you can count on with ME Elecmetal … We will ALWAYS be here when you need us!

ME Elecmetal’s products and services include:
• Grinding mill liners (castings, rubber and composite)
• Grinding media (SAG, ball and grinding rods)
• Crusher wear parts
• Smelter ladles and slag pots
• 3D laser scanning for wear analysis
• Reline simulation services
• 2D/3D simulation services (DEM and FEM)

Crusher Wear Parts:
ME Elecmetal offers wear parts for all makes and models of primary, secondary, tertiary and pebble crushers.

Gyratory Crushers:
• Through-hardened alloy steel concaves
• Primary mantles
• Arm shields
• Rim liners

ME Elecmetal
Minneapolis, MN • Tempe, AZ
+1-763-788-1651 • +1-480-730-7500
Email: sdevos@meglobal.com
www.me-elecmetal.com
The Field Computer Every Mine Site Needs

Finding a field computer that fits seamlessly into your workflow can be difficult. Mining operations need computers that are robust, improve data accuracy, work efficiently, save money, and provide seamless connectivity. Usually that means working with several pieces of equipment, getting intensive training, and bearing a substantial cost. But not anymore.

The new Mesa® Pro Rugged Tablet from Juniper Systems has the robust computing power, rugged durability, seamless connectivity and deep customisations that smart mining operators need to manage a wide range of requirements.

Juniper Systems developed or enhanced each feature of the Mesa Pro from previous technology used in our rugged tablets. Each feature was in direct response to a need we anticipated or that was requested directly from our users. And while the basics of mine operations are similar across operators and sites, the specific applications are different, raising the need for customised features to fit each unique site. The Mesa Pro is Juniper’s first 10-inch rugged tablet that’s perfect for mining environments.

A Screen for Rain and Shine

In mining, there is no ‘normal’ work environment. Your office is wherever you are: the cab of a truck, an excavator or loader, low-light buildings, or directly in the sun and the elements outdoors. The Mesa Pro’s high-visibility backlit LCD display offers peak brightness for a clear screen even in direct sunlight. An integrated polariser (in landscape orientation) allows for use with polarised sunglasses.

Light isn’t the only issue users face when on the mine site. Where touchscreen capabilities tend to fail in most conditions other than dry and warm, the Mesa Pro offers specific touch profiles for regular use, gloved hands, or wet screen conditions. The large, 10.1-inch screen has a resolution of 1920 x 1200, which means it shows more data within the boundaries of the screen, so there is less scrolling. Whether looking at maps, CAD plans, or data capture software, users can expect to see more of their data on screen at once.

Spend More Time Unplugged

The Mesa Pro features a battery design that matches the long hours typical in mining work. The battery provides 43.2 Whr of operating time, and an optional, additional battery provides another 43.2 Whr of operation. The dual battery approach allows for easy charging in the field, and the batteries are hot-swappable, so you’re never without computing power. An integrated LED charge indicator also provides instant feedback when swapping batteries, making sure users always have a full charge. A dual bay battery charger is available that allows for fast charging of two batteries, or the Mesa Pro itself is capable of internal rapid charging: 50% battery charge can be reached in less than 1 hour, and 100% battery charge is achieved in just 2 hours and 15 minutes. Users aren’t tethered to an electrical outlet for long before they can get back out in the field.

Tough As You Need It

Keeping with Juniper’s long history of rugged, field-ready technology for an outdoor office, the Mesa Pro has an aluminum frame that provides the whole device with a rigid core. The larger display requires more support because that is the area with potential for the most damage from a drop. An optically-bonded screen and the frame underneath provide protection to the display. And, in case of a drop, direct impact to the screen is avoided thanks to the raised corner bumpers which provide a gap between the screen and the ground.

Like all of Juniper’s computers, the Mesa Pro is Juniper Rugged™.
Mesa Pro has been tested to meet MIL-STD-810H (USA military standard) certifications. This testing includes repeated drops from four feet to concrete to prove shock resistance, and operating in extreme hot and cold temperatures. Plus, the Mesa Pro’s ports are sealed against rain and blowing dust, achieving an IP65 rating.

**Connect Your Workflow Seamlessly**

As a tool our customers will use daily, the Mesa Pro offers a wide range of inputs and connectivity options for collecting, reading and sharing data. Connectivity paired with the larger screen makes the Mesa Pro an easy upgrade to any field computer and is also a perfect laptop replacement. Between 19V DC power input, multiple USB ports, and an audio jack, other devices or computers can share information seamlessly. For wireless connectivity, the Mesa Pro works with many carriers’ 4G LTE networks (cellular-enabled devices), Wi-Fi, or Bluetooth®.

**Customise It to Fit Your Needs**

Mesa Pro was designed with the potential to be customised to specific needs, because every mine site is different and requires its own functionality. Options range from simple branding to hardware integrations. Juniper Systems can customise the bumper colors as well as display your company’s logo on the device casing and during the power-up screen. In the Mesa Pro, hardware solutions are easily integrated in two areas within the device that are purposely available for expansion. Potential integrations include radios, sensors, RFID and barcode readers, antennas, or other functionality you may require. The goal with customisation is to streamline your processes and equipment so only one device is needed: the Mesa Pro. These customisations are possible because the Mesa Pro is manufactured and assembled in Juniper’s USA-based facility.

**Now Shipping**

The Mesa Pro is now available from Juniper Systems. Our demo program is available to test the Mesa Pro’s durability, connectivity and new features in your own mine environment. Contact us today for a quote at +44 1527 870773 or by email at rugged@junipersys.com. Learn more at https://junipersys.com/mesa_pro.
Surge in Early Commitments Ahead of Investing in African Mining Indaba

Key government leaders and policymakers across the globe are signing up in their numbers ahead of the world’s largest mining investment event, Investing in African Mining Indaba (MiningIndaba.com). Indaba is returning to Cape Town in February 2023 with an impressive speaker line-up comprising thought leaders and decision-makers from across the mining industry.

“We saw a record-breaking Indaba in May 2022 that really set the tone for the industry and for post-pandemic events as we lead up to February 2023. We are seeing a lot of early commitment and we are encouraged by the interest we have already received. This really reaffirms the importance of the Indaba, that it is given the upmost attention and support by state officials and is really driving positive policy change across the continent.” said Simon Ford, Portfolio Director, Investing in African Mining Indaba.

Leading the charge of government leaders that will be in attendance are South African Minister of Mineral Resources and Energy, Gwede Mantashe and Minister of Trade and Industry, Ebrahim Patel.

Government leaders from mining producing countries in Africa include the Nigerian Minister of State for Mines and Steel Development, Gbemisola Ruqayyah Saraki; Ghanaian Minister of Land and Natural Resources, Samuel Jinapor and the Ghanaian Deputy Minister for Lands and Natural Resources, George Mireku Duker; as well as the Zambian Minister of Mines and Minerals Development, Paul Kabuswe.

Investing in African Mining Indaba continues to garner significant support across the continent, with government officials from Chad, Ethiopia, Botswana, Central African Republic, Mali, Mauritania, Namibia, Somalia and South Sudan having also made early commitments.

On the global front, United States of America Under Secretary of State for Economic Growth, Energy and the Environment, Jose W. Fernandez, will be in attendance. He will be joined by Special Presidential Coordinator Amos Hochstein. Fernandez last visited South Africa in August 2022 where he participated in the US-South Africa Strategic Dialogue and co-chaired sessions that explored ways to deepen bilateral cooperation on climate and energy issues, as well as strengthen economic ties between the two countries.

The theme for 2023 is ‘Unlocking African Mining Investment: Stability, Security, and Supply’ and will feature speakers who will consider the challenges and opportunities facing the continent’s mining industry as it seeks ways to bolster its economic power amid the global rush to secure supply for greener energy transition.

Attendees will hear from global mining leadership including Anglo American Chief Executive, Duncan Wanblad; Rio Tinto’s Chief Executive - Minerals, Sinead Kaufman; CEO of Exxaro Resources, Dr Nombasa Tsegwa; Minerals Council South Africa CEO, Roger Baxter; Gécamines SA Chairman Alphonse Kaputo Kalubi, and CEO of ICMM, Rohitesh Dhawan.
Unlock the future of African Mining
Through Investment: Stability, Security, and Supply

Network
Meet thought-leaders, government leaders, c-suite and other influential people in the industry all under one roof.

Learn
Will provide one week of pioneering talks from influential leaders and thought-provoking discussions from across the value chain.

Invest
Guaranteed ROI from targeted roundtables to meeting hubs, with more focus than ever on ensuring your objectives are met.

Get Meetings
Create meaningful connection through unmatched networking programme’s and scheduled 1-2-1 meetings and get the most out of your time.

Be sure to follow and include us in your social media posts using #MI2023 | @MININGINDABA
**September**
- **9th Malawi Mining and Energy Conference and Exhibition**
  - Zomba | Malawi
  - Kaunda International Conference Centre
  - [www.mmec-malawi.com](http://www.mmec-malawi.com)

**October**
- **11th Northern Nigeria International Mining and Energy Conference & Exhibition**
  - Kano | Nigeria
  - Ramada Hotel & Conference Centre
  - [www.nnimec.org](http://www.nnimec.org)

**November**
- **11th Zambia International Mining and Energy Conference and Exhibition**
  - Lusaka | Zambia
  - Zambian International Convention Centre
  - [www.zimeczambia.com](http://www.zimeczambia.com)

**December**
- **10th South African Mining and Energy Conference and Exhibition**
  - Johannesburg | South Africa
  - Gallagher Convention Centre
  - [www.mmec-southafrica.com](http://www.mmec-southafrica.com)

**2023**
- **9th Mozambique Mining and Energy Conference and Exhibition**
  - Maputo | Mozambique
  - Chissano Joaquim Conference Centre
  - [www.mmec-moz.com](http://www.mmec-moz.com)

**2024**
- **10th Tanzania Mining and Energy Conference and Exhibition**
  - Dar es Salaam | Tanzania
  - International Convention Centre
  - [www.mmec-tanzania.com](http://www.mmec-tanzania.com)

**2025**
- **11th Kenya Mining and Energy Conference and Exhibition**
  - Mombasa | Kenya
  - Mombasa Exhibition & Convention Centre
  - [www.mmec-kenya.com](http://www.mmec-kenya.com)
7TH SENEGAL INTERNATIONAL MINING CONFERENCE & EXHIBITION

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Hotel King Fahd Palace | Dakar, Senegal

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