

# ZAMBIAN MINING MAGAZINE



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## CEC's first tranche for green bond oversubscribed



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# Green bonds should revolutionise power generation



Andrew Maramwidze (Editor)

Investors' scramble for mining projects dotted across the continent is real, as Africa is endowed with natural resources.

So it is great news for CEC to announce that its US\$200 million green bond programme has been oversubscribed. The development came after the company's first tranche of US\$ 53.5 million, issued as a private placement, to a select few investors and was oversubscribed by over 178 percent.

CEC has attracted a wide spectrum of investors to finance the renewable en-

ergy development of 200 megawatts (MW) of solar energy. With such exceptional subscriptions of a diversified investor class participating in a green and tradable instrument; we hope many more green projects in the country will get this overwhelming support. The country needs more investors to get many projects off the ground.

CEC's green bond success has set the pace for the mining industry to realise the potential green projects carry, as the globe shifts from fossil-powered energy generation, the shift should be embraced and encourage saving the continent.

The attraction towards green bonds is also expected to ease the heavy burden of power producers looking for funding; giving them time to concentrate on what they know best, which is power generation.

At this stage, it is very appropriate for governments to be challenged and implored to do more in crafting policies that support the green bond trend, power producers should easily and quickly tap into green bond financing and allow the mining industry which is the biggest consumer of power to benefit from a reliable supply of power.

More power generators should be lured to green bonds, once the value chain

is attractive enough, most projects will easily tap into this lucrative funding method.

As we prepare to be at the biggest mining jamboree slated for next month in South Africa, miners across the continent will be relieved to know that renewable power generation now has the biggest investor backing and attraction. Remember mines consume more power.

*Please do share your comments, Letters to the Editor and opinions.*

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### Pangeni copper project on track

BeMetals Corp. recently announced results of drill hole D22-C1 at the D-Prospect of the Pangeni Copper Project.

According to the company, the Pangeni Copper Project: D-Prospect: Drill hole D22-C1 intersected 18.10 metres grading 0.70 per cent copper.

In addition, the copper intersection has a grade that exceeds the grades of certain operating, large-scale, copper mines in the Domes Region of the Zambian Copperbelt and has a width similar to mineralized units in these deposits.

“This copper intersection is open along strike to the southwest and west, and both up and down dip beneath the Kalahari sand cover.”

“We are very pleased and excited by the results from drill hole D22-C1 at the Pangeni Copper Project in Zambia. These new results, including 18.10 metres grading 0.70 percent copper confirm the pedigree of the geological setting, and highlight similarities to known mined deposits in the Domes Region of the Zambian Copperbelt,” said the company in a statement.

### First Quantum to sell smaller mines

Toronto-based First Quantum intends to explore selling smaller mines in its portfolio and stakes in its larger mining assets, and has dismissed rumours it planned to sell a stake in the company or whole mines.

According to the company, selling smaller mines is a response to the closure of Cobre Panama following a dispute with the Panama government. The government ruled in December the mine’s licence contravened numerous articles of the country’s constitution.

First Quantum has debt of \$1.05bn which comes up for maturity in early 2025. Ratings agency Fitch warned that if the Cobre Panama mine were permanently shut, First Quantum’s net debt leverage ratio in 2024 would increase to more than five times earnings before interest, tax, depreciation and amortisation resulting in a covenant breach.

In addition, it plans to cut spending by \$400m this year — to a range of \$1.2bn to \$1.4bn partly owing to reduced spending on Cobre Panama, as well as moves to combat cost growth at its Zambian mines.

“Recent discussions in Panama have been constructive regarding the responsible environmental stewardship of the mine,” said Tristan Pascall, First Quantum Chief Executive Officer in a statement.

### New mining investments to spur economy

The finance minister Situmbeko Musokotwane has announced the government’s optimism regarding an economic upturn in 2024, driven by new investments in the mining sector in the Copperbelt province.

He further said the government anticipated growth in agriculture and manufacturing activities as additional contributors to the country’s economic resurgence.

Dr. Musokotwane emphasized that the government has secured parliamentary approval to borrow 33.3 billion kwacha under the 2024 national budget.

The minister clarified that the borrowing, from both domestic and external sources, will be conducted with careful consideration to

gradually reduce the borrowing rate from 14 percent to 5.2 percent. This strategy aims to bring the country’s debt back to sustainable levels, reflecting the government’s commitment to responsible financial management.

“We will adhere to the borrowing plan to ensure it is controlled as the country is still battling with unsustainable debt,” Dr. Musokotwane stated.

### KCM, Vedanta deal nears completion

The implementation process for a deal between Konkola Copper Mines (KCM) and Vedanta Minerals is nearing completion, the mines minister Paul Kabuswe has announced.

Kabuswe said the consent judgment related to the deal was scheduled to be signed soon to pave way for the last step which is a creditor’s scheme of arrangement.

He said the government has done its part by resolving the KCM issue that emanated from the liquidation of the mine by the PF Government.

“This government has negotiated various conditions for miners; among them is the 20 percent salary increase immediately Vedanta assumes full operations of the mine (KCM),” Kabuswe said.

“Vedanta has done its part, the Government of Zambia has done its part and ZCCM IH has done its part, now it remains for the courts to run that process of the creditors’ scheme so that we remove the provisional liquidation,” he added.

### Muntanga to commence uranium production in 2026

The developers of Muntanga Mine, GoviEx Uranium said, are on track to complete the feasibility study and the environmental and social impact assessment in 2024.

“Our vision is clear: to commence uranium production within two years post-financing, becoming a uranium supplier in this uranium cycle,” said a letter to stakeholders from the Executive Chairman, Govind Friedland and the Chief Executive Officer, Daniel Major.

The company said having a diversified asset base provides it with a significant advantage, particularly during periods of political uncertainty.

“Our Muntanga project in Zambia has shown good progress during 2023.”

Last year, the company announced a substantial increase in open-pit mineral resources at Muntanga, with measured and indicated resources nearly tripling, now representing 74 percent from 29 percent of total resources.

“Our total in-pit constrained resources increased 18% and we have shown a grade improvement in all mineral categories. What’s more exciting is that this upward trajectory in resource growth persisted even under lower uranium prices, such as the USD50/lb used in our Preliminary Economic Assessment, which is a testament to the project’s potential and resilience.”

In 2023, we completed a 15,835-meter drilling program on the Muntanga and Dibbi East deposits. The results of the infill drilling program are promising, indicating the potential for further conversion of mineral resources from the inferred into the indicated category, which would mean these upgraded mineral resources can be included in the upcoming feasibility study, potentially increasing the size and quality of the project.



# CEC's first tranche for green bond oversubscribed

**C**opperbelt Energy Corporation's (CEC) first tranche subscription towards the US\$200 million green bond programme has been oversubscribed.

According to the first tranche of US\$ 53.5 million, issued as a private placement, to a select few investors was oversubscribed by over 178 percent.

The CEC first green bond registration announced at the COP 28 in Dubai, attracted investors which include Emerging Africa Investment Fund who acted as the Cornerstone Investor and others were Absa Bank, Atlas Mara Bank Zambia and the African Local Currency Bond (ALCB) Fund.

Announcing the subscription allotment, CEC Managing Director, and Chief Executive Officer Owen Silavwe said: "The response from a wide spectrum of investors has been extremely positive and encouraging. We are thankful to our partners for the support and hard work exhibited during the entire Green Bond process.

The financing raised through the Green Bond allows us to continue to finance the renewable energy development aligned to our strategy."

He said the company remain keen on actualising green energy ambitions and the issuance of this Bond is an affirmation of commitment to achieving flagship 200 megawatt (MW) of solar energy.

"We look forward to subsequent tranche

subscriptions which should provide an opportunity for a diversified investor class to participate in a green and tradable instrument."

James Doree, Head of Corporate Investment Banking at Cygnum Capital, the Bond's lead arrangers, said, "We are committed to finding capital markets solutions for infrastructure and clean energy investment. This transaction, Zambia's first non-recourse project bond and the first to be issued locally under the ICMA Green Bond Principles, demonstrates CEC's leadership and impact, while also providing it with a flexible and scalable structure to roll out their renewables pipeline."

"The willingness of a local and regional capital market to back an entirely new funding instrument highlights Zambia's commitment to sustainably advancing its energy market. We are delighted to partner with CEC and act as the cornerstone investor, increasing investor confidence in a rapidly evolving sector," added Paromita Chatterjee, Investment Director at Ninety-One, Fund Manager of the Emerging Africa Infrastructure Fund, commenting on the transaction,.

Theuns Ehlers, Head of Project Finance at Absa Group said, "this is an ingenious financing solution for Zambia and having a sponsor with strong operational and financial capabilities has helped the structuring and bankability of a private-to-private project finance bond raise, therefore, we are very proud to be associated with this transaction."

Bobbline H Cheembela, Atlas Mara Bank Zambia, Acting Managing Director praised the government for introducing various incentives to support green bond financing such as exemption from withholding tax.

He further stressed that these incentives, have enabled participation of both local and international investors and will assist in developing the debt capital markets and the inflow of hard currency into the country that will in part support the sovereign debt restructuring. He concluded by saying,

"We trust the CEC Renewables strategy will add to the power supply of the country."

The proceeds from the Bond, will be deployed towards further solar generation investments and associated transmission infrastructure. CEC's commitment to attaining its green energy generation ambitions of 200MW of solar energy generation is slowly being materialised. At present, it has an operational 34 MW solar plant, and under construction is a 60MW solar plant, targeted for commissioning in the first quarter of 2024.

CEC said the successful issuance of the first green bond is not only a pivotal moment for the Group, but for Zambia and its capital markets, marking a clear demonstration of alternative financing options for the much-required diversification of energy sources in the country.



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# GoviEx completes drilling campaign at Muntanga

**G**oviEx Uranium has concluded an extensive drilling program in support of its ongoing feasibility study at Muntanga Uranium Project.

According to the company, the field work was conducted following a successful drilling program in 2022, which resulted in an updated increased mineral resource estimate (MRE1).

“We are very pleased with the results of recent infill drilling campaign which indicates strong potential for conversion of more mineral resources from the inferred into the indicated categories, which would mean these upgraded mineral resources can be included in the upcoming feasibility study, increasing the size and quality of the project.

“With uranium prices strengthening, we

are continuing to progress with the development of the Muntanga project and looking forward to delivering a feasibility study next year with a goal to start producing within two years of securing financing,” said Daniel Major, GoviEx Chief Executive Officer.

Statistics indicates that in the second half of 2023, the company conducted a total of 15,835 metres of infill drilling, covering 160 holes mostly at the Dibbwi East and Muntanga deposits, with the objective to further upgrade the mineral resource category in areas previously categorized as inferred, mostly due to drill hole spacing and expansion of the Dibbwi East mineral resource open pit.

The results of the current infill drilling program indicate potential for conversion of

mineral resources from the inferred into the indicated categories.

The updated MRE1 resulting from the 2023 drilling will be reported as part of the forthcoming feasibility study in 2024.



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# Kagem, workers' unions reach collective agreement

**K**agem Mining, the Mine Workers Union of Zambia (MUZ) and the National Union of Miners & Allied Workers (NUMAW) have reached a collective agreement on employee pay increases for 2024 and 2025.

The agreement will see unionised employees receive a 10 percent increment in pay for 2024 and a further 10 percent in 2025. Additionally, the agreement confirms an increase on the education allowance for employees from the current ZMW 1,500 to ZMW 2,000.

Following successful negotiations between the emerald mine's management team represented by Kagem's Head of Human Resources, Dr. Wesley Chishimba, the General Secretary of the Mine Workers Union of Zambia (MUZ), George Mumba and the President of the National Union of Miners & Allied Workers (NU-

MAW), Saul Simujika starts this year.

"We want to thank Kagem, and the unions for 'walking the talk' because you have fulfilled the obligations of the packages agreement before it expired. It is gratifying to see that within the desired period we were able to conclude the negotiation," George Mumba, the General Secretary of the Mine Workers Union of Zambia (MUZ).

This pay increase agreement follows that of 2022, when the mine agreed to enhance the company pension contribution from 20 percent to 25 percent of basic pay, bringing the effective salary increase at the time to 15 percent for 2022 and 2023. The company delivered on these promises.

"We are delighted to have reached a mutually acceptable agreement with the unions and offer a salary increase that


rightfully recognises the productivity and teamwork of our employees, and their part in helping to maintain the mine's success," said Adriaan Prinsloo, Kagem General Manager.

"Kagem is committed to looking after its employees and providing a positive local impact, ensuring that Zambian emeralds benefit the people of Zambia," he added.

Kagem aims to provide a positive impact from its operations in Zambia. Believed to be the world's single largest producing emerald mine, Kagem is 75 percent owned by Gemfields and 25 percent by the Zambian Government's Industrial Development Corporation (IDC).



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# Kansanshi joins efforts to reduce plastic pollution

With the production and consumption of plastics having skyrocketed over the past few decades, FQM's Kansanshi Mining PLC has joined the call to action in enhancing efforts to reduce plastic pollution and seek sustainable alternatives.

However, transitioning to more sustainable practices, such as recycling and adopting alternative materials, can lead to cost savings and new economic opportunities, not just for the country but also for companies that consume plastics on a daily basis.

Arnold Malambo, Environmental Manager at the mine, highlights the company's substantial progress in reducing plastic waste generation and advancing eco-friendly initiatives.

"Since the year 2014, we have gone on a serious campaign to reduce plastic waste generation, and to that effect, our drive has been more about recycling and avoidance. Just to take you back to 2014, we, as a site, were consuming just over 4.9 million bottles of water, costing around US\$60,000 per month.

To us as a department, we saw that as an opportunity, not only to contribute to waste reduction in terms of cost but also the amount of plastic waste that would otherwise go into the environment," he said.

He said that all employees received reusable aluminium bottles, which have become a standard item, and that visitors are also offered these bottles as an alternative to single-use plastics.

"So even for visitors, we try by all means to give them aluminium bottles, which they can reuse, instead of plastic. So, with this campaign, we've seen that over the years, we've been able to reduce bottled water consumption by 99.8 percent, as of last year (2022). Our goal is to ensure total elimination of bottled water," he continued.

Furthermore, the company addressed plastic waste generated from canteens by substituting non-biodegradable food packaging and cutlery with sustainable alternatives, such as biocane food packaging and corn starch cutlery have been introduced. This has resulted in significantly reducing the non-biodegradable waste sent to the landfill.

In terms of industrial waste packaging materials, Kansanshi has undertaken an ambitious recycling programme. Various industrial plastics containing chemicals and bags used for fertilisers and other materials are shredded, packaged, and sent to recyclers. These materials are then transformed into reusable products, such as plastic chairs and PVC ceiling boards, by recyclers on the Copperbelt and Lusaka.

Malambo emphasised the importance of educating employees and the public about the devastating effects of plastic waste on the environment. He underlined that despite a mere 15 minutes of use, most plastic packaging materials persist in the environment for a minimum of 480 years, causing extensive harm.

"So, we have tried to make our employees conscious about the dangers of plastic. The disadvantage it has on the environment is that you can see how littered the entire country is, and if you look at the amount of litter in the country, the biggest component is plastic. We do not have enough recycling facilities, and it's not every type of plastic that is recyclable.

"It is an ongoing programme because it's not easy to change everyone's mindset, but you can actually see that for the majority of the workforce, once they are on site, littering is something that they avoid. The use of plastic is something we have continued to encourage that they avoid as much as possible," he said.

The company has been proactive in raising awareness about the environmental consequences of plastic pollution, prompting a shift in employee behaviour and fostering a greener mindset.

FQM remains committed to its ongoing environmental initiatives, aiming to further reduce its carbon footprint and waste generation. The company calls upon other stakeholders, including municipalities and the government, to join hands in addressing this pressing issue. A collective effort is essential to create lasting solutions and protect the environment for future generations.

Additionally, the mining company is collaborating with local authorities to support community cleanliness and environmental preservation in Solwezi.

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## Mopani copper mine waste dump attract investors

**J**ubilee Metals Group said on Tuesday it has formed a strategic partnership with Abu Dhabi-based International Resources Holdings (IRH) to recover copper from a historic waste dump at Mopani copper mine.

IRH is a unit of Abu Dhabi's most valuable listed company International Holding Company (IHC). The company is actively pursuing the acquisition of metal assets including copper, nickel, graphite, manganese, cobalt and lithium which are essential to the UAE's clean green energy drive.

Jubilee, which mainly focuses on recovering metals from mineral waste, said it had secured IRH's investment to process an estimated 350 million metric tons of copper waste rock, which could potentially yield "in excess of 20,000 tons per annum of copper at a cost of below \$4,000 per tonne of copper".

Jubilee said it had agreed with IRH to form a dedicated special purpose vehicle through which both the acquisition of the copper waste rock and implementation of the processing solution will be funded, at an estimated cost of \$50 million.

"Under the funding term sheet IRH undertakes to provide all capital required by the special purpose vehicle through a combination of equity in the special purpose vehicle and shareholder loans," Jubilee said in a statement.

The construction and commissioning of the copper retreatment works would be completed within a 12 month period, Jubilee said, with work expected to start in the first quarter of 2024.

Jubilee will design, implement and operate the mining and processing project on behalf of the joint venture, it added.

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KG Bulk Filtration solutions offer a diverse range of products that cater to unique demands, ensuring clean fuel and oil, improving equipment performance, and reducing overall maintenance costs.

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Traditionally, users would invest nearly half a day in cleansing equipment or storage tanks, incurring substantial labor expenses while grappling with operational downtime, untidy premises, and unsafe work conditions. KG Bulk Filtration has ingeniously engineered systems for uninterrupted operation. These systems seamlessly integrate into prevailing fuel or oil storage and distribution frameworks, ensuring a smooth implementation devoid of any disruptive factors. KG Filter Carts offer a compelling and quick ROI including:

- Increase in diesel and oil life by 40-100% thus reducing massive procurement costs
- Drastic reduction in maintenance and replacement costs of equipment which make up for a large chunk of critical machinery costs
- Reduced operational downtime
- Improved environmental impact due to savings in fuel/oil and reduced emissions

## How to Procure the Cart?

Procuring the KG Filter Cart is a simple and straightforward process. Our team is ready to assist you in choosing the right model for your needs, ensuring a seamless integration into your existing operations. Connect with us at [sales@kginternational.com](mailto:sales@kginternational.com) or WhatsApp us at +971 50 700 8262 and visit our website [www.kginternational.com](http://www.kginternational.com) for more details.

## KG's Full Product Range

KG can support mines in a holistic fashion by supplying a compelling solution encompassing bearings, filters, bulk filtration carts, gearboxes, motors, and grease – all of which can help drive increased ROI and operational uptime.

# Blasting shows African mines the power of positive disruption

**A**s we prepare for another exciting Investing in African Mining Indaba in 2024, the theme of ‘positive disruption’ could not be more appropriate for the directions being forged in the field of mine blasting and explosives.

According to Ralf Hennecke, Managing Director of Omnia group company BME, mining has been facing the same winds of change that are impacting all sectors of the global economy, but has not just been adapting to new demands. Rather, the sector has been applying technologies that are taking safety and productivity to new levels.

“From our perspective as mining technology partners, BME can certainly attest to how mines are ‘Embracing the power of positive disruption’,” said Hennecke. “We have no doubt that this is a critical element of African mining’s bold new future.” He highlighted that one of the many questions that will be posed at this year’s Indaba relates to how Africa will respond to the increased demand for battery minerals, and whether the continent can sufficiently ramp up production while sustainably managing environmental and social impacts.

“This is a challenge to be faced as much by the mining companies themselves as their entire value chain, and calls for long term partnerships dedicated to innovation and constructive problem-solving,” he said. “In the blasting space, we feel well-positioned to play our part – as our continuous improvement strategies have pushed the boundaries in terms of both sustainability and productivity.”

At the heart of what quality blasting is all about is to streamline downstream processes for mining customers. This invariably means efficiency, which has impacts on cost and carbon emissions.

In blasting, good rock fragmentation is key to unlocking the early stage efficiencies on mines, which are doubly significant because the loading, hauling and comminution phases that follow are among the mine’s most energy intensive. Making these functions smoother means that less energy is consumed, cutting costs and reducing the operation’s carbon footprint.

“It has been a long journey towards improving fragmentation,” he said. “While BME entered the South African market in 1984 as a pioneer in cold emulsion explosives, this was followed by decades of investment in emulsion technology and our range of electronic and digital solutions – as well as equipment and accessories.”

This allowed the company to constantly leverage its offering with emerging technologies over time, which it embraced by building in-house expertise and capacity. Among BME’s most valuable lines of development was electronic detonation, which continues to enhance blasting outcomes through its safety, accuracy, reliability and flexibility.

By allowing milli-second delays between detonations, and by lengthening our firing window, mines are now able to design increasingly intricate blasts to suit their geological conditions and production requirements. Mines have also been able to initiate ever larger blasts, thereby limiting their pit disruptions and blast-related downtime.

“Underpinning this capability has been BME’s own electronic initiation system – AXXIS – which is steadily evolved by our dedicated team of engineers, technicians and operators,” said Hennecke.

Software has of course been central to the positive disruption in the blasting space, and a key application has been in the planning of blasts. Today, mines can use blast planning programs like BME’s Blastmap to prepare each blast to the finest detail of complexity – then even simulate the results.

A non-negotiable in Africa’s mines is the prerogative of safety, he pointed out. A high point for BME was its recent dual safety innovation in our flagship AXXIS Titanium system, where testing can be conducted at a lower voltage than detonation.

“Expanding our operations into Africa, we have applied our safety commitment to the same global standard,” he said. “As an active member of Safex – the international industry body focused on the safe application of explosives – BME applies the highest standards across our operations. This is reflected in our zero recordable case rate (RCR).”

BME has even made our contribution beyond the technical arena, and into explosives-related regulatory development in Africa. As a blasting pioneer in Africa, it was the first explosives company to be licensed in countries like Mauritania and Sierra Leone. Its experience meant it could assist government authorities there





in drafting legislation that would pave the way for the responsible application of explosives.

In addition to supporting the mining sector's drive towards lower carbon emissions, it has also been vital for mining stakeholders to protect the environment in every way possible. Where innovatively applied, he explained, these efforts should also lead to positive social impacts – a key element of the environmental, social and governance (ESG) priorities that are growing in importance.

“BME has managed such an achievement with our used oil initiative,” he said. “By systematically and responsibly collecting used oil from customers and other sources, we removed this hazardous substance from the economy and prevent possible contamination of water and land.”

By embracing the circular economy approach, BME treats and re-uses this oil as a fuel agent in its quality emulsions, ensuring that it is safely disposed of during our high energy blasts. The benefits extend further, as the company has designed the collection network to include small businesses in local economies around mines. This assists the social responsibility efforts of mines as they work towards promoting economic diversity and livelihood resilience in their host communities.

To support the global move towards lower emissions, BME's parent company Omnia Holdings has entered into a partnership with Swedish-based Hypex Bio Explosives Technology, which is at the forefront of innovative and sustainable civil explosives solutions.

“Hypex Bio has developed a ground-breaking emulsion using hydrogen peroxide (HP). This first-to-market non-nitrate explosive emulsions reduces the carbon content of blasting by 90% over traditional sources. This technology has the potential to completely change the explosives supply industry,” said Seelan Gobalsamy, CEO of Omnia.

“It is well accepted that the bold new future for African mining cannot be business as usual,” argued Hennecke. “While companies like BME root their success in an operational foundation of secure supply chains and reliable delivery to customers across the continent, we also embrace the need for innovation and change.”

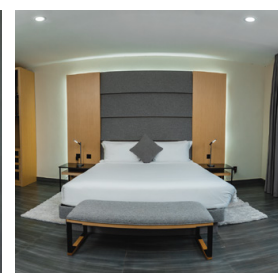
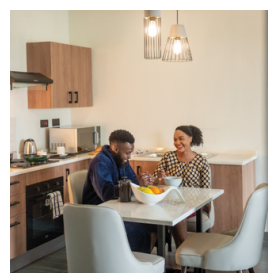
This certainly applies to services and solutions, but also to how companies create the waves of success that generate opportunities for African economies all the way down the supply chain.

“With Africa as our base, BME demonstrates what the continent has to offer other mining regions of the world,” he concluded. “Africa is responding actively to the revitalised search for minerals critical to the energy transition, and can leverage a more sustainable future from this opportunity.”



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# Comprehensive showcase of Africa's renewable energy slated for March

**A**frica Energy Indaba, the continent's premier energy conference and exhibition is yet again set to convene industry leaders, policymakers, innovators, and stakeholders from across the continent and beyond, dedicated to advancing Africa's renewable energy development, this year.



Slated for the 5th to 7th March in Cape-town South Africa, the flagship underscores Africa's commitment to harnessing its abundant renewable energy resources, to power a sustainable and prosperous future.

Given the recent outcomes of the COP28 Summit hosted in Dubai at the end of 2023, a historic result of the event was the adoption of a fossil fuel phase-out agreement, which commits the parties to transition away from fossil fuels in energy systems, in a just, orderly and equitable manner, so as to achieve net-zero emis-

sions by 2050. Adding to this outcome, the global aim will be to triple renewable energy development and implementation by 2030. The event will feature a comprehensive showcase of renewable energy technologies, solutions, and innovations driving Africa's energy transition.

Exhibitors, including leading renewable energy companies, start-ups, and research institutions, will present ground-breaking technologies and initiatives shaping Africa's renewable energy landscape. A major focus will be on solar and wind technologies, driving change

across Africa, through immediate solutions that can be implemented affordably.

The Africa Energy Indaba reaffirms Africa's commitment to accelerating the transition to renewable energy, fostering sustainable development, and powering a prosperous future for all Africans. By convening key stakeholders, facilitating dialogues, and showcasing innovative renewable energy technologies and solutions, the event aims to catalyse action, drive investment, and shape Africa's renewable energy landscape for generations to come.

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# Caterpillar develops first battery electric prototype

Caterpillar Inc. has successfully demonstrated its first battery electric prototype for an underground mining truck. According to the company, the development is added to the company's growing portfolio of battery electric and semi-autonomous technology for underground mining applications.

The demonstration for Newmont and other industry leaders, at the company's proving ground in Tasmania, Australia, comes on the heels of the 793 battery electric prototype surface mining truck, which was unveiled in November of 2022.

Caterpillar developed its first battery electric prototype underground mining truck with voice of customer input and support from Newmont Corporation. The companies are collaborating to achieve Newmont's vision of a fully connected, automated, zero carbon emitting, end-to-end mining system.

"This milestone is a reflection of the partnership between our teams at Newmont and Caterpillar, showcasing the impact of strong collaboration in the mining industry," said Rob Atkinson, executive vice president, Newmont.

"Achieving this milestone together, combining capabilities and shared values, is a testament to the strength of our strategic alliance."

This battery electric truck will complete Caterpillar's first fully electric underground load and haul solution when paired with the commercially available R1700 XE battery electric loader.

Denise Johnson, Caterpillar's Resource Industries group president said, "This is a milestone for the entire Caterpillar team as we work closer than ever with Newmont to provide more sustainable choices for the underground mining industry."

Caterpillar also completed a demonstration of its growing autonomy and automation capabilities.

This technology addresses some of the key safety challenges faced daily by our underground customers, like the risk of collision when moving heavy machinery through dark, cramped spaces.

Autonomous trucks can help to enhance mine site safety by removing operators from potentially hazardous or remote sites. Additionally, these features can improve productivity by creating increased visibility for mine site coordinators, enabling more consistent operations for both staffed and autonomous machines.

Johnson added, "We are building on our foundation of industry-leading autonomous solutions for surface operations, along with our deep experience in underground technology, to provide significant improvement in both productivity and safety for underground mining customers." This demonstration is the latest example of Caterpillar's progress, developing more sustainable offerings for the mining industry, both on the surface and underground.



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# SCOUT AERIAL

## AFRICA

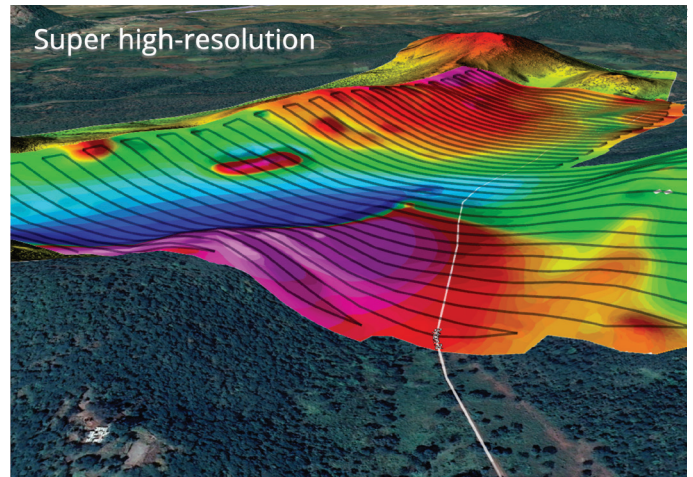
**Scout Aerial Africa is a leading provider of Remote Sensing and Geospatial solutions across Africa with a reputation for performance, quality and reliability.**

We are committed to providing safe aerial solutions for our clients, with reduced delivery timeframes, cost savings and minimal environmental impact. Our capabilities have attracted local and international clients who benefit from our geophysical magnetic, topographic, volumetric surveys and remote pilot licence training (RPL).

Scout Aerial Africa is a part of a dynamic group of companies – Scout Aerial Australia (Operator) and Scout Aerial Systems (Manufacturing). Between us, we have developed a broad range of remote sensing capabilities for many applications across a variety of industries.

With an advanced exploration capability, we are leading the industry in airborne geophysical magnetic surveys. Carrying extremely high-resolution magnetometers, our drones detect ore bodies under the ground. This technology allows large areas to be covered in a fraction of the time compared to traditional ground-based methodologies.

Our topographic surveys provide accurate high resolution maps, whilst our volumetric surveys provide precise volume calculations of stockpiles, mined areas or excavated sites, enabling you to obtain comprehensive information about an area,



enabling better decision-making and efficient resource management.

We have worked closely with the Civil Aviation Authority of Zimbabwe to develop the regulatory framework for Remotely Piloted Aircraft Systems (RPAS) and we were the first company certified for Fixed Wing and Multirotor commercial operations.

We have a reputation for respectability and fair play - these characteristics combined with our demonstrated capability and a healthy stance in the industry, underpins the company's performance. Our team is comprised of qualified professionals with extensive experience in their respective fields.

#### **Contact Us:**

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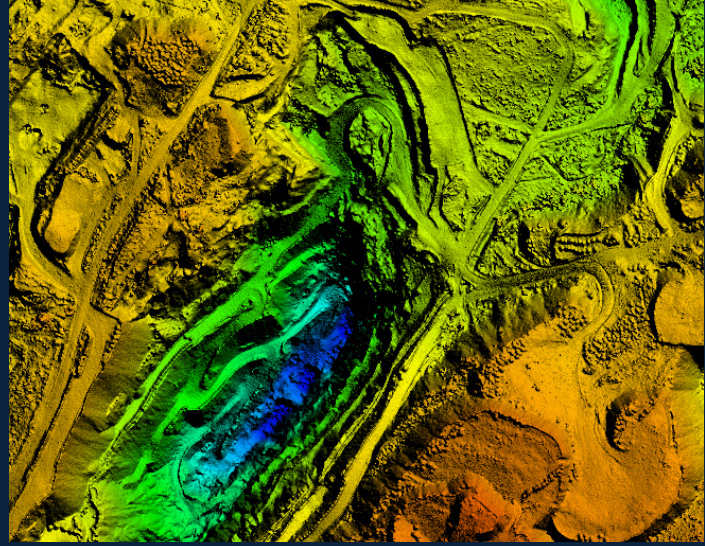
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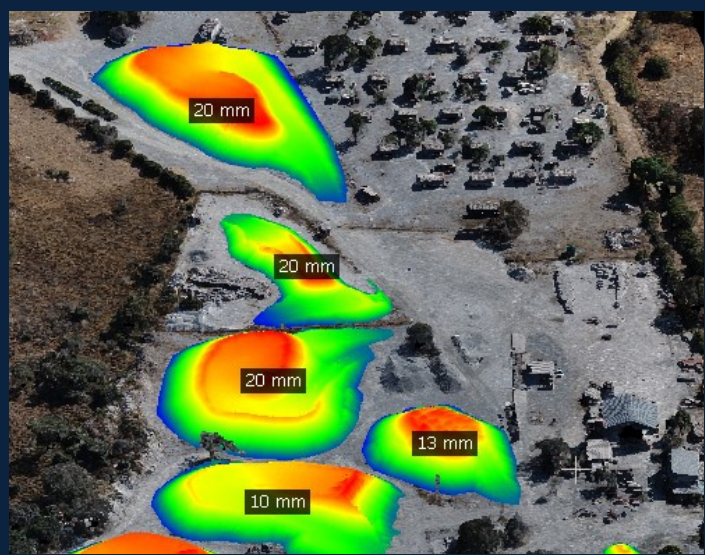
# SCOUT AERIAL AFRICA

## INNOVATIVE REMOTE SENSING



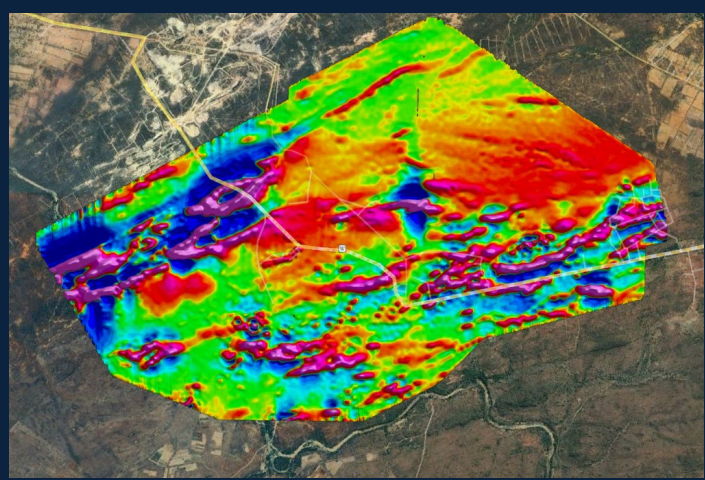
### TOPOGRAPHIC SURVEYS

Scout Aerial Africa utilizes drones for topographic surveys, offering highly precise survey-grade measurements faster and more cost-effectively than traditional methods.



### VOLUMETRIC SURVEYS

Drones capture aerial imagery for accurate volume calculations, aiding in stockpile assessment and resource allocation. The method proves useful in Waste Management, Mine Planning, Land Use Planning, and more.



### GEOPHYSICAL SURVEYS

We conduct precise remote inspections, capturing ultra-high-resolution geophysical magnetic survey data efficiently. This geophysical method maps spatial variations in the Earth's magnetic field, aiding in various applications like mineral delineation and environmental searches.



### RPL TRAINING

Our RPAS professionals offer CAAZ-approved training for all experience levels. Our goal is to provide the knowledge and skills necessary for safe and efficient aerial operations.



# New XCMG vertical milling mining machine hits market

**X**CMG Machinery (XCMG), a global leader in the construction machinery industry has successful made trials for its vertical milling mining machine.

The innovative equipment, XVM160 sets a new standard in mining production with its unparalleled capacity and innovative features.

According to the manufacturer, the XVM160 is a world-first in vertical milling mining equipment, boasting the largest single mining area to date at 6m x 2.5m and a maximum mining depth of 100m.

“This makes it the most powerful mining production equipment currently available,” said McKenzie Chow, from XCMG. Chow further said the XVM160 is a game-changer in the potash mining industry, replacing the old horizontal mining methods with a new vertical approach.

“This ingenious technique uses the equipment’s own weight to crush ore and ensure operational stability. With a milling rotor torque of 4x120kN.m and a milling speed of 0-40rpm, the XVM160 not only

boosts the efficiency of stone crushing but also cuts down on energy consumption.”

In addition, by adopting a continuous self-sliding transportation method for ore, the XVM160 has successfully replaced the age-old process of horizontal mining and relay transportation.

“This significant shift has led to a substantial reduction in mining costs. As per its calculations, the XVM160’s mining efficiency outperforms traditional mining equipment by threefold, and it can potentially slash mining costs by around 30 percent,” said Chow.

Meanwhile the triumphant trial of the XVM160 vertical milling mining machine is a testament to XCMG Machinery’s unwavering commitment to innovation and their supremacy in the worldwide construction machinery market.

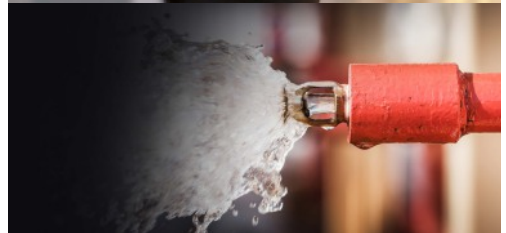
“The company persistently pushes the envelope in mining production, providing solutions that boost productivity, minimize expenses, and foster eco-friendly practices.”



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The Blackwater Mining logo is a large, stylized yellow 'B' on a black background. Below the logo, the text 'BLACKWATER MINING' is written in yellow. At the bottom, there is a red phone icon followed by the phone number '+260 77 005 0060' in white.



# Africa, the next region to set a new standard in aviation safety

**G**rowing resource sector demand in the African region could result in new aircraft and remotely piloted aircraft system (RPAS) operators entering the aviation support sector. These types of operations can pose high risk for personnel and when not managed appropriately can result in sometimes tragic outcomes. It is critical that these operators are equipped to meet the challenges they may face in these environments.

Flight Safety Foundation's Basic Aviation Risk Standard (BARS) is designed to address the safety issues facing aviation operations in the resource sector and other sectors by establishing a single common safety standard comprehensively supported by the industry.

At the heart of the BARS Program is a suite of safety standards intended to supplement, but not replace, existing national and international regulations. BARS is based on proven aviation safety principles, tailored to the needs of the onshore resources industry and other sectors such as offshore oil and gas, utility and energy, humanitarian, and others.

All BARS Standards are subject to continual review, which results in refinements and additions of new elements as warranted. A technical advisory committee comprising representatives of member organizations meets bi-annually to ensure the Standards remain contemporary and relevant while discussing emerging risks and current best practices in the industry.

The BARS Program Office serves as a central audit repository. Audit reports are uploaded to a software platform where only BARS Member Organizations can view them and the data to determine which BARS registered operator they will use.

Audit results show that identified non-conformances are promptly addressed by the operators, thus tangibly improving safety.

BARS online and in-person training provides participants with the knowledge to review their companies' aviation management policies and procedures and to formulate strategies to manage the risks associated with chartered aviation operations.

BARS-registered operators must provide information on accidents and incidents they experience. The BARS Program analyzes this data and produces detailed reports. This analysis in conjunction with safety training programs provided only to member and associated organizations position BARS as a unique service in the marketplace.

The BARS Program provides a cost effective and efficient means of monitoring, assessing and analyzing risks associated with contract aviation. It aims to educate aircraft and RPAS operators (both large and small) and contribute to enhancing the safety standards for air operators globally.



## JOIN THE BARS PROGRAM AND MAKE A DIFFERENCE

The BARS Program provides a cost effective and robust means of monitoring, assessing and analyzing risks associated with your organization's aviation activities.

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## From Oxide to Opportunity: The Rise of Mimbula Copper Mine in Zambia's Copperbelt

**N**estled amidst the verdant expanse of Zambia's Copperbelt, the Mimbula mine hums with the quiet efficiency of a rising star. Though a relative newcomer compared to the region's mining giants, Mimbula holds immense potential, not just for copper extraction, but also for Zambia's economic and social development.

### A Mine Reborn: From Tailings to Triumph

Mimbula's story is one of transformation. Prior to 2017, the area was home to inactive tailings from Konkola Copper Mines (KCM), a legacy of Zambia's rich, yet sometimes turbulent, mining history. Recognising the untapped potential beneath the surface, Moxico Resources, a UK-based mining company, secured the rights to explore and develop the site.

What they discovered was a treasure trove of copper – a mix of oxide and sulphide deposits estimated at 93.7 million tonnes with a grade of 0.97%. This resource formed the foundation for the Mimbula Copper Project, paving the way for a new chapter in the mine's history.

### Innovation at its Core: A Focus on Efficiency and Sustainability

From the outset, Mimbula embraced innovation. Recognizing the limitations of traditional processing methods for oxide ores, the team opted for a novel approach – the Mineral Carbonation Process (MCP). This environmentally friendly technique uses recycled carbon dioxide to extract copper, minimising water usage and waste generation.

The MCP's efficiency extends beyond

environmental benefits. It requires lower capital investment compared to traditional smelters, making Mimbula a cost-effective operation. This lean approach translates to quicker production timelines, with the first copper cathode produced in April 2020, just months after the project's official launch.

### Economic Engine and Community Champion

Mimbula's impact extends beyond the mine gates. The project has created over 900 jobs, directly injecting much-needed economic stimulus into the surrounding communities. Local businesses have flourished, catering to the needs of a growing workforce.

The mine's commitment to social responsibility is evident in its various community





initiatives. These include investments in education and healthcare infrastructure, skills development programs, and environmental protection measures. Mimbu- la understands that its success is inter- twined with the well-being of the people and the environment it operates.

**Expansion on the Horizon: A Brighter Future for Mimbula and Zambia**

The success of Mimbula’s initial phase has paved the way for ambitious expan- sion plans. A \$100 million investment is

set to unlock the mine’s full potential, increasing copper production to 56,000 metric tonnes per year. This expansion will create even more jobs, boost Zam- bia’s export earnings, and contribute to the country’s economic diversification goals.

The Mimbula story is still being written, but its early chapters hold immense promise. From its innovative approach to mining and community engagement, Mimbula embodies a new era for Zambia’s cop- per industry – one that is sustainable, re-

sponsible, and driven by a commitment to shared prosperity. As the mine continues to grow, its impact will undoubtedly ripple outwards, leaving a lasting legacy on the landscape and the lives of the people who call Zambia home.

**Key Takeaways:**

- Mimbula Copper Mine is a relatively new but rapidly growing operation in Zambia’s Copperbelt.
- It utilizes the innovative Mineral Carbonation Process (MCP) for efficient and environmentally friendly copper extraction.
- The mine has created significant job opportunities and contributes to the economic development of surrounding communities.
- Expansion plans are underway, promising further economic growth and diversification for Zambia.

Mimbula’s story is a testament to the transformative power of innovation and responsible mining practices. As it contin- ues to evolve, this Zambian copper mine stands poised to illuminate a brighter fu- ture for the region and beyond.



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Trends & Technologies

# Epiroc launches common automation panel for mixed fleet

**E**piroc is now launching the revolutionary Common Automation Panel (CAP) for RCS-based surface drill rigs - Pit Viper and SmartROC DTH MKII models. CAP enables a transformation in remote control centers, with improved ergonomics and a platform approach to run mixed fleet operations from a single station.

The Common Automation Panel is designed for an innovative transformation of the control room.

“CAP has been created for the modern mine remote control center environment. This product will help our customers to streamline the value chain of their surface drilling operations – and create a safer and more productive environment, says Christopher Blignaut, Automation Manager at Epiroc Surface division.

CAP creates opportunities for complete transformation, including improving the layout in the control room, the way operators are trained and work, and reduced variability and spare parts costs.

“The CAP station will bring value to the daily mining operations that focus on technology and automation – through direct opportunities to increase utilization

of the fleet and reducing operating costs. Operation through CAP can also prolong the effective life of the equipment by ensuring that equipment operates within optimal design parameters. This results in lowering maintenance costs overall,” said Christopher Blignaut.

Common Automation Panel has a new design approach, which was developed in collaboration with close partners. It includes a 12” touchscreen display and joystick configuration for different machine types, which is an important benefit when it comes to mixed fleet operations with Pit Viper and SmartROC DTH MKII as well as training for new operators.

For operators, this means easier adaptation between machines and more flexibility to run the fleet. The product was also designed with improved ergonomics in mind, to allow the panel to be situated comfortably in multiple positions.

The Common Automation Panel also offers a new safety system to further reduce the office footprint and increase the total number of machines that can connect into a control room in a single system. This is important for situational awareness during remote operations and will reduce maintenance and operating costs

for larger fleets. CAP will enable more consistent and predictable operations and a lower overall cost of ownership. In the long run, this will have a positive effect on de-carbonization as well as enhancing the health and wellbeing of the operators.

“We see increased environmental, social, and governance (ESG) demands, tighter demands on health and safety, and the need to integrate groundbreaking digitalized solutions that boost productivity in the mining environment. CAP answers these demands directly,” said Christopher Blignaut.



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## Corrosion-resistant flameproof junction box is a world first



Pratley, the renowned manufacturer of innovative electrical termination products, has developed and launched a ground-breaking new product, the Flameproof Ex d Envirobox®. This is the world's first polymeric, corrosion-resistant, direct-entry, flameproof junction box.

Its recent launch signals a major milestone in the electrical industry and has been confirmed by Pratley Electrical Research & Development Manager Sven Breedt as: "A new product unlike any other in the world and one of Pratley's most innovative electrical inventions."

Flameproof equipment is designed to prevent internal ignition within a flammable atmosphere from transmitting outside the protective enclosure. However, all traditional direct-entry flameproof junction boxes made from steel, cast iron or aluminium materials can be

prone to corrosion over time and when used in very harsh environments. Special attention needs to be given not just to the overall climatic conditions of the area where the enclosures are installed, but also to the material and design of the equipment.

Pratley's new Flameproof Ex d Envirobox® junction box, made from a specially formulated, robust engineering polymer, is designed to withstand severe environmental conditions. This makes it ideal for use in areas with a high risk of corrosion, such as offshore oil platforms, underground mines, and petrochemical plants.

"The need for a lightweight and corrosion-resistant flameproof junction box is evident with the current, ever-changing mining environment," says Sven. "Over a decade's worth of research and development went into the design and development of this junction box."

The specially formulated, robust engineering polymer is unique to Pratley. The material has exceptional mechanical properties such as strength, stiffness, creep, dimensional stability and more. This ensures that the Flameproof Ex d Envirobox® can withstand 2x 20-joule impact tests in a staggering -40°C environment and has been third-party tested to a massive 4 000-kilopascal internal pressure. Additionally, it is IP66/68 certified for continuous underwater depths of up to 300m, making it water, dust, and gastight.

The lid and base have an accurately machined flame path. "The flame path surface of traditional Ex d junction boxes is coated or greased to prevent corrosion. However, this is not a long-term solution as the coating can wear off and greases would need to be reapplied periodically," continues Sven.

The engineering polymer of the Envi-

robox® ensures that the flame path is completely corrosion resistant. The machined surface flame path renders the junction box safe, easy to use and maintenance-friendly in surface and underground mining applications. The lid is fastened down with eight stainless steel A2-70 Allen head screws, contributing to the corrosion resistance of the junction box, and it has Pratley's signature red Ex identification band for quick Ex equipment identification.

The junction box is supplied standard with 4 x M25 entries but can be supplied with M20 entries or smaller entries on request. The box can accommodate Pratley Ex d flameproof cable glands and accessories. The junction box is therefore exceptionally versatile. Each box is supplied as a standard two-way box with 2 x flameproof blanking plugs.

It can safely accommodate terminals, connectors, relays, and any other non-energy storing devices. The internal bosses are drilled and tapped to provide an earthing point for terminal mounting rails or earth lugs. These are electrically connected to the box entries providing complete earthing continuity.

Boxes can be fitted with an N35 terminal rail, a Pratley patented Cranked rail, an inverted Cranked rail, or Piggyback rails.

Pratley Kwikblok® terminals and pre-cut lengths of cable with glands can also be factory fitted to customer requirements.

It has an optional external earthing point and is supplied with 4 x M6 Nuts and washers as well as a 1 x M6 Spring washer. The box has threaded mounting M5 holes and can accommodate an indexable mounting plate that can be purchased separately if required.

The Flameproof Ex d Envirobox® is fully certified to SANS, EN and IECEx Standards for use on surface and underground mining applications (Ex db I/ IIB+H2 T6..T5 Mb Gb, Ex tb IIIC T85.. T100 Db) in Zone 1, 2, 21 & 22 and an ambient temperature range of -40°C to +55°C.

Pratley's Flameproof Ex d Envirobox® is a revolutionary junction box that sets a new standard in the electrical industry.

"I am confident that what Pratley has produced is a product that not only complies with our policy statement of producing products that outperform all others on the world market but exceeds that policy. Our goal was to produce the only direct entry junction box that is corrosion resistant, and the launch of the Pratley Flameproof Ex d Envirobox® certainly achieves that goal. It is a world first, and

I see it marking the future of electrical termination products for explosive atmospheres," concludes Sven.

**"Pratley's Flameproof Ex d Envirobox® is a revolutionary junction box that sets a new standard in the electrical industry."** – Sven Breedt,

*Electrical Research & Development Manager, Pratley*

## Social media

### Twitter

The Flameproof Ex d Envirobox® is the world's first polymeric, direct entry corrosion-resistant and flameproof junction box. #PratleyElectrical

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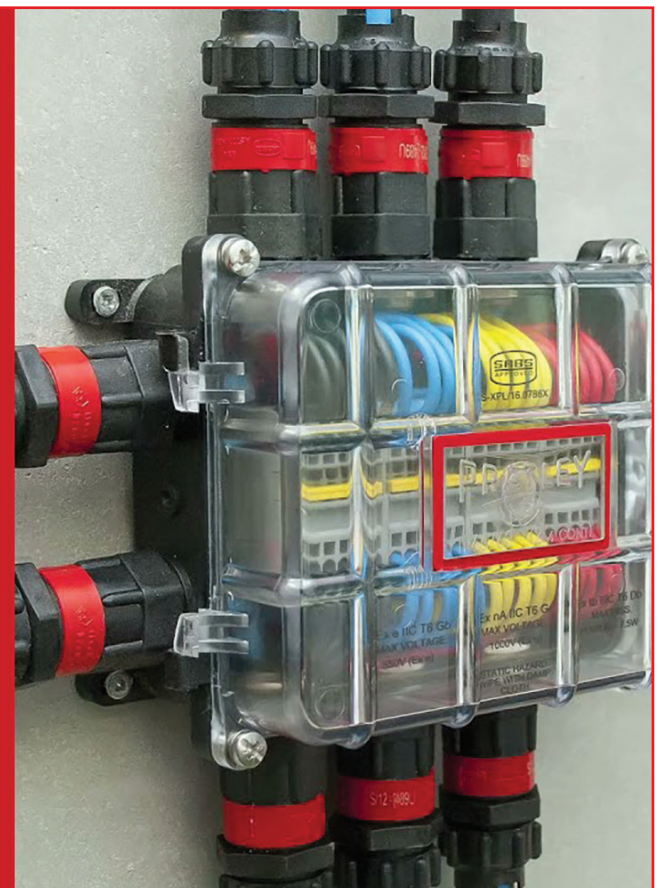
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# PRATLEY

## Rectangular Envirobox

Ex e/n and Standard (N° 1)





# Optris camera PI 640i finds use in all industrial applications

The thermal imager Optris PI 640i is the smallest measuring VGA infrared camera, with a body-sized 45x56x90 mm and weighing only 269 - 340 g (depending on the lens), the Optris PI 640i counts among the most compact thermal imaging cameras on the world market.

According to the manufacturer, Optris PI 640i is a specifically designed product package for outdoor condition monitoring and fire detection. And the unit's environmental rating of IP66 and an integrated air purge ensure reliable 24/7 operation under harsh conditions.

In addition, the built-in heater/fan has an extra wide operating temperature range of - 40 °C, up to 50 °C. This IR camera has a spec of 640 x 480 pixels and delivers pin-sharp radiometric pictures and real-time HD videos with a spec of 1280 x 720 pixels.

On the other hand, the USB Server (PoE) ensures easy integration of both camera streams (IR + VIS) in the video management systems. The high-resolution infrared camera PI 640i finds use in all industrial applications, where pin-sharp infrared pictures and videos are essential for process monitoring, condition monitoring,

early fire detection and optimisation.

Meanwhile the real-time thermographic images also prove especially valuable for surveillance and quality assurance in the automotive sector, in the plastics branch, and in the semiconductor as well as photovoltaic industries.

The unit can be delivered with industrial thermal imager equipment and comes with an extensive license-free thermography software package.



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# i.safe MOBILE and RealWear present RealWear Navigator® Z1

i.safe MOBILE, innovation and world market leader for explosion-proof mobile devices and solutions and RealWear, Inc., the pioneer of smart glasses for frontline workers, have launched with the RealWear Navigator Z1 the world's most advanced intrinsically safe and ATEX/IECEX certificated head-mounted wearable.

The Navigator Z1 is particularly designed for use in hazardous areas for troubleshooting equipment via remote expert guidance, virtual training and for eworkers using Field Services Management (FSM) or streamlined inspection data management systems (IDMS).

Navigator Z1 delivers unparalleled performance with exceptional energy efficiency and is powered by an advanced chipset with a built-in advanced AI engine.

"The design of the most powerful smart glasses for frontline professionals took incredible collaboration between RealWear and i.safe MOBILE," said Dirk Amann, CTO of i.safe MOBILE.

"We are pleased that we have been able to make a device that has met the requirements to achieve ATEX and IECEx for use in explosive atmospheres."

The platform lays the foundation for RealWear's broader AI Core vision for frontline workers. Navigator Z1 ensures voice recognition for fully

hands-free use up to 100dBA, an essential feature for noisy oil and gas work environments. In addition, Navigator Z1's unique modular design enables unprecedented customization for various add-ons like an IS-certified thermal camera and a swappable battery.

The main operational areas of the Navigator Z1 include the remote expert guidance and training, remote experts can conduct in-the-moment maintenance and repair, potentially reducing costly travel and downtime using popular apps like Microsoft teams and zoom.

The is also designed for field services management (FSM), using simple voice commands, workers can connect to FSM enterprise AI systems such as hands-free solutions from RealWear and OverIT to handle work orders safely and quickly, and conduct asset maintenance at reduced operational costs.

On the other hand it uses equipment and site inspection rounds. The inspectors can traverse safely around a job site, take high quality photos and dictate notes using the field data collection component of an Inspection Data Management System (IDMS) such as hands-free solutions from RealWear and HUVR. From there, the captured data is instantly uploaded and geocoded for integrity verification, auditing and compliance purposes. The solution saves time and money, while enhancing safety and enabling further automation, 3D digital twins and AI.

"Worker safety and productivity must not be mutually exclusive," said Dr. Chris Parkinson, RealWear's cofounder and CEO.

"With so many consumer-grade gadgets being hyped to industry, we have delivered something truly modern and in high demand for critical work procedures. With certification, we're able to fulfill our strong pre-order backlog. Navigator Z1 is laying the groundwork for an AI-enabled workforce in hazardous industries."

The RealWear Navigator Z1 has a series of major technical improvements which include the introduction of RealWear's new AI Core, the most powerful processor ever in a RealWear device, especially designed for on-device enhanced AI experiences, significantly lighter for added comfort, while maintaining its ruggedness and durability, improved screen visibility with HD 720p display, high resolution front-facing camera (48 MP) for better remote collaboration and low-light image capture for inspections and auditing and enhanced noise cancellation for improved voice-responsiveness and accuracy.

In addition, improved connectivity with faster Wi-Fi® 6 and an optional 5G intrinsically safe solution for private and secure enterprise connectivity, a thermal camera module to spot invisible issues before they become critical and a removable integrated snag-free battery for enhanced safety and for extended use enterprise Secure Android™ 12.

## Redefining the Standard for Mine Ventilation Efficiency & Availability

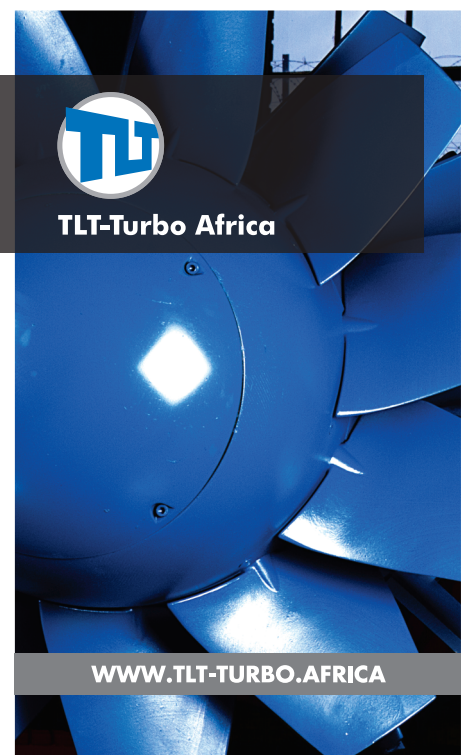


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- ▶ Energy efficiency analysis and improvement
- ▶ System upgrades and retrofitting

### Mine Ventilation Range

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- ▶ Modular Mining Fans
- ▶ Surface Fans
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