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ISSUE  
**69**  
2023

**White Gold Boom,**  
Depression and the Fourth  
Industrial Revolution

**Advanced Dust  
Suppression  
Methods**

**Pickstone  
Peerless  
Project by  
Hems Africa**

**The Umkondo Basin:  
A Geological Marvel**

**Advancements in  
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Interview

# Elton Gwatidzo

Association of Mine Managers of Zimbabwe President

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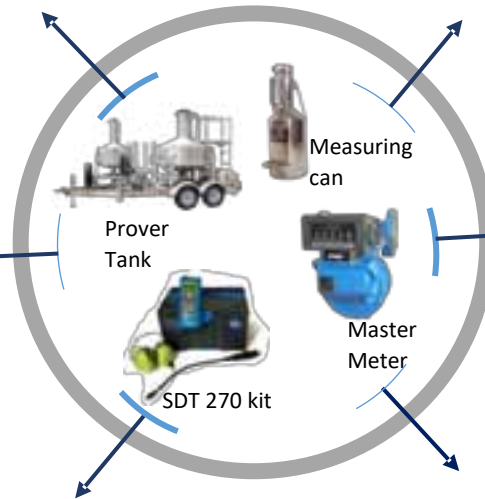
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# Time to set Standards for the ASM Industry



*Keith Lungiso*

## THE CLEAR PERSPECTIVE

Hundreds of lives are lost every year mainly due to careless mining happening under the belly of the earth costing the country of its most precious commodity, human lives.

It was refreshing to hear the newly appointed mines and mining development Minister Hon Zhemu Soda hit the nail on the head, attributing deaths to human error and carelessness. The question will now be why are our people in the ASM dying underground when their counterparts who mine way deeper seldom experience disasters and mine collapses.

The answer is simple. Large-scale miners follow set standards and have qualified Engineers running the mines! They follow site plans to the dot prioritizing safety over everything else.

Small-scale miners will go for any visible "gold" and are known to take down "pillars from old German shafts" just to make a quick buck! But is it worth it? Seeing families in distress over loved ones buried underground isn't a joke therefore something needs to be done to keep our miners safe despite them not taking precautions on their safety and well-being. ASM miners are known for

"embracing the possibility of any-time death underground" due to the conditions they operate under. This has to stop and the government has to step in.

Of course, whoever is into mining does it for the money however life is sacred and prioritizing life over money is never worth it. The government should invest in the safety of our miners. We need them, we love them we don't want them dying with the immense contribution they are making to the economy.

It is time for the Ministry of Mines and Mining Development to set standards for Small-scale miners.

We strive to provide you with a comprehensive view of the Zimbabwean mining sector and its contribution to economic development. We hope this issue informs and inspires you, offering valuable knowledge and perspectives.

You can write to us or submit contributions on **email: [info@miningzimbabwe.com](mailto:info@miningzimbabwe.com)** or **WhatsApp: +263 242 777728**.



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# Softening commodity prices, thin capital markets and high cost structure impede mining growth



*Chamber of Mines technical affairs Manager Mr David Matyanga*



**T**he growth and development of the mining sector in line with the government's vision to achieve an upper-middle-income economy by 2030 are most likely going to be impeded by thin capital markets, high-cost structure and the decrease in commodity prices, the Chamber of Mines of Zimbabwe (CoMZ) has hinted.

Speaking at the Association of Mine Surveyors of Zimbabwe (AMSZ) Annual General Meeting and Conference in Victoria Falls the Chamber of Mines technical affairs Manager Mr David Matyanga said the growth realized by the mining industry over the years is at risk due to these factors.

"Capital markets remain thin, the cost structure high and with softening commodity prices, likely to inhibit growth realized over the years is at risk," Matyanga said.

According to Chamber, the country's mining sector has been resilient and has recorded significant growth over the years.

"The sector faces some headwind that is inhibiting higher levels of growth.

"While the geology and mineral endowment is attractive, the policy environment has significant room for

improvement to usher competitive environment for enhanced investments across the mineral supply value chain," Matyanga said.

The mining industry grew by 10% in 2022, (up from 5.9% in 2021) benefitting from strong performances across all key minerals, Gold, platinum, diamond, nickel and chrome account for over 90% of total mineral revenue of US\$5.6 billion generated in 2022.

In the outlook, the mining sector is projected to grow by around US\$6 billion in 2023.

Demonstrating this potential, the mining sector recorded strong performance during the 9 months to September 2018, compared to the same period in 2017, with the majority of key minerals posting significant output growth led by gold 61 per cent; diamond, 23 per cent; and lithium, 31 per cent.

The mining sector contributes around 13.5 per cent to the GDP, which has been above 12 per cent since 2019, it also contributes 19 per cent to total government revenue and earns over 80 per cent of the country's foreign currency; while it attracts more than 73 per cent of the FDI into the economy, against a regional average of 31.7 per cent. The mining sector employs over 53,663 people in the large-scale mining

industry, and more than 500,000 in the small-scale and artisanal sectors.

The country's mineral endowment is well acknowledged and a comparative advantage. While the country's mining industry has contributed immensely to economic development, the country is yet to be fully mapped. Advanced mineral exploration models have not been fully applied Chamber is pleased with the issuance of EPOs and SG although more can be done. The upside for the discovery of new deposits appears very bright.

The country has an expansive craton - diamond and lithium, Karoo basins rich in coal, coal bed methane gas (CBM), natural gas and uranium, and Metamorphic belts rich in pegmatite minerals such as lithium, tantalite, and rare earth elements among others.

Zimbabwe's mining sector is a strategic pillar of the national economy. The sector is diversified in terms of minerals produced, the number of operating mines and dispersal of control over mineral production. The country is endowed with more than 40 minerals most of which have been exploited in the history of the country. The sector has strong linkages to local, regional and international value chains.



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# Gold deliveries increase by over 1 percent

Gold deliveries by large-scale producers increased by approximately 1.1 per cent during the first three quarters of 2023 compared to the same period last year with deliveries by Artisanal and Small-Scale Miners (ASM) decreasing by 19.2 per cent, official figures released by the country's sole gold buyer and exporter Fidelity Gold Refinery (FGR) show.

Rudairo Mapuranga

ASM, however, accounted for approximately 61.6 per cent of the total deliveries during the first three periods of the year.

During the first three-quarters deliveries by large-scale producers increased by 1.06145 per cent to 8629.7163 kgs in 2023 from

8539.0780 kgs in 2022 with deliveries by the ASM decreasing by 19.2161 per cent to 13836.1790 kgs in 2023 from 17127.4054 kgs in 2022. Overall deliveries decreased by 12.4699 per cent to 22465.8953 kgs from 25666.4834 kgs in 2022.

In September 2023 gold deliveries by large-scale producers decreased by 2.8 per cent to 961.1361 kgs in 2023 compared to 988.3511 kgs in 2022, with deliveries by small-scale miners decreasing by 9.13582 per cent to 2169.5769 kgs in 2023 compared to 2387.7141 kgs in 2022. Overall deliveries decreased by 7.3 per cent to 3130.7130 kgs from 3376.0652 kgs in 2022.

Deliveries by the large-scale producers in August stood at 1100.6512 kgs compared to 1379.1247 kgs from Small-scale producers with total deliveries in August standing at 2479.7759 kgs. Total deliveries for August decreased by 7.3 per cent compared to 2674 3806 kgs delivered in July.

For the period January to July, total deliveries by large-scale producers increased by 1.6 per cent to 6567.9290 kgs from 6464.1939 kgs in 2022. However, small-scale miners' deliveries decreased 17.5 per cent from 12472.2436 kgs delivered in 2022 to 10287.4774 in 2023. Total deliveries by both producers during the period January to July 2023 decreased by approximately 11 per cent to 16855.4064 kgs from 18936.4375 kgs delivered during the same period last year.

Total deliveries by the large-scale gold producers during the period January to June 2023 increased by approximately 0.4 per cent from 5498.4087 kgs delivered in 2022 to 5519.9795 kgs.

However, deliveries by Artisanal and Small-Scale Miners (ASM) decreased by 17.31 per cent to 8661.0463 kgs from 10474.1159 kgs.

Also, total deliveries by both the large scale and the ASM declined by

approximately 11.22 per cent to 14181.0258 kgs from 15972.5246 kgs.

In June alone, large-scale producers delivered 1032.5263 kgs from 837.1151 kgs. While the ASM deliveries decreased by 13.5131 percent with 1702.0787 kgs delivered in June from 1968.0192 kgs delivered in June last year. June total deliveries also decreased 2.5 per cent to 2734.6047 kgs from 2805.1343 kgs delivered in 2022.

There is an urgent need for financial institutions in Zimbabwe to look for opportunities and ways to capacitate Artisanal and Small-Scale Gold Miners (ASGM) to ramp up production in the wake of heavy rains which saw deliveries by the miners decline by 18.2 per cent during the first 5 months of 2023 compared to the same period last year.

Artisanal and Small-Scale Miners last year accounted for over 67 per cent of gold deliveries to the country's sole gold buyer and exporter Fidelity Gold Refinery (FGR). FGR General Manager Mr Peter Magaramombe attributed the improved contribution of small-scale producers to timeous payments to the miners by his organization.

Last year gold deliveries reached FGR's target of 35 tonnes, the increase in deliveries is attributed to ASM whose deliveries increased by 30.3 per cent to 24.1 tonnes from 18.5 tonnes delivered in 2021. Deliveries by large-scale producers were approximately 11.2 tonnes in 2022 as well as in 2021.

Gold deliveries to FGR in the first quarter of this year (2023) plunged 20 per cent to 6.194 in the first quarter of the year from 7.694 tonnes in the same period last year.

"Gold output has declined for the first quarter ended March 31 2023 to 6.194 tonnes from 7.694 tonnes during the comparable period last year due to heavy rains during the first two months of the year," FGR general manager Peter Magaramombe said.



PETER MAGARAMOMBE





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# Machinery Breakdown Insurance

Machinery breakdown is a significant risk that mining entities face. The time and expense required to repair substantial pieces of machinery which often requires specialist attention, overseas parts or is custom made can have a significant impact on the business. If the company is uninsured then repair costs combined with the potential loss of income, temporary replacement machinery hiring costs and other costs add up to a substantial amount. This is why Machinery Breakdown insurance is important.

## What does Machinery Breakdown Insurance Cover?

The Machinery Breakdown policy caters for sudden and unforeseen physical damage to installed machinery while working, at rest, being dismantled, moved, re-erected or re-commissioned. Machinery covered ranges from small compressors or motors to boilers and larger types of machinery used in mining, material handling and processing. The major areas of cover include:

- Cover against internal machinery damage such as: electrical damage, centrifugal forces, foreign bodies, failures in safety devices, overheating, impact, shock, pressure or lubrication defects.

- Damage suffered by the machinery due to errors in design, calculation, manufacture or assembly.

- External damages produced by, Fire, explosion or lightning strike, blows, collisions, falls and atmospheric phenomena.

- Damage resulting from the mismanagement or negligence of an employee due to lack of experience or expertise in handling the machinery.

- Expenses for urgent repair. Repairing complex equipment quickly can be expensive. Most policies cover any expenses needed to speed up the repair or replacement of damaged machinery, including the cost of temporary repairs.
- The policy can also be extended to cover Loss of Profits during the downtime of the machinery and related expenses of quantifying these losses.

## Conditions of cover

The following are the usual conditions that are looked at when cover is being arranged:

- Replacement-value (sum insured) of selected machinery.
- Type and use of machinery.
- Service and maintenance records are critical as the policy will not respond where

there is neglect of service intervals.

- Voltage protection mechanisms in place for machinery sensitive to variations in voltage.

- Regular safety and reliability tests records.

- Age of the machine including performance and output records.

- Availability of spares on site and ease of access to spares from machinery manufacturers.

## Risk Management

An effective risk management program assists in identifying and mitigating the risk of machinery breakdowns. It also compliments your insurance cover. Various risk management strategies which range from visual inspection programs to more dynamic pre-emptive analysis such as using ultrasonic/X-ray inspections or thermographic testing can be used. Such programs help mines to reduce the risks associated with gradually developing mechanical failures.

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*Eng Alfred Madowe*

## Pickstone Peerless transitioning to underground mining

**T**he General Manager of Pickstone Peerless Mine, Eng Alfred Madowe, shared some insights on the mine's transition from open pit mining to underground mining at the Association of Mine Managers (AMMZ) technical visit that was hosted by the mine.

Eng Madowe said that underground mining has better grades than open pit mining, which will enhance the mine's gold output.

The underground operations at Pickstone were shut down in 1971 due to a slump in the gold market. The mine operated at a cut-off grade above 5g/t and was flooded until recently when Dallaglio started to pump out the water and assess the condition of the shafts and drives.

Dallaglio has launched a project to access high-grade ore that was not viable before the closure of the underground operations and to conduct further underground exploration activity.

Eng Madowe said that the board approved the underground feasibility study for Pickstone in December 2021. The project,

which cost US\$22 million, involved re-equipping the underground mine and setting up the surface infrastructure required for the underground mine. The project faced some challenges such as shaft constrictions and blockages, which delayed its commissioning from April to August this year. The first ore was lifted from underground on 25 August using the newly commissioned state-of-the-art hoist.

Pickstone mine will operate as a hybrid operation, delivering ore from both open pit and underground sources. The open pit operation will last until June 2024. Eng Madowe said that the indicative underground grades range between 3 to 5 grams per tonne, while the open pit grades are at an average of 1.8 grams per tonne. He said that since the commissioning of the underground project, production has increased significantly, with the mine and Eureka Mine in Guruve producing a combined 210 kgs per month. He said that the target is to increase production to 230 kgs per month next year and eventually 250 kgs in 2025.

Eng Madowe said that they are working to increase the gold recovery rate from the current 78-80% to a higher level. He

explained that they are planning to install three more CIL tanks in 2024 to optimize the gold extraction process. "We have added more ball mills and CIL tanks, but we still need more residence time for the leaching. We have 13 tanks now, but we will add three bigger ones in 2024," he said.

He also said that Pickstone will operate as a hybrid mine, combining open pit and underground mining, until June 2024. The mine is constructing a new tailings facility to replace the old one, which is almost full. He said that the project has received approval from EMA. "We have to expand our tailings capacity as we transition from open pit to underground mining. We expect to complete the hybrid phase by June next year," he said.







THE AMMZ PICKSTONE PEERLESS MINE VISIT Q3





# Zimbabwe to collect records on hammer mills to curb side marketing



**T**he Ministry of Mines and Mining Development has implored strategies to ensure all gold produced in the country is delivered to the country's sole gold buyer and exporter Fidelity Gold Refinery (FGR) with the latest being to collect records on all hammer mills and mobile processing units which have become rampant in mining provinces.

Although there is no law in the country which supports the existence of hammer mills and mobile processing units, there has been a proliferation of these sites leading to the rampant side marketing of the yellow metal.

Speaking at the gold mobilisation deployment workshop in Harare recently, the Minister of Mines and Mining Development Hon Zhemu Soda said the government will continue to improve how gold mobilisation exercises are conducted to ensure responsible sourcing.

"As we continue to improve the manner in which we conduct the exercise, the teams

should continue with innovative ways of inspecting plants at each stage of production across the whole value chain. It is also important to note that this time around teams will be required to collect records on all hammer mills and mobile gold processing units which have become rampant in the provinces. This will help the MMMD to account for the gold that these illegal operators are producing with the hope of ensuring that this gold also finds its way to FGR," Hon Soda said.

In an effort to increase gold deliveries through official channels, the government deployed 10 teams to 6 provinces namely Masvingo, Matabeleland North, Mashonaland Central, Midlands, Manicaland and Mashonaland West to carry out the 2023 Third Quarter Gold Mobilization, monitoring and surveillance Exercise.

The country produced 35 tonnes of the yellow metal last year and is targeting to produce at least 40 tonnes this year, however, during the period January to August 2023 there has been a 13 per cent decrease compared to the same period last year.

"The gold sector in Zimbabwe has proved to be strategic to the mining industry and the national economy at large. Gold has remained one of the major foreign currency earners in Zimbabwe. In 2022 the gold deliveries to Fidelity Gold Refinery stood at 35.2 tonnes which was above the

set target.

"The 2023 gold deliveries to FGR set target stand at 40 tonnes. The key to realising this target is the plugging of side markets which are a pariah to our efforts in the mining sector and to the development that we hope to see achieved. For 2023 from January to August, the gold deliveries to FGR sit at 19.335 tonnes against a target of 40t by the end of the year. In 2022 for the month of January to August a total of 22.29 tonnes was delivered, this represents a 13.2 % decrease. Hence, ladies and gentlemen, there is a need to employ strategies to decrease the rampant side marketing of gold," Minister Soda said.

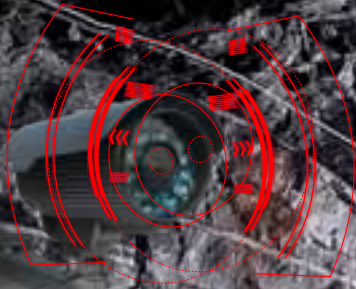
According to the Permanent Secretary in the Ministry of Mines and Mining Development Mr Pfungwa Kunaka, the send-off is going to proffer strategies on how the government can encourage the sale of gold to the formal market.

"This send-off workshop is designed to bring together stakeholders from the gold industry to discuss the challenges of curbing gold leakage and to develop solutions. We will establish the scale and scope of the gold leakage problem, the factors that contribute to gold leakage and the best practices for curbing gold leakage," Kunaka said.



Minister of Mines Hon Zhemu Soda





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# Interview: AMMZ out going President Eng Elton Gwatidzo



Eng Elton Gwatidzo

**Reflecting on your tenure as President of the Association of Mine Managers of Zimbabwe, what accomplishments are you most proud of?**

We have managed to successfully unite mining professionals. This achievement has been accomplished through the implementation of regular quarterly visits and monthly meetings. This is evidenced by the remarkable attendance at the 2022 Conference. Additionally, we have re-branded the Association's website which has garnered international acclaim.

**What were some of the main challenges you faced during your presidency, and how did you approach them?**

Some of the challenges have been mainly in failing to achieve some goals of the Association such as getting finality to the Mining Regulations Review as well as getting affiliation to the Engineering Council of Zimbabwe. Continued engagement is the only way out.

**How would you describe the state of the mining industry in Zimbabwe when you took on this role, and how has it evolved during your time as President?**

The industry had been shrinking and shifting focus to small mining operations. Lithium mining and some investments in gold mining have been encouraging. More still needs to be done in exploration to increase potential.

**Can you share any specific initiatives or policies you implemented to promote growth and sustainability in the mining sector?**

Continual and regular quarterly technical visits which brought major stakeholders together partnering and sponsoring some activities in the academic areas of mining.

**In your opinion, what are the biggest opportunities and potential areas for improvement in Zimbabwe's mining industry going forward?**

Exploration, policy consistency, promotion of Chinese-local cooperation

**How have you worked to strengthen relationships between the Association of Mine Managers of Zimbabwe and other key stakeholders such as government agencies, mining companies, and local communities?**

Through Technical visits, we have continually invited and partnered with the Ministry of Mines and other key stakeholders. By fostering partnerships and creating a platform for dialogue, we were able to address some of the concerns facing the industry and implement strategies to navigate the economic downturn. I have also encouraged and supported my team responsible for collaboration to continually engage partners

**As the outgoing President, what advice would you give to your successor to effectively lead the association and drive positive change in the industry?**

- positivity and continued networking
- deliberate engagement with key stakeholders



**Can you discuss any significant partnerships or collaborations you facilitated during your tenure that have had a lasting impact on the mining sector?**

I had the opportunity to forge several significant partnerships and collaborations that have had a lasting impact on the mining sector. These partnerships allowed us to gain firsthand access to the operations and strategies of these companies. This helped enhance our industry expertise and enabled us to advocate for the interests of the mining sector. There are far too many to mention but I would like to say working with Mining Zimbabwe immensely aided to the growth of the Association.

**How have you prioritized the safety and**

**well-being of mine workers throughout your presidency, and have you seen improvements in this area?**

My administration has implemented several key measures aimed at prioritizing mine worker safety. Firstly, we have worked closely with relevant regulatory authorities to strengthen safety guidelines and regulations within the mining industry. This includes conducting comprehensive assessments of mining operations to identify potential hazards and implementing proactive measures to mitigate risks. As you know, I am also the Mine Rescue Association of Zimbabwe (MRAZ) President. Part of my duties is to organise and coordinate rescue activities furthermore ensure that the rescue teams are at all times in condition to undertake rescues in irrespirable foul atmospheres. Although progress has been made in enhancing the safety and well-being of mine workers during my presidency, there is still a pressing need for further improvement. Its still a delicate area so the need for improvement in safety is still key

**Looking back, what will you miss most about serving as President of the Association of Mine Managers of Zimbabwe (AMMZ)?**

As I reflect on my time serving as President of the AMMZ, there are several aspects that I will deeply miss. Firstly, the opportunity to collaborate with fellow industry experts and professionals who share the same passion for mining and its development in Zimbabwe. It was truly invigorating to engage in meaningful discussions, exchange knowledge, and collectively work towards innovative solutions for the Zimbabwe Mining industry. Secondly, the ability to advocate for the rights and interests of mine Managers and contribute to shaping policies that promote sustainable mining practices was an out of this world experience. The sense of responsibility I felt in representing our members and striving for their advancement will be greatly missed. Lastly, the chance to witness the growth and progress of mining in Zimbabwe, playing a role in fostering a thriving and responsible industry will always hold a special place in my heart. The memories of overcoming challenges, celebrating milestones and witnessing positive transformations will be cherished forever. As I step down from the role of President of one of the greatest Mining Associations in Zimbabwe, I am truly grateful for the incredible journey and the invaluable relationships formed along the way.





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## Jena Mines fresh-air team commissioned, vows to win the national competition

**M**ine Rescue Fresh-Air teams National Coordinator Mr Lameck Karikeka on last month commissioned Kuvimba Mining House-owned Jena Mines FreshAir team with the team vowing to win in the upcoming national rescue competitions at Mimosa Mining Company.

According to Karikeka the team was well prepared and their stationing was well equipped to earn commissioning. He also wished them well at the coming national rescue competitions.

"I'm very happy for Jena Mines, the team was prepared and their station was well equipped with new equipment. Also, the team checking their medicals they are all fit, we are very happy for the team and we will be looking forward to seeing them participate at the national competitions," Karikeka said.

Speaking to Mining Zimbabwe after the commissioning of the team, Jena Mines General Manager Mika Mutove said the commissioning is a great achievement for

Jena Mines and the greater Silobela area as it will help reduce loss of life in times of disaster.

"The commissioning of the Jena mine rescue team is a great achievement and its importance cannot be over-emphasised. We have a team to ensure in times of accidents we minimize loss of life. In times of disaster as a mine, we need an on-site team. Also, the coming in of the Jena rescue team is a milestone achieved for the greater Silobela area," Mutove said.

Jena Mines Rescue team trainer Timothy Mapinde said the Jena Freshair team is ready to take the number one spot at National Rescue competitions.

"Being a brigades man needs courage and sacrifice. It's an instruction that we are going to be number one, I promised and it should be done," Mapinde said.

Adding on the mine Safety Health and Environment Quality (SHEQ) and rescue team Manager Tatenda Hapanyengwi said his team was ready to win at the coming competitions and intends to build a proto

team next year.

"This event is a milestone for us as Jena Mines and for Kuvimba Mining House, we have done a fit we weren't able to do for the past years but at the moment we now have a commissioned team. We are very happy, we are very proud and we thank the Mine Rescue Association for allowing us to be a commissioned team so that we are able to respond to all national callouts issued to us. We intend to participate in the national mine rescue competition at Mimosa end of this month. The goal is to go and win the competition for the non-donating team. In the near future we want to have a prototeam so we intend to acquire 8 sets so that we have a fresh-air team and a prototeam. The commissioning is an advantage to the Midlands and the Silobela areas as we would be able to attend to all callouts within the region," Hapanyengwi said.

A team member Ms Evelyn Tamirepi said, "We are going to be making history at the coming mine rescue competition"





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# Dallaglio's ESG performance



**E**SG, which stands for Environmental, Social, and Governance, has become a crucial aspect in the Global mining industry. With increasing concerns about climate change, human rights, and corporate responsibility, mining companies are now focusing on integrating sustainable practices into their operations.

Environmental considerations involve minimizing the impact of mining activities on ecosystems, reducing carbon emissions, and conserving water resources. Social factors include ensuring the safety and well-being of workers, respecting local communities, and promoting diversity and inclusion. Governance entails transparency, ethical decision-making, and accountability.

By incorporating ESG principles, mining companies can not only mitigate risks but also enhance their reputation and attract responsible investors. They can implement measures such as using renewable energy sources, adopting advanced technologies for efficient resource utilization, and engaging with stakeholders.

Mining Zimbabwe spoke to Shakeelah who gave us an insight into how one of Zimbabwe's mining giants, Dallaglio is handling ESG.

**Can you please tell us about your background and your position at Dallaglio?**

My name is Shakeelah Kassim, I am a Chemical Engineer with experience in the development, implementation and monitoring of Quality, Environmental, Occupational Health and Safety (OHS), and Risk Management systems in Zimbabwe.

My current role at Dallaglio primarily involves the development of systems and processes to understand, monitor and report on ESG-related issues across our operations.

**The world is looking forward for mining companies to prioritize issues of Environment Social and Governance (ESG) what is Dallaglio's strategy for ESG issues?**

The foundation of Dallaglio's ESG Strategy is built on taking the time to fully understand the expectations and priorities of our stakeholders, both internal and external. This understanding of what issues are most important to our Business and stakeholders has informed and will continue to inform the individual elements of our ESG strategy. This approach also allows us to prioritize high-impact areas and effectively identify and monitor our ESG-related risks.

We currently have systems in place to monitor our ESG metrics and are in the process of collecting sufficient data to help us fully understand and establish a baseline for Dallaglio's ESG performance. This baseline will be used to set targets specific to our operations going forward, with the aim to continuously improve.

Our strategy is also guided by international reporting and disclosure standards, such as those outlined in the Global Reporting Initiative (GRI), the Task Force on Climate-Related Financial Disclosures (TCFD), the International Financial Reporting Standards (IFRS) and relevant International Council on Mining and Metals (ICMM) guidelines and frameworks.

**In terms of mine rehabilitation strategy, what has Dallaglio prepared to ensure**

**the Environment is safe and usable after mining?**

Rehabilitation has been considered at all stages, from Mine development to operation, all the way through to closure, and rehabilitation plans are in place for all our operations. Progressive rehabilitation is also being done where possible, for example, the new Tailings Storage Facility (TSF) at Eureka was designed and is operated drawing from guidelines in the Global Industry Standard on Tailings Management (GISTM) set up by the ICMM.

**In 2023, what is Dallaglio's CSR Strategy and how much has been invested by the company?**

In 2023, we aim to place more focus on measuring and understanding the effectiveness of the CSR programs that we currently have in place to identify opportunities for improvement. At the end of Q2 2023, close to US\$50,000 was invested in Community-related initiatives, including the rehabilitation of roads and commissioning of boreholes for nearby Villages, as well as the continued construction of the Mafuti Maternity Clinic at Pickstone Mine. A further investment of over US\$100,000 is planned for the remainder of the year.

**What has been the response of the communities regarding the ESG initiatives your company is currently undertaking?**

The response from the surrounding communities has been largely positive as our operations bring not only employment opportunities but also the development of infrastructure in the surrounding areas, including schools and health facilities.





### Do you have a mine closure strategy and what does it say?

We do have Mine closure strategies in place for both of our mines and these are constantly being adjusted and updated according to any developments in our operations. The primary objectives of our closure plans are as follows:

- To ensure the mine, processing site and associated infrastructure are returned to a state as close as possible to the original.
- To ensure any mine infrastructure, and associated impacts not completely returned to their original state have the potential to be of use to the local community and stakeholders for socially or economically viable activities.
- To ensure the site is made safe for humans and animals.
- To ensure the site is left physically, chemically, and biologically stable.
- Closure is achieved efficiently and cost-effectively with minimal social and economic upheaval.
- To ensure sufficient funds are available to achieve the closure objectives.

### Can you please give us a list of Dallaglio's ESG initiatives since its inception?

Dallaglio's Initiatives are as follows:

- The establishment of Pickstone Milling

Centre for the small-scale mining community in the area, where ore from tributed claims is brought to the milling centre by the small-scale miners. The company crushes and mills this ore, and the miners retain the free gold, while the company benefits from processing of the remaining sands.

- Construction of a Mother's Shelter at Mafuti Clinic near Pickstone to provide delivery beds, prenatal beds and other facilities for pregnant women awaiting delivery with the aim to reduce the mortality rate of mothers and their babies.
- Rehabilitation of the main road in the Grey City- Muroiwa and Mazhambe villages near Guruve, as well as grading of the Pickstone-Chegutu Road.
- Installation and commissioning of solar and manual boreholes at health facilities, schools and villages in the communities near Pickstone and Eureka.
- Donations of learning materials, including stationery and textbooks, to primary and secondary schools in the communities surrounding Pickstone and Eureka.
- Grading of school grounds at local schools.
- Repair of infrastructure and facilities in local areas, including construction of adequate ablution facilities at schools and clinics.
- Ad hoc donations to local government,

including ZRP and traditional leadership, to assist in carrying out duties and for traditional ceremonies.

- As far as possible, there is priority employment of people from surrounding communities.
- Internal graduate programs for training and employment of young, local talent.

### What do you think needs to be done for mining companies to adhere to ESG initiatives?

In my view, commitment from the Board and senior leadership is required to ensure a solid foundation for effective ESG programs, I believe adherence will then follow. At Dallaglio, we are privileged to be guided by a Board and senior leadership team who fully understand and accept the extent of our social responsibility as a mining company and play a key role in driving our ESG initiatives forward.



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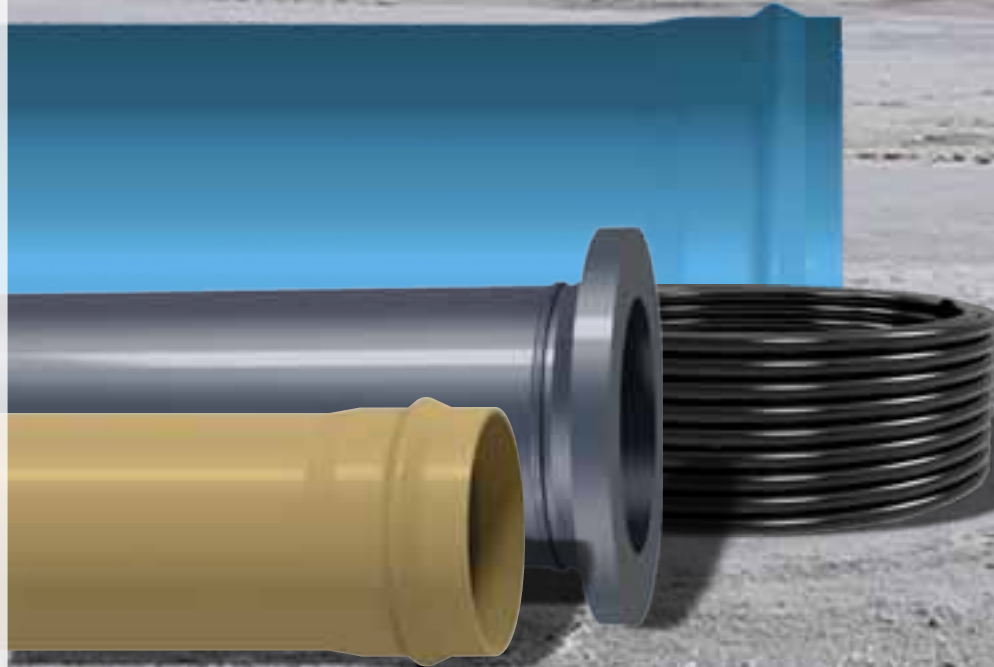




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# The Umkondo Basin: A Geological Marvel



**I**n October 2023 Mining Zimbabwe and other Media outlets were invited to the Zimbabwe Consolidated Diamond Company (ZCDC) to have an appreciation of how the Diamond miner was faring in terms of production. We spoke to the Exploration Manager who took us through the history of the Umkondo basin.

My name is Mr Hopewell Mvura I am the ZCDC exploration manager. What we are seeing here is a conglomerate unit where we are mining for diamonds within the ZCDC shares of formation.

This is what we refer to in geological terms as the Umkondo Basin.

The Umkondo Basin is more of a fallen basin which was formed more than 1.2 million years ago and it is more of an alluvial deposit where material was transported from various sources and deposited within this basin.

The basin resembles what we refer to as more of an ocean area.

Just like in the current days, you know that streams are eroding and are transporting material all the way to the ocean. So sedimentary units were deposited within this Umkondo Basin, which is a fallen basin.

At the bottom of this basin, we've got what we refer to as a Conglomerate rock, which is the one which was our diamonds here in Chiadzwa. On top of that conglomerate rock, you've got what we refer to as the grit. The grit also has got some diamonds. But the diamonds in the grit are quite small and the big diamonds are found within the

conglomerate unit.

So the conglomerate unit consists mainly of clasts that are more of sedimentary material and then the clasts are more of quartz. Then they are cemented and consolidated by some calcite or iron material, which has managed to make the conglomerate more consolidated and more competent. So the diamonds within the conglomerate are quite big compared to what you find within the grit. That is a layer which is above the conglomerate.

The thickness of the conglomerate is about one meter, plus or minus and there are areas where the thickness can be just a few centimeters. But in terms of diamond deposition, we've realized that the concentration is per unit area, not per unit volume. So this deposit, in terms of grades, it is a high-grade deposit.

There are areas where we can get grades which are as high as 1,000 CPHT. That is carats per 100 tons. If we mine 100 tons, we'll be able to get plus or minus 1,000 carats. There are areas like that. But on average, we are getting grades around 500 CPHT on the whole of this concession.



In terms of the quality of the diamonds, we are getting more of a gem quantity. The gems are in the range of plus or minus 20% gems. The greater part are what we refer

to as bots, or many people refer to them as industrial diamonds, which are more on the low-quality side.

The other thing I would like you to understand is the main source of diamond, or the conceit, which is responsible for bringing diamond to the surface, is what we refer to in geological terms as a kimberlite pipe or a labradorite.

So the source of this Chiadzwa diamond is not known at the moment. There have been different schools of thought. However, most people, tend to think that the source could be continental. Not necessarily that is close to where we are right now. The source is most likely continental, which means there is a kimberlite pipe which is sitting somewhere else, whose source we don't know. It was exposed to the surface, and then it was eroded. As it was eroded, the diamonds were now transported and deposited within this massive Umukondo Basin.

This is where we are mining at the moment. And the Umukondo Basin stretches all the way from Chiadzwa. It gets to Chimanimani. So in Chimanimani, we've got another operation, which we refer to as the Port of Chimanimani. But that one, we are mining our diamonds within the upper part of the Umukondo Basin, which is the same basin as where we are right now. So there is massive potential in terms of mining.

There is massive potential in terms of more exploration work, which is part of our expansion program and the exploration program so that we are able to determine more diamond resources.

So as far as our resource statement is concerned, right now, we've managed to confirm plus or minus 56 million carats of diamonds, which are still to be mined here and then in terms of the depths, our mining has been concentrated to less than 50 meters from the surface. As you can see from this pit, which is behind me, we've gone up to plus or minus 40 meters from the surface. So we are mining along strike, where there is much stripping. However, a lot of work has been done to a depth of about 300 meters from the surface in terms of drilling. So we have confirmed the existence of this conglomerate layer, even up to 300 meters from the surface.

So there is greater potential for this unit. I think.





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# ZMF calls for the rejection of speculative EPOs

The Zimbabwe Miners Federation (ZMF) has called on the government to reject Exclusive Prospecting orders (EPOs) which are held for speculative reasons and give local Zimbabweans a 3-month reprieve to apply.

Rudairo Mapuranga

Speaking to the media before an engagement Meeting Between the Permanent Secretary (Ministry of Mines and Mining Development) and, the ZMF Provincial Executive last month, the Federation President Ms Henrietta Rushwaya said the government should expedite the granting or rejection of EPOs to facilitate production in reserved areas as most areas where EPOs are neither accepted nor disapproved have been idle with no production taking place.

She also urged the government to create and implement a policy, which is currently barring small-scale miners from accessing mining claims held under EPOs for speculative purposes as this will allow Artisanal and Small-Scale the right to go and peg in the areas for production.

"The issue to do with EPOs has become a thorn in the flesh in the sense that they are affecting the generality of our people at large. If the government could be amenable to the situation where they can have EPOs rejected or accepted in the shortest possible time. If the government could be friendly enough to reject EPOs applied for speculative purposes, there are certain EPO applicants you can well note that they have no capacity to do exploration. If the government, once rejecting an EPO, could be in a position to allow local Zimbabweans who would want to mine a moratorium of at least 3 months where they are given the window to go and peg and apply for certain pieces of land within that EPO that has been rejected. This will enable local people to peg from areas within their village homes," Rushwaya said.




An EPO is a large area of ground targeting the selected minerals for exploration. The maximum is 65,000 hectares in Zimbabwe and a minimum size is up to the company to choose. EPO's tenure is 3 years with an option to renew for another 3 years.

EPOs are used by companies as first-pass exploration areas. This means that companies after doing the highly technical exploration studies will eventually drop the EPO ground in 3 years.

## How are EPOs issued?

Large-scale exploration is carried out under licenses issued by the Head of State and administered by the Mining Affairs Board as per the provisions of Mines and Minerals Act 12:05. Two titles are issued under large-scale exploration depending on the mineral to be explored according to the act, which are Special Grant (SG) for energy minerals like Coal Bed Methane, natural gas, oil, and uranium to mention, and EPOs for other minerals, example base metals, gold, diamond to mention.



What is an EPO?



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# ZMF requests for the liberalisation of the semi-precious & gemstone sector



**I**n an endeavour to ensure the growth and development of the semi-precious and gemstones sector, the Zimbabwe Miners Federation (ZMF) has requested the liberalisation of the sector.

In a letter submitted to the Permanent Secretary in the Ministry of Mines and Mining Development Mr Pfungwa Kunaka, ZMF's Secretary for semi-precious and coloured gemstones Mr Privelage Chinembiri Moyo said the country was failing to compete on the global stage as a source and supplier of semi-precious and gemstones due to various bottlenecks which include the lack of a policy framework, intertwined bottlenecks, inconsistencies, very long export process, lack of modified financial laws regarding USD cash purchases (CD1 requirement) among others.

ZMF through Moyo said their request is focused on the sectors' growth as well as on promoting the participation of many stakeholders and industry players being miners, traders, communities, both genders, jewellers and buyers.

Moyo said the sector is operating under the shadow of many minerals hence it needs to be defined and simplified under the vision of his excellence of promoting the ease of doing business.

"The target of our request is to bring the sector to its glory of being a foreign currency earner whose contributions to the revenue generation can be anywhere closer to a billion dollars. The world over the sector is promoted by communities where most of the product minerals are found.

"Whereas in Zimbabwe most are found in farming areas like clear quartz, tourmalines, aquamarine, agates, kyanite,

rose quartz, topaz, cat's-eye, sphene, Amethysts etc.

"Our proposal for the sector's liberalization is as follows:

*i.* Allow the trading of semiprecious and gemstones locally and within our borders without any restrictions such that we may compete with other growing nations like DUBAI whose laws are liberalized to promote industrial growth.

*ii.* Our vision is to see the opening up of many traders in and outside our cities as well as to encourage companies to diversify into trading of the sector's products.

*iii.* Allow the opening up of semi-precious and gemstone trading centres within areas where the stones are being mined, extracted or found. These centres will allow whoever found stones to come and trade at their centres which will be controlled by various stakeholders. E.g. RDCs, ZRP, MMCZ, Ministry of Mines, ZMF Banks, ZIMRA, etc. Ideally, we wish to emulate the Mbare Musika concept whereby farmers of various sizes bring their produce to the market for trading thereby creating a one-stop shop.

*iv.* The opened-up centres will be able to collect data regarding the stones coming into the centres and those being sold and collect taxes, levies, and royalties.

*v.* The centres will issue receipts and invoices for any purchases from the centres which will be used to track the source of origin as well as for export, inter-province movement and border exit.

*vi.* Centres will allow foreign buyers to hunt for their preferred stones only from centres unlike currently whereby they hunt stones in communities resulting in undercutting the supplier due to wasted time searching for specific stones.

*vii.* We also welcome the subagent introduction under SI256 of 2019 though

we propose it to be more simplified for growth.

*viii.* Holders of subagents' licences should search for stones from trading centres and promote exports as a requirement. Foreign buyers must approach the subagent holders for their requirements as they will be able to export the stones in a very short period of time not more than 3 days as they will be working hand in glove with most government institutions.

*ix.* In Zambia, the exports of semi-precious and gemstones have a turnaround time of not more than 48 hours and the following are the departments involved, Zambian police for a letter to confirm source of origin, Zambian revenues authority for evaluation, tax and royalties, ministry of mines for an export permit.

*x.* In Malawi an export process is done within one hour while in Zimbabwe can go as far as up to 4 months involving more than 20 visits to various office departments.

"We hope with our request and thrust to promote the ease of doing business, you may allow a threshold amount to benchmark export permits which may be issued at MMCZ offices for our semiprecious and gemstones sector.

"We wish the Ministry of Mines to reintroduce the exemption from compliance permit for the semi-precious and gemstones sector as it was in existence before.

"This permit will allow our buyers and traders to harness the ease of doing business as all the stones which fit in handbags and carry bags will have a formal export process.

"This will do away with the current bureaucratic process which takes more than 3 months for a simple export to be done also it will be a welcome move for samples to be exported easily.

"In light of the above, we are sure Zimbabwe will experience an influx of buyers as we are currently losing them to our neighbouring countries due to delays in exports and inconsistencies. Also, the above will contain the illicit flows of revenue and our stones which are being traded illegally and exported illegally," Moyo said.



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# Invictus discovers heavier hydrocarbons in Muzarabani



Oil and Gas exploration in the Muzarabani-Mbire area of Mashonaland Central Province is at an advanced stage with Australia Stock Exchange-listed exploration junior, Invictus Energy reporting encouraging signs which show elevated gas readings including heavier hydrocarbons and elevated LWD.

According to Invictus Managing Director Scott McMillan elevated gas shows up to 70 times above background and elevated Log While Drilling resistivity encountered in Upper Angwa primary target reservoirs.

He said the company observed a higher total background gas in Mukuyu-2 along with heavier hydrocarbons (C4 and C5) in mudgas increasing with depth. The Invictus Managing Director also said the company is preparing to drill ahead to the planned total depth of 3,750 metres Measured Depth (mMD) following the drill bit change out.

"We have encouraging signs in our Upper Angwa primary target, which has shown elevated gas readings including heavier hydrocarbons and elevated LWD resistivity across the zones of interest.

"The presence of elevated mud gas readings combined with elevated LWD resistivity and increasing background gas

with depth is a positive sign as we progress through the Upper Angwa Alternations Member.

"Following a drill bit change, we are preparing to drill a further 1,000 metres to our planned total depth of 3,750 metres through the remaining Upper Angwa and into additional potential in the untested Lower Angwa.

"Once total depth is reached a comprehensive wireline logging programme to evaluate results will follow, with the aim of confirming the presence of moveable hydrocarbons in multiple zones.

"The well remains on track to be completed in the forecast 50 to 60 days," McMillan said.

## Progress and current operations

Since the last update, the 9 5/8" casing was set and the choke manifold for the blowout preventer (BOP) was changed out prior to the commencement of drilling the 8 1/2" hole section, which has reached the current depth of 2,745 metres Measured Depth ("mMD").

Elevated mud gas peaks (up to 70 times above background gas baseline) have been observed while drilling to 2,582 mMD

with marked increases from C1 to C5 compounds (methane, ethane, propane, butanes and pentanes).

Elevated LWD resistivity and low Gamma Ray readings across this interval coincided with a drilling break and subsequent losses of drilling mud to the formation. Drilling progress was slowed due to repairs to the top drive system, which have now been completed and the remedying of mud losses to the formation.

Total background gas is higher than those observed in Mukuyu-1 and heavier hydrocarbons (C4 and C5) have been detected, providing further evidence of an active petroleum system in the basin.

## Forward Plan

Following the change out of the drill bit and batteries for the LWD tools, the Exalo 202 Rig will recommence drilling through the primary targets in the Upper Angwa (Alternations Member) and to the Lower Angwa (Massive Member) to approximately 3,750 metres MD before running a wireline logging evaluation suite.





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# Zimbabwe Mining in 2023

The mining industry in Zimbabwe remains a key driver for the country's economic transformation and development with the government targeting the sector to achieve an ambitious annual revenue of US\$12 billion by the end of this year.

Rudairo Mapuranga

The sector however achieved a revenue of US\$5.6 billion in 2022 with gold, platinum, diamond, nickel and chrome accounting for over 90 per cent of the total revenue.

In the outlook, the mining sector is projected to grow by around US\$6.4 billion in 2023 to reach the US\$12 billion economy, a feat that seems impossible currently.

## Official mining performance so far in 2023

There was mixed performance of the mining sector during the first quarter of 2023, compared to the fourth quarter of 2022 and the comparable period in 2022. Gold, nickel, and chrome underperformed compared to the fourth quarter of 2022 and the first quarter of 2022 output.

The major components of the Platinum Group of Metals, namely platinum, palladium, and rhodium registered growth of 3.4%, 2.8% and 3.6%, respectively when compared to the first quarter of 2022.

PGMs output benefited from ongoing investment in mine development and exploration, and improvement in operational efficiency including an increase in concentrator and smelting capacity in the sector. Depressed commodity prices due to a weak global economic outlook remain a major challenge for the PGMs going forward.

Nickel output at 3 471.02 tonnes in the first quarter of 2023 was 15.4% below output in the fourth quarter of 2022. Output benefited from ramping up ore volumes

and nickel production at one of the major nickel producers. In addition, Nickel output benefited from producers who ramped up production on account of increased investments in mining equipment and mine development during the years 2022 and 2023.

Diamond output stood at 1,64 million carats in the first quarter of 2023 and exceeded the comparable quarter in 2022 by 53%. Diamond output benefitted from the ramping up of production across all diamond mines, driven by increased investments in exploration, mine development and production capacity.

Chrome ore output for the first quarter of 2023 amounted to 412,708.68 tonnes, 23 per cent lower than output in the comparable period in 2022.

Coal output recorded strong growth during the period under review when compared to the same period in 2022. Coal benefited from the increase in demand for thermal coal from the new power station that was commissioned during the first half of 2023 which facilitated coal mining.

## Shortcomings

Although Zimbabwe boasts not only a diverse range of over 40 minerals but also some of the world's largest deposits of key minerals such as gold, platinum, lithium, chrome and nickel, some factors could lead the industry to fall short of what it could contribute to growth and development of the country's economy.

The Government of Zimbabwe adopted an "open for business" policy in 2018 to encourage more foreign direct investment (FDI). For example, the government set an ambitious \$12 billion target for the mining sector by the end of 2023 and is calling for increased investment in renewable energy.



Despite these pronouncements, the Zimbabwe government has not implemented enough investor-friendly policies to attract robust investment and corruption remains a major concern. FDI into Zimbabwe remains below regional peers.

The mining industry also faces rising operation costs due to commodity softening and persistent electricity shortages which has been impacting the sector's growth.

Over the past 12 months, the mining industry has witnessed softening of prices for most key minerals, with rhodium (-74%), lithium (-69%), palladium (-41%), diamond (-60%) and nickel (-8%).

The prices are coming down at a time the cost structure for the mining industry has increased, propped up by high electricity which went up by more than 40 per cent in the last 11 months. The situation has been compounded by recent increases in royalty for platinum and lithium.

Also, in the past 11 months, royalty for platinum was increased by 180 percent from 2.5 percent to 5 percent while that for lithium was increased by 150 percent, from

2 percent to 5 percent. These challenges have severely weighed down on the viability of mining projects with affected mining companies reporting that their overall cost has increased by more than 10 percent.

While mining companies have tried to reduce their costs through various strategies including cutting back on capital expenditure and optimising their businesses, the viability gap is so huge that only with Government intervention in the form of electricity tariff and royalty reduction viability can be restored.

#### New Development

According to Minister of Finance and Economic Development Professor Mthuli Ncube, the government is committed to offering full support to the growth and development of the mining industry, including awarding mining companies national project status where necessary, as well as fiscal incentives, which will allow duty-free importation of equipment, thereby facilitating the resumption of operations.

The government is also considering strengthening mining policy through solid

consultations for the grafting of the mines and minerals amendment bill to ensure it tackles things to do with corruption caused by unclear laws.

#### Recommendations

According to the Chamber of Mines of Zimbabwe, for the growth and development of the mining sector to be realized, there is a need for the Government to intervene on electricity tariff and royalty reduction.

The government should ensure that operational costs are subsidized by reducing electricity tariffs for mining companies as well as ensuring that the power supply is stable.

Due to softening prices affecting the mining industry, the government should also ensure that taxes are reduced for mining companies for them to operate at a profit.

The government should also consult mining experts when coming up with policies for commodities so that policies are not enacted based on a temporary boom.



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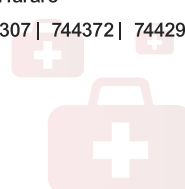
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# Jena Mines targets 80kgs gold per month



Silobela-based gold producer Jena Mines has seen an improvement in its production since the takeover by Kuvimba Mining House (KMH) with the mine increasing its average monthly production from 25kgs to 40kgs. The mine has a ramping up strategy which will double output to 80kgs per month.

Rudairo Mapuranga

Speaking to Mining Zimbabwe Jena Mines General Manager Mika Mutove said his mine has seen an improvement in its production from 2020 to 2021, a deliberate move by the Kuvimba Mining House to ensure that funding is allocated to see Jena grow.

"It was a deliberate ramping up, production ramping up strategy, where it was a 25 kg mine operation and now we boast of 40 kgs of gold per month. We are still in the production ramping-up stage. It will be taking another 12 to 24 months to double that figure" Mutove said.

According to Mutove Jena Mines' resources currently stand over 60 million tonnes with a life of mine of up to 40 years. He said Kuvimba has invested over US\$10 Million in the mine ramping-up strategy where over US\$2 million was invested in exploration which saw the life of the mine increasing to 40 years.

"We, as Jena Mines, boast of having one of the world-class deposits of gold, where we look at more than 60 million tonnes of ore, 60 million tonnes resource size. So, we are looking at a life of mine of more than 30 to 40 years. Talking of its history and performance, Jena Mines has always been

a thriving mine, even under difficult economic circumstances.

"It's one of the few gold mines which did not close. As we are speaking, Kuvimba has invested over US\$10 million to see this ramping up that we are talking of. We did the exploration project in 2021. Yes, there was significant drilling, over 2 million was invested in exploration," the Jena General Manager added.

The coming in of Kuvimba according to Mutove saw the resuscitation of the termite shaft which was previously abandoned due to flooding. The company also resuscitated Jena's biggest shaft through dewatering, equipping, building a new headgear and putting in a hoist.

He said the revival of the shafts resulted in underground production increasing to 600 tonnes per day; that increase also led to the strategy whereby the mine needs to increase its processing capacity.

"We also did the resuscitation of the termite shaft. The Termite shaft was flooded and was abandoned. When we came in, we dewatered, re-equipped, developed, and now termite is in production. We also brought in another shaft, the Linus shaft, which is our biggest shaft here. We equipped it, equipped the shaft, built the headgear, and put in a hoist, developed it, and brought Linus back into production. Termite and Linus are the two shafts that were brought back by Kuvimba into production to bring our underground tons per day or production rate to 600 tons per day. So, as a strategy, that increase in mining capability meant we needed to increase our processing capacity" he said.

The coming in of Kuvimba saw Jena Mines deliberately building and installing a second ball mill to increase milling capacity, there was one ball mill at the mine and the second bigger ball mill is going to bring throughput to 800 tonnes per day. Jena Mines is also looking forward to doubling its processing facility to close to 2000 tonnes a day due to improvement in ore sourcing where the mine is taking some from open pit mining.

"We are looking at a capacity of 800 tons at the plant and 600 at the mining site. Through understanding our resource and investing in our efforts in understanding it, we then brought in a new mining method where we are now going on the surface and we are now nine months into our open pit mining method, which then brought stability to all our sourcing issues.

"Now, more than half of our production is coming from the open pit, mining open pit and underground combined, it's now double what the plant can do. The efforts now looking forward is to expand the processing so that it can handle close to 2,000 tons per day. That is why you recall I was talking about doubling whatever we are doing. Currently, we have commissioned our thickener at the plant.

"The thickener was the smallest, the closest bottleneck. So, we bottlenecked the thickener on the plant. Now, we are building the third ball mill. We should be putting in a third ball mill in the next two quarters. We should be commissioning a third ball mill. That should take us to 80 kg plus," General Manager Mutove concluded.





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## Opens a USD\$250k branch in Gweru

Tyre automotive industry specialist, Tiger Wheel and Tyre opened the company's ninth outlet in the country in the city of Gweru with the company commending the Government for creating a conducive environment for investment opportunities.

The launch of a new store marked the reinforcement of the company's

commitment to providing the people of Zimbabwe with top-quality products and services. Tiger Wheel & Tyre will supply tyres to all segments and industries, from Mining, Agriculture, Truck and Bus to Passenger, Light Truck and 4x4 tyres. This will add value across all industries that are key to developing Zimbabwe's economy.

The Tiger Wheel and Tyre Gweru Branch was officially commissioned by the Minister of State for Provincial Affairs and Devolution, Midlands Province Hon Owen Ncube who said the Government will continue to protect new investments and promote private sector-led economic development.







"Services provided by Tiger Wheel and Tyre to our Transport Sector have significant contributions to major drivers of our Provincial Gross Domestic Product (GDP). These include the mining sector, manufacturing sector, retail sector, and agricultural value chains that are some of the major contributors towards the realization of an Upper Middle Income Society by 2030."

Speaking at the official opening of the Gweru branch the company's Managing Director for Zimbabwe Rishi Magecha said the branch is equipped with state-of-the-art facilities, trained professionals, and a wide range of products.

"Tiger Wheel & Tyre has always strived to maintain a high level of professionalism,

customer service, and product quality. From our humble beginnings to the expansion we are witnessing today, our journey has been one of dedication, hard work, and relentless pursuit of excellence. This 9th store is a testament to the trust you've placed in us, and for that, we are deeply grateful.

***"OUR JOURNEY HAS BEEN ONE OF DEDICATION, HARD WORK, AND RELENTLESS PURSUIT OF EXCELLENCE"***

"We understand that a vehicle is more than just a mode of transportation. It's a vital part of your daily life, a tool for business, a carrier of precious cargo like friends and family. That's why at Tiger Wheel & Tyre, we always say, "Our business

is not just about wheels and tyres, it's about people."

"Our new store here in Gweru is equipped with state-of-the-art facilities, trained professionals, and a wide range of products for you to choose from. But more than that, it's a symbol of our commitment to you. It stands for our promise to continue offering unparalleled service, to continue being a brand you can trust, and to continue serving our wonderful customers, who are the very heart of our business," he said.

The branch, which was set up for US\$250 000, has since employed locals with the firm set to open more branches across the country.





## Ionosphere exports 1200mt Spodumene Concentrates

Bluffhill-based Ionosphere Investment which is targeting to export a monthly target of 5000mt tonnes of spodumene concentrates exported 1200mt on its debut export in September and is working on dispatching a 330MT in due course.

The company is however targeting to export 5000mt by year end.

According to the company Managing Director Nyasha Chidoh, Ionosphere has reached two milestones. The first milestone is the start of the loading of the first spodumene concentrates and the second milestone is securing approval from the government for the export permit.

The spodumene concentrate being loaded was produced at its open pit mine in Mataga Mberengwa.

The company will be producing 5,000MT per month spodumene concentrates. The shipment consists of 300 metric tonnes of spodumene concentrate and is to be sold

into the global spot market via a major trading company. Ionosphere is monitoring the process chain of the product as a pathway to global lithium chemical accreditation and will sell according to the Fastmarkets Spodumene spot price index.

"We are particularly pleased to make this first shipment in less than 1 month since we have been granted our export permit, reflecting the team's strong execution capabilities and commitment," Chidoh said.

The commercial shipment of lithium-bearing concentrate is a defining moment for the company, as it establishes its place in meeting the world's ever-growing demand for lithium and its role in the global energy transition. As the demand for lithium continues to rise, ionosphere mining projects are well-positioned to thrive in this growing market and contribute to achieving decarbonization and electrification targets.





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# Interview: Addmore Mangoma Mineral Resources Executive



## How much investment have you put into your current exploration projects?

Since its inception in 2016, ZCDC has invested a total of US\$ 20,095,119 into its exploration projects. The organization has purchased 3 diamond drill rigs, 1 RC drill rig, 2 excavators, 4 tipper trucks and a 10-tonne DMS plant specifically for exploration projects. To date, the organization has done 42,000 metres of diamond drilling as well as 12,600 metres of RC drilling at a cost of US\$6.0 million and US\$655 thousand respectively.

## You pride yourselves (ZCDC) on over 2.6 million fatality-free shifts how have you managed such an impressive feat?

The first of our core values as ZCDC is ZERO HARM. Our shareholders, management and employees are clear on our shared commitment to creating and maintaining a safe working environment. We continuously strive to create a safety culture that embraces proactive management of workplace hazards and risks as well as learning from incidents to prevent recurrence. We also embrace industry standards and best practices, and we allow independent parties to audit and evaluate our compliance to these standards which we have adopted. ZCDC has a certified Integrated management

system (IMS) with ISO9001, ISO14001 and ISO45001.

## What is the role of AI in Diamond mining?

Globally, AI has already made a big impact in the diamond industry, particularly in advanced data analytics, exploration and targeting, resource estimation, operational optimization, safety and risk management sustainability, pricing, grading, and sorting technologies. One of our core values as ZCDC is innovation, and we are excited about the fast pace at which this technology and its applications are developing. We anticipate that the economics of these technologies will obviously improve as they scale up, and our teams are ready to adopt any technology that improves efficiency as well as profitability.

## Can you kindly tell me about the mining process involved in extracting diamonds from the ground?

The Chiadzwa mining operation is a typical open-cut diamond mine. We make use of surface mining methods and equipment as the ore body is relatively shallow with maximum depths of 100m below the surface. Our mining cycle typically starts with bush clearing and removal of topsoil

to a topsoil bank for use in rehabilitation. Subsequent unit operations are drilling, blasting, loading and hauling waste to waste dumps and diamond-bearing ore to the process plants and stockpiles. We also make use of in-pit dumping as continuous rehabilitation, backfilling the mined-out areas as we advance.

## What CSI programs are you undertaking as ZCDC?

1. Bursaries for both Primary, Secondary and Tertiary students
2. School infrastructure support (construction of classroom blocks)
3. Electrification of Schools (Chiadzwa and Gandautu Schools)
4. Agriculture Inputs and Tillage Support to the Community
5. Repair of cracked houses in Arda Transau
6. Community buying framework (Purchase of horticulture, poultry, beef meats from the local community)
7. Employment of local contractors for all our construction projects
8. Health: free medical treatment (including Dr service) to the community
9. Sports: sponsorship of Manica Diamonds
10. Rehabilitation of Community dip tanks
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12. Rehabilitation and drilling of Boreholes
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### What kind of machinery and equipment is used for Diamond Mining?

Our mining fleet is the typical surface mining fleet with drill rigs, excavators, dump trucks, dozers, and other support equipment. The mined ore is taken through several stages to extract the diamonds. This entails crushing to liberate the diamonds from the host rock. This is followed by the concentration stage using both Dense Media Separation and XRT technology. The concentrate obtained is then hand-sorted to recover the diamonds.

### What are the roles of technology and automation in optimizing mining operations at ZCDC?

XRTs are currently the most advanced diamond recovery plants efficiently sorting diamonds from non-diamond material. We also make use of drones for survey work and security surveillance reducing the manpower required for security patrols and making survey pick-ups and aerial mapping exercises more efficient. Our technical services departments also make use of GIS and mine planning software to optimize and increase efficiency in their workflow.



### Are there any specific quality control measures in place to meet KPCS standards?

The Kimberley Process is an international certification scheme that regulates trade in rough diamonds with the objective of preventing the flow of conflict diamonds while helping to protect legitimate trade. There are several rules and minimum requirements set out by KPCS in this regard.

An example of the rules outlined by KPCS is that companies that produce diamonds must maintain effective security standards to ensure that conflict diamonds do not contaminate legitimate production.

In this regard, ZCDC has robust security systems and procedures that prevent access to the diamond fields by illegal miners as well as a 4 Tier security surveillance system that includes real-time live feed monitoring of all its processes at



operations, head office, parent ministry and by state security ensuring transparency and accountability. ZCDC has adopted these minimum requirements to ensure that all our activities are transparent, secure, and safe, furthermore showing care for the environment and communities in which we operate.

### What do you foresee as the future of Diamond mining and how are you preparing for it?

The future of diamond mining is bright, however, with its own opportunities and threats.

The typical customer for our product as well as environmental activists and regulators rightly demands the use of responsible and sustainable mining techniques, reduced carbon emissions as well as world-class labour practices which often increase operating costs and may reduce profitability. Technological advancements as earlier mentioned are rapidly increasing production efficiency and reducing costs allowing productivity

improvements while minimizing environmental impacts. ZCDC will continue to apply innovation in its operations in order to remain competitive in the operating environment.

Moving to the market, the demand for natural diamonds is proving to be resilient despite the increased footprint of lab-grown stones in the market. Diamond mines are getting deeper and more expensive to run, with some big mining companies depleting their resources and reserves, reducing the supply of natural diamonds in the market. In this vein, ZCDC is future-proofing itself by continuously investing in the diamonds of tomorrow through its exploration programs.

### What is the life of mine at Chiadzwa?

Current plans see us mining in Chiadzwa for 10-12 years with continued exploration and evaluation. However, it is dynamic. ZCDC anticipates current exploration work to continue opening up new mines and opportunities.







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# White Gold Boom, Depression and the Fourth Industrial Revolution

**L**ithium extraction and global trade have historically been under-reported. This article aims to provide a clear analysis and data for lithium extraction, global trade and industrialization in Zimbabwe.

The first lithium mine to be established in Zimbabwe was Bikita Minerals in 1909 whose main focus was on tin ore extraction. Bikita minerals mined for 70 years initially for tin. Little was known about the occurrence of white gold deposits until the Second World War when the demand became so urgent. A sharp demand for lithium production during World War 2 was for military applications. Lithium hydride a carrier of hydrogen was used for inflating military naval balloons. This consumed as much as 80% of the world's yearly lithium production in 1944. As a result, grounds at Bikita Minerals were subjected to intensive prospecting operations and lithium mining began in 1940. Bikita Minerals historically became the largest lithium producer in Africa and frequently ranked third in the world after Greenbushes and Tanco. With the end of World War 2 in 1945, the United States government cancelled contracts with lithium producers and this led to a sharp decline in demand termed as depression in this article.

After 6 years of depression, lithium became an essential need for the Cold War. Research into new applications for lithium was very successful during the Cold War. Lithium deuteride was a major component for the manufacture of US H-bombs and

thermonuclear weapons first deployed during the Cold War. With the advent of the Cold War, a boom in lithium production was signified again for the sole purpose of fabricating nuclear weapons. Bikita Minerals lithium resource contributed to the global market for ammunition formulations. With all being said, resources and reserves at Bikita Minerals have always been historical, updates were never in the public domain. However, current updates state that, Bikita Minerals is owned by Sino Mine Resource Group listed on the Shen Zheng Stock Exchange. Its subsidiary is Sino nonferrous Metal Resources Zimbabwe a geological exploration company under the Directorship of Wang Zhenhua. Sino Mine Resource Group bought shares in Prospect Resources Arcadia Lithium Project in 2018 and later sold out shares and fully acquired Bikita Minerals.

21st Century Zimbabwe, experienced a boom in exploration and mining of the nonferrous metal also known as white gold, mainly due to the dead white colour which somewhat resembles the inside of a coconut. The era ushered in the establishment and development of new lithium mines dominated by Chinese investors like Sino Mine Resource Group, Suzhou, Zhejiang Huayou Cobalt, Shenzhen listed Chenxin Lithium project and Suzhou TA and Ultra Technologies relinquished million-dollar investments on lithium exploration and mining. Apart from Chinese dominance, Australian-based Prospect Resources rolled out the Arcadia Lithium Project in 2018 and currently owns a potential high-grade

lithium deposit located approximately 8 km north of the Arcadia lithium mine, known as the Step Aside Lithium Project. Not much updates have been revealed about the Mirrorplex Lithium project which was last reported to be still in the exploration phase, stage two drilling. It seems the world's clean energy transition will be impossible without lithium resources. A degree of resource nationalism from Zimbabwe is benefiting China which has for decades invested in the African green energy market and accounts for 59% of the world's lithium refining.

As the global economy advances towards a net zero scenario, the demand for lithium, copper and nickel which is vital to many clean technologies will increase. International Energy Agency estimates that by 2040 the global demand for these vital minerals namely lithium, copper and nickel may exceed the current demand for coal. Furthermore, experts estimate that 20% of the world's lithium demand can be met by Zimbabwe if it fully expands its reserves. Zimbabwe becomes the heartland for the scramble of lithium, which is an essential catalyst for the fourth industrial revolution. Corresponding with the current boom, more lithium mines are developing and Chinese investors are still up to lithium mining investment and exploration though Zimbabwe is geologically under-explored.

Technological advancement in the transport industry requires more lithium resources for expansion. The use of lithium batteries in upcoming electric and hybrid





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vehicles could further increase the demand for lithium resources. The global market for lithium batteries increased by more than 20% in the past few years leading to a boom and rush into lithium exploration, mining and investment. Electrification of vehicles with a combination of increased use of low-emission energy sources implies a transition to a mineral-intensive paradigm. Lithium, copper, nickel and cobalt have become critically important. Lithium is one of the key elements in energy transition. This resource can have a positive impact based on new value-creation creation in the form of increased output, exports, employment and tax revenues. Contrary to the above stated, Zimbabwe is signified by an increased output in lithium production, though there is an element of employment creation, it is symptomatic of exploitation, encompassed with leakages when it comes to international trade.

Opportunities for lithium mining stem mainly from burgeoning demand in the energy and transport industry which is expected to multiply several times in the coming decades. Lithium compounds are used in the production of special glasses and ceramics. It is used as a fluxing agent to lower the melting point of glass and ceramics, making it easier to shape and mould. Lithium-based ceramics are also used in some specialized applications, such as in heat-resistant ceramics for furnace linings and in the production of lithium-ion conducting ceramics for batteries.

The most immediate opportunities are those arising from lithium extraction and refining activities, export growth, job creation increased tax revenues and the forging of productive links. There are also capabilities related to the creation of knowledge-intensive capacities that can be generated from the use of the resources and foster structural change. Mostly creation of knowledge on the lithium manufacturing industry is fostered by a sharp decline in the need for the vital resource. "Closure of window opportunity," gives ample room for adequate research on new ventures for uses of lithium resources.

The article goes further in assessing the future of lithium mining giving special reference to energy experts who believe that, potential benefits offered by lithium mining are commonly viewed as a "window opportunity" that is likely to close within a few years. Most probably due to alternative battery technologies being

developed that are less lithium-intensive or that do not require the use of lithium. So what is required is, to utilize the "window opportunity" by reviewing the Base Minerals Act and Mines and Minerals Act so that mineral resource extraction benefits communities through infrastructural development particularly the revival of the education sector, transport and energy industry, rural electrification programs, access to clean running water and development of mining towns through the construction of modern-day shopping mall.

The white gold boom termed as a "window opportunity" in the article might close because other countries would have intensified lithium exploration with the development of new types of deposits. Other countries in North America and the Caribbean endeavoured to increase the volume of lithium small-scale expertise. However, Zimbabwe is still discovering new lithium sites evidenced by the Ministry of Mines and Mining Development in conjunction with the Minerals Marketing Cooperation of Zimbabwe, which are still in the process of listing areas of verified deposits in Zimbabwe which are Goromonzi, Mudzi, Buhera, Bikita, Chegutu, Hwange, Insiza, Rushinga, Mutoko, Mutare. Contrary to the discoveries, the fact still remains that Zimbabwe is under-explored geologically which leaves the Geological Survey of Zimbabwe, Geological Society of Zimbabwe and other mining fraternities to constantly work on geological explorations and prospecting for the resource.

Energy experts from Latin America and the Caribbean further argue that the "window opportunity" will likely drop due to recycling. Increased use of lithium recovered from lithium battery recycling as a source of input for the manufacture of new batteries might probably override demand. However, one tends to argue that factors of depression are certainly present in the development of the energy industry and it is not easy to put a deadline on "window opportunity" as there is subject to a high degree of technological uncertainty with the fourth industrial revolution on the

verge. Therefore, responsible mining fraternities and responsible government ministries should be vigilant in terms of appropriation and distribution of profits reaped from lithium extraction so that society benefits from exploitation before the closure of the window opportunity.

The constant call for Mineral Beneficiation and Value Addition by MMCZ and MMMZ for lithium resources is a milestone towards achieving beneficiation to communities during times of depression. Winston Chitando the former Minister of Mines advocated for lithium miners to value-add lithium resource, as Zimbabwe seeks to derive maximum benefits from the mineral. The government of Zimbabwe took a bold step and banned all raw lithium exports after arguing that smuggling to South Africa and the United Arab Emirates is costing the country \$1.8 billion United States dollars lost in mining revenue. Contrary to the above assertions, it should be noted that, as mining companies are compelled to develop local processing plants, they may register diminished profits and be less willing to expand their operations and increase production. Globally, Zimbabwe is a small producer and investors may consider investing elsewhere. In 2022, Australia and Chile accounted for 77% of global production. Although the standard of the Zimbabwean workforce is high, there is a shortage of appropriate technical skills required for mining industrialization.

The article has investigated the history of lithium production in Zimbabwe, from dawn to the present. The first boom for lithium occurred during WWII in response to demand from the US Army for its applications in aerostatic balloons and ammunition production. A subsequent large market arose for glass and ceramics, energy and transport industry for the fourth industrial revolution. Other markets for lithium are the pharmaceutical industry, aerospace industry, automotive industry, electronics, and production of aluminium and magnesium alloys. With a subsequent rise in the market, the obvious risk is that in the long run, global lithium prices could drop. Many African countries that are overly dependent on a commodity, have experienced windfalls when world prices are high, but also steep economic falls when these prices drop leading to a boom depression in resource demand. Therefore, the government should maximize on channelling profits to tangible developmental projects.





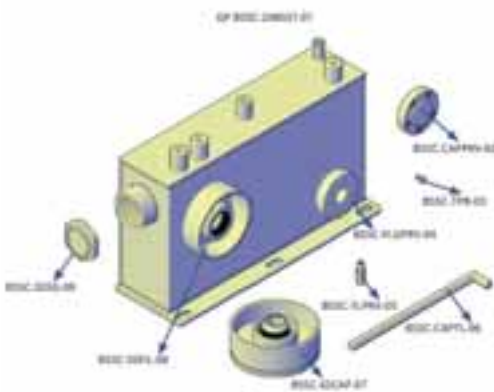


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## PREVENTING INJURY TO HEAVY MACHINE OPERATORS

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## CASE STUDY

This follows a special request from a longstanding customer concerned about the risk of injury caused to operators or assistants opening radiator filler caps of machines under pressure and getting badly burned in the process. With safety at the heart of the South African-based company, it tackled the challenge head-on and devised an ingenious system to prevent accidents and burns caused by pressure blowoff. Its patented safety filler system both prevents people without the specially designed tool from opening the cap, while additional safety mechanisms built into the device ensures a slow release of pressure with little risk of burns.

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BSSC-CAPTL-06  
BSSC-SSCAP-07  
BSSC-SSFIL-08  
BSSC-SSSG-09

## PRESSURE BLAST

BSSC Radiators CEO, Dillan Bennett says the customer was operating underground mining equipment and found the pressure cap on the equipment's surge tank to be a safety concern and prone to dislodging under pressure. This could cause dangerous situations for operators and the company recognised the urgency of the problem and went back to the drawing board to develop a safer alternative solution.

"The core of our innovation lies in the implementation of an alternative pressure release valve fixed on a flange. This design effectively moves the pressure away from the operator who fills the system and ensures their safety. To add an extra layer of security we also introduced a tamper-proof bolt unique to their system, which prevents unauthorized access and ensures that only trained personnel can open the pressure release valve.

"Furthermore, we incorporated a deviation system into the design which features a screw-on type cap made of durable stainless steel which has more threads for a better fit and preventing rusting. The cap contains deviation rings that gradually release trapped pressure as water flows through them, effectively eliminating the risk of sudden pressure release during system filling," says Dillan.

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With safety being of paramount importance, BSSC Radiators aims to revolutionize the industry by implementing their innovative solution and significantly reducing the risks associated with cooling system filling. By prioritising safety while enhancing operational efficiency, the company endeavours to create a safer working environment for operators in the mining industry.

"As with our radiators and other systems, we are already in the process of working with OEMs and dealers to offer these solutions to the market locally and abroad. We remain committed to further development and adaptation of all cooling systems to meet the diverse needs of our customers and to find solutions to the industry's challenges," concludes Dillan.

#### EASY RETROFIT

Technical sales manager, Morne Bouwer, part of the development team, explains that in order to complement their innovative solution, BSSC Radiators developed a specialised tool that accompanies the tamper-proof bolt, ensuring that only authorised individuals can access and operate the system.

This comprehensive approach not only improves safety but also minimizes the possibility of operators who are in a rush to make their daily quotas are not tempted to bypass procedures and open the system themselves in order to save time.

Most importantly, the system will be able to be retrofitted to almost any mobile and stationary underground and opencast mining equipments. Its design ensures that performance of the original cooling system is not adversely affected.



*Publications: Cape Business News, Creamer Media  
Engineering news, Modern Mining, Mining Business Africa,  
Fore Runner, SABS.*



*Eric Bruggeman (CEO of the South African Capital Equipment Export Council) & Dillan Bennett (CEO of BSSC Radiators )*

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# Underground Barring Down and Scaling



Scaling, also known as barring down, is a basic skill that every person working underground should understand and be able to demonstrate to a minimum level of competence. Scaling may be described as the art and function of making the ground safe using a scaling bar to locate and remove loose rock from the walls, face and backs of the workplace. In manual scaling, loose or potentially unstable rock is prised off the rock surface with an appropriate scaling bar. The ability to correctly "read the ground", or assess the ground conditions, is essential to all people carrying out scaling, no matter how small the area to be scaled. The importance of the ability to correctly read the ground can never be over-emphasised in relation to scaling and ground control in general.

The physical work associated with manual scaling is amongst the most arduous underground mining work and can only be done effectively for a comparatively short period of time before rest is required. A high level of mental and physical alertness is required at all time while scaling. During rest periods, the person should be actively observing the area around where they are standing, in all directions, to look for planes of weakness in the ground that have the potential to form unstable blocks or wedges.

Scaling skills are vital for all people working underground to ensure that their workplace is made and kept safe from loose and/or potentially unstable rock.

Manual scaling is potentially one of the more hazardous activities in underground mining. The person carrying out the scaling is working in close proximity to the rock face and can be exposed to potentially unstable ground that may fall unexpectedly. In addition, the conditions underfoot may be very uneven which can

hinder rapid evasive action.

A range of issues need to be considered when scaling, these include:

- *Identifying the ground conditions;*
- *Scaling equipment;*
- *Scaling procedures;*
- *Scaling in high headings;*
- *Scaling in narrow headings; and*
- *Regular check scaling of main access ways.*

Scaling is an on-going process in each workplace with exposed ground that is never finished until the mine closes. No ground should be assumed to be stable until it has been sounded with a scaling bar. Recognising that large potentially unstable blocks may appear and sound stable, other means should be employed to make the area safe where doubt exists.

Ground conditions should be checked using appropriate scaling procedures before starting work and confirmed on a regular basis during the shift in ALL workplaces where ground is exposed.

## IDENTIFY THE GROUND CONDITIONS

It should never be assumed that the ground in a workplace is safe unless it has been checked by those working in the area using correct scaling procedures. All underground workplaces are kept safe by regular, on-going, checking and scaling as required. This is vital to the safety of all people working underground.

Ground conditions may be identified by:

- *Sight see if the rock looks to be stable – look for intersecting joints, cracks, zones of weakness in the rock; and*
- *Sound listen for rock noise caused by high stress - strike the rock with the moil tip on the bar and listen to the sound the rock makes.*

Natural planes of weakness, or joints, in the rock play a very important part in forming the potentially unstable blocks, wedges and slabs that should be removed by scaling. Before scaling it is vital that the ground be observed for an appropriate period of time to determine the orientation, length, spacing and roughness of the exposed trace of the joints or cracks in the backs, walls or face.

The intersection of two or more joints, rock fractures due to blast damage and/or intact rock failure can form potentially unstable wedges or slabs of varying shapes and sizes. Some of these wedges or slabs may be unstable and on the verge of falling or sliding. These potentially unstable wedges or slabs can be located by sounding the rock with the bar during scaling. The application of water to the backs, walls and face can assist with the visual detection of joints, cracks, etc. The application of water to certain ground conditions, eg some highly stressed ground, can cause pieces of rock to spall off the areas where the water has been applied.

Key blocks or wedges may be holding a number of other blocks and wedges in place behind or above the exposed face. The removal of the key block may "free up" other blocks or wedges, that were previously held in place by the key blocks, thus triggering the fall of a number of other blocks.

The use of a stope light held from the side and directed at the rock face may provide shadows that highlight the outline of a potentially unstable block or slab that can be removed by scaling.





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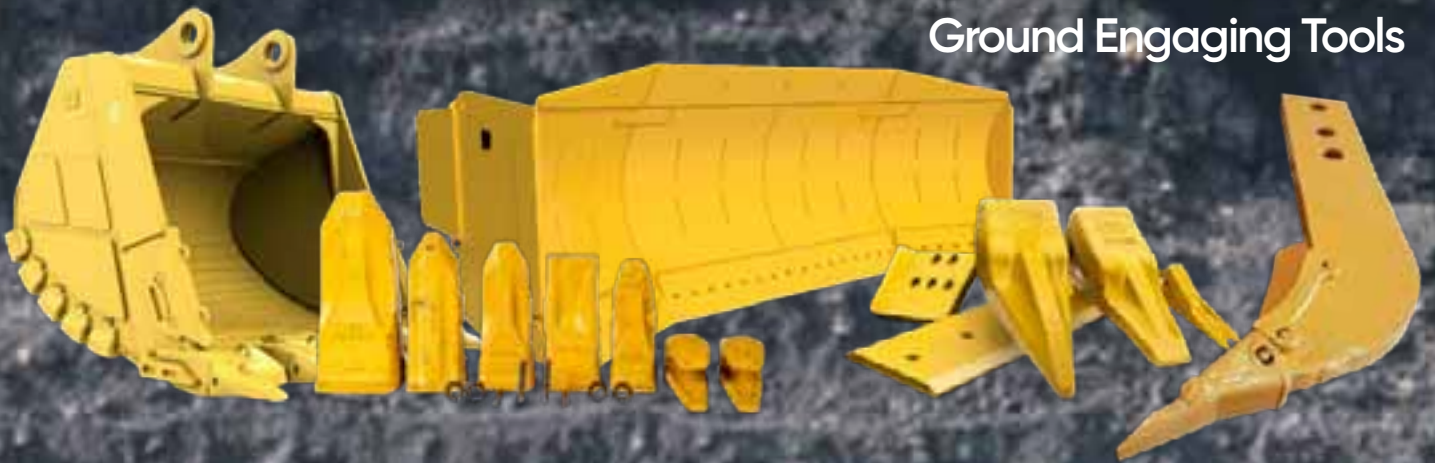
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## How to avoid vibrating screen damage

**T**he best way to ensure reliability for vibrating screens is to always choose original equipment manufacturer (OEM) parts. While fabrication shops often produce quality components, they can't guarantee parts built to OEM standards.

A vibrating screen works as a total system, so minor differences in size, weight, and material can lead to a chain reaction of damage, ultimately resulting in lost profit.

Here are the four most important vibrating screen parts to buy from the OEM

### Shaft components

Shaft components form the heart of a vibrating screen and are machined from specific material to 1/1,000 inch, so any flaws can damage an entire machine. For example, if a fabrication shop doesn't design the shaft shoulders within OEM tolerances, the small difference in size can cause the shaft assembly stack to be too tight or too loose. This can lead to excessive heat and wear, and even potential failure of the shaft and body components.

### Mounting components

The mounting components are designed to deflect at a certain spring rate, depending on the weight of the vibrating screen. Replacing a damaged part with a fabricated version that may not be the correct material or design could cause the spring rate to be thrown off. This could mean the mounting assembly can't take as much load and may be too soft, leading to another break, or it could be too stiff, which may cause side panels to break.

### Deck frames

All material is classified using screen media, which is supported by the deck frames. That makes the deck frame quality extremely important. If a fabrication shop doesn't manufacture the deck frame according to the machine's specifications, the media will not tension correctly, leading to broken screen media, contaminated product, and other potential damage.

### Side plates

Properly fitted side plates are vital to the structure and functionality of a vibrating screen. If one side plate is replaced, and the fabricated version doesn't exactly match the opposite, it can unleash a series of positioning issues down the line. Even the smallest inconsistency can trigger problems with the shaft assembly and cause the machine to rack.

While the money saved on buying aftermarket parts may seem big initially, the end result could cause additional downtime and costs. Before buying, consider the potential hazards of using a fabricated part and look at the value of having the support of the original equipment manufacturer.

Daily, weekly and monthly inspections, coupled with preventive maintenance, ensure your vibrating screen is running optimally, keeping your production on schedule and your productivity at maximum levels.



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# The best equipment for mining survey



In today's competitive mining industry, staying ahead of the curve is crucial to success. This requires the use of advanced technology and equipment that streamline operations, increase efficiency, and ensure accurate results. When it comes to mining surveying, accuracy is paramount, and using the best equipment is vital. In this article, we will explore some of the top mining survey equipment options available in the market currently.

## Total Station

Total stations are essential tools for mining surveying. They combine electronic theodolites, electronic distance measurement (EDM), and microprocessors to provide accurate measurements. Total stations can measure distances, angles, and elevations with ease. With features such as automatic target recognition and data storage capabilities, total stations enable surveyors to gather detailed information efficiently. Their compact size and portability make them ideal for mining operations in remote or challenging terrains.

## GNSS/GPS Systems

Global Navigation Satellite Systems (GNSS) or GPS (Global Positioning System) devices

have revolutionized mining surveying. These systems use signals from satellites to determine precise locations. With the ability to capture real-time positioning data, GNSS/GPS systems are invaluable for accurately mapping mining sites and areas for exploration. These devices are known for their high precision and speed, making them ideal for large-scale mining projects.

## 3D Laser Scanners

3D laser scanners have become increasingly popular in the mining industry due to their ability to capture highly accurate data quickly. These scanners use laser beams to measure distances and create detailed 3D representations of surfaces, structures, and terrain. By producing comprehensive point clouds, mining surveyors can analyze and measure various aspects of a mining site, such as stockpile volumes, topography, and geological formations, with remarkable precision.

## Drones

Unmanned Aerial Vehicles (UAVs), commonly known as drones, have become an essential tool in modern mining surveying. Equipped with high-resolution cameras, LiDAR sensors, and GPS systems,

drones can capture aerial imagery and create precise 3D models of mining sites. These models aid in volumetric calculations, site planning, and monitoring of mining activities. Drones also provide a safer and more cost-effective alternative to traditional land-based surveys, as they can access hard-to-reach areas, reducing human risks and surveying time.

## Mobile Mapping Systems

Mobile mapping systems, mounted on vehicles, are ideal for collecting data in large-scale mining operations. These systems combine multiple sensors such as laser scanners, cameras, and GNSS, to collect precise data while driving through a mining site. Mobile mapping systems offer fast data collection and can generate accurate 3D models and terrain maps, enabling efficient planning and analysis of mining activities.

Choosing the right mining survey equipment depends on the specific requirements of the mining project. Factors such as site conditions, project scale, and budget considerations should all be taken into account. However, investing in cutting-edge technology like total stations, GNSS/GPS systems, 3D laser scanners, drones, and mobile mapping systems undoubtedly enhances surveying accuracy, efficiency, and safety.

Mining survey equipment facilitates precise data collection, streamlines operations, and enables informed decision-making in the ever-evolving mining industry. The technological advancements brought by these tools are transforming surveying practices, allowing mining companies to optimize their resources and improve productivity. By investing in the best mining survey equipment available, companies can position themselves at the forefront of industry innovation while ensuring sustainable and profitable mining operations.





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# Pickstone Mine project



Hems Africa Engineering is a renowned Engineering firm based in Zimbabwe with over 24 years of exceptional service. Its expertise lies in SMPP Projects, specializing in structural steelwork, mechanical engineering, piping, and plate work.

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Hems has offices in Harare, Bulawayo, South Africa, and also has interests in Zambia. Their capabilities extend to handling engineering SMPP or Turnkey projects of any size in the SADC area, as evidenced by their extensive

portfolio of high-value projects.

In 2021, Hems was awarded a contract to equip Pickstone mine, a project that was recognized as one of the largest in the country and would contribute significantly to the mining industry's output.

The project commenced in early 2022 and its scope entailed both surface and underground equipping. Surface equipping being the headgear, surface conveyor, bank screens, a 2500mm diameter sheave, jack catch boxes, bank steelwork, ore chutes to the conveyor, winder house, ore bin and mechanical

installations.

The steel works on surface conveyor structures and mechanicals, including the installation of a conveyor vee pulley, were completed in 2 months, overcoming adverse weather conditions. The Underground scope of works entailed stripping old, disused structures and equipping them with new equipment for the shaft and tunnels. The shaft stripping and equipping was from surface to 5.5 level, involving extensive development works being side wall supporting, shaft collar civils, shaft steel equipping, compressed air pipe fixing, shaft water pipe fixing, shaft electrical cables fixing, fabrication of kibbles and Galloway stage.

*Hems Africa Engineering was awarded a contract to equip Pickstone mine, a project that was recognized as one of the largest in the country*







Additionally, our team successfully completed the loading station steel structure civil works, 40m conveyor structure and mechanicals, rail tracking from the 2nd level to the 4th level, and shaft gates modification from the 2nd level to the 5th level within the specified time-frames, despite challenges such as water pumping and falling grounds, blockages, bad ground, and water. The total works took 9 months due to blockages and removal of rubble, considering that the Southwell shaft had been

decommissioned since 1973 this a notable milestone

Hems Business Development Manager Mr Oscar Msowa said that Hems takes pride in its commitment to safety, quality, and customer satisfaction. To ensure the safety on site the team followed strict SHE policies and procedures and maintained a competent team of 80 passionate and resilient individuals in place throughout the project. The project was completed and commissioned without any injuries or

fatalities.

The mine is currently running and all installations are working up to the required specifications to the satisfaction of the client.

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# Advancements in Mine Ventilation Systems Prioritize Safety, Efficiency, and Sustainability

**A**s of 2023, advancements in mine ventilation systems continue to prioritize worker safety, energy efficiency, and environmental sustainability. Here are some of the new methods and technologies being adopted:

## Advanced Air Monitoring

High-quality air monitoring systems are being integrated into mine ventilation systems. These systems use advanced sensors and data analytics to continuously monitor air quality parameters such as gas concentrations, humidity, temperature, and particulate matter. This helps to detect and prevent hazardous conditions, allowing for timely interventions.

## Real-time Ventilation Control

New ventilation control systems enable real-time adjustment of airflows within the mine based on the changing requirements. Sophisticated algorithms and sensor networks automatically optimize the airflow, minimizing energy consumption without compromising worker safety.

## Refrigeration and Cooling

Underground mining operations are implementing more efficient refrigeration and cooling systems to maintain a comfortable working environment in deep and hot mines. These systems use advanced cooling technologies such as chilled water, air conditioning, and ice

storage to provide a cool and safe working environment for miners.

## Computational Fluid Dynamics (CFD)

CFD modeling is being extensively used to simulate and analyze airflow patterns, heat transfer, and contaminant dispersion within mines. CFD helps in designing and optimizing mine ventilation systems by predicting airflow behavior and identifying potential issues like stagnant zones or hotspots.

## Alternative Power Sources

Mine ventilation systems are increasingly powered by renewable energy sources like solar panels and wind turbines. This reduces the reliance on traditional power sources, lowers carbon emissions, and ensures a sustainable source of energy for the operation.

## Smart Airflow Management

Smart ventilation systems deploy intelligent sensors and control devices to actively manage airflow in different areas of the mine as per the real-time demand. These systems utilize advanced algorithms and automation techniques to ensure that the right amount of air is delivered to specific work areas or zones, optimizing ventilation efficiency.

## Underground Air Purification

Underground air purification systems are

gaining traction to reduce the exposure of miners to harmful contaminants and improve overall air quality. These systems utilize technologies such as electrostatic precipitators, activated carbon filters, and HEPA filters to capture and remove dust, gases, and airborne pathogens.

## Integration of IoT and AI: Internet of Things (IoT) and Artificial Intelligence (AI)

technologies are being integrated into mine ventilation systems to enable intelligent monitoring, control, and predictive maintenance. IoT devices and AI algorithms improve the efficiency and effectiveness of ventilation systems by analyzing real-time data, detecting patterns, and making informed decisions.

These new methods and technologies in mine ventilation aim to ensure safer working conditions, increase energy efficiency, and reduce the impact on the environment. They represent a continued commitment to innovation and continuous improvement in the mining industry.







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# Definition of surveyors, embracing technology, adoption certificate of competency highlighted AMSZ AGM



**E**mbracing of technology and artificial intelligence in surveys, the adoption of certificate of competency and defining surveyors in the mines bill highlighted proceedings at the recent Association of Mine Surveyors of Zimbabwe (AMSZ) annual general meeting and conference which was held in Victoria Falls last month.

The AMSZ pledged to work flat out to ensure that the mines surveyors are clearly defined and their duties clearly articulated in the Mines and Minerals Bill.



*Tahwa with Matyanga*

## Definition of surveyors and competency certificate

Speaking at the event the AMSZ President Mr. Gabriel Mwale said the Association was going to ensure that the mines bill is made better for mine surveyors and that their roles and qualifications be included in the bill for clear management of surveyor's work. He said the previous bill did not clearly define the work and role of mine surveyors and what qualifications they should hold.

Mwale also said that AMSZ is working to ensure that all practising mine surveyors

have a certificate of competency which allows them to demonstrate that their level of competency is comparable to others who hold the same qualification as per international standards.

Mwale said AMSZ was ready to protect the mine survey institution in Zimbabwe through aligning survey work with the country's laws. He said it was of importance for the Mine Surveyor to be clearly defined by the Mines and Minerals Amendment Bill. He said to protect the mine survey industry the Mine Surveyors certificate of competency should be made a requisite for all mine surveyors in Zimbabwe. "We were able to participate in the mines draft bill and they are things that we were worried about, the bill was silent on the mining cadastre. As surveyors we are also not sure what our qualifications should be, we need to be sure to protect our industry. We need one definition which clearly defines a mine surveyor. The Mines Surveyors Certificate of Competency is" issued in accordance with the provisions of the Mines and Minerals Act and the regulations framed thereunder". It empowers mine surveyors who pass the prescribed examination to practice as Mine Surveyors in Zimbabwe just like land surveyors. Land Surveyors are defined by the Land Act and what they do is defined in that Act. We will make sure that the mines bill is made better for surveyors," Mwale said.

## Embracing technology

Speaking at the AGM the Ministry of Mines and Mining Development's Chief Director

of Technical Affairs Mr Charles Simbarashe Tahwa urged the Association to embrace technology to ensure that the profession is not left behind with technological advancement which is fast becoming a determinism factor in every sector.

"Of course, today's mine survey is an exact science. If we don't embrace it, we will be as sure as the sun will rise tomorrow, we will be left behind. If we don't embrace it, it advances and leaves us behind. So, we are seeing more and more inter-credit systems and applications that are coming. Things that make life easy," Tahwa said.

Tahwa also encouraged the AMSZ to transform their association into an institution that will direct and control the activities of mine surveying in Zimbabwe to ensure they remain relevant and up to date with the changes in technology.

He said the AMSZ should partner with institutions of higher and tertiary learning such as the Zimbabwe School of Mines (ZSM) to ensure that surveyors are up to date with new skills and technology of the industry.

Tahwa also said the Association needs to come up with some strategies that will make it relevant to the international community. He said the Association needs to establish set standards that are acceptable to international groups seeking to monitor the activities of the mining industry.

## Softening commodity prices affecting mining

Speaking at the AGM the Chamber of Mines of Zimbabwe technical affairs Manager David Matyanga said the growth and development of the mining sector in line with the government's vision to achieve an upper-middle-income economy by 2030 is most likely going to be impeded by thin capital markets, high-cost structure and the decrease in commodity prices.

Matyanga said the growth realized by the mining industry over the years is at risk due to these factors.

"Capital markets remain thin, the cost structure high and with softening commodity prices, likely to inhibit growth realized over the years is at risk," Matyanga said.





According to Chamber, the country's mining sector has been resilient and has recorded significant growth over the years.

"The sector faces some headwind that is inhibiting higher levels of growth.

"While the geology and mineral endowment is attractive, the policy environment has significant room for improvement to usher competitive environment for enhanced investments across the mineral supply value chain," The Chamber said.

#### From the old coordinate systems to the new standard

Mr Charles Simbarashe Tahwa said that Zimbabwe is in the process of standardising the old coordinate systems to the new standard.

"We just want to move away from our traditional old archaic system to a new digital platform. It's easy to do, the ease of doing business, and all our neighbours are on that front, and we are the ones that are still lagging. One of the key issues is that

we have to now standardize the coordinate systems that we use. And I'm sure you should be well aware of which system we are going to be using," Tahwa said.

#### Kazungula bridge visit

As part of its AGM the AMSZ visited Kazungula Bridge to appreciate the survey work and technology work at the bridge which excited them for incorporation into the mining industry. AMSZ President Gabriel Mwale said his Association visited the bridge to appreciate the technology and artificial intelligence used at the bridge.

Secretary-General for AMSZ Takunda Mubaiwa said the association was also there to appreciate structural integrity on the survey side of the bridge and take the initiative back to the mining survey.

"We are here to appreciate the structural integrity on the survey side of things and take this initiative to be our technical tour," Mubaiwa said.

Council member Mr Stewart Gumbi

speaking at the visit said "We are here at the Kazungula Bridge, the bridge that connects three countries. We want to appreciate part of the civil engineering and engineering survey that goes into building such infrastructure of this size. This is more akin to what surveyors have to deal with in terms of engineering surveys when they do engineering surveys and infrastructure development in conjunction with civil engineers at mining sites. So we are here to appreciate, this at a much larger scale, but we want to appreciate what goes on in terms of engineering surveys in developing infrastructure development.

The 923-metre-long (3,028 ft) by 18.5-metre-wide (61 ft) bridge has the longest span of 129 metres (423 ft) and links the town of Kazungula in Zambia with Botswana and Namibia.

The two-day event was attended by Mine surveyors from large and junior miners, survey equipment suppliers mostly from South Africa and stakeholders from the mining industry. Most prizes from the question and answer segment were bagged by Unki's Wayne Silunde.







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# 5 Advanced Dust Suppression Methods Employed in 2023



**D**ust suppression has become an increasingly essential practice in various industries due to the detrimental effects of airborne particles on both human health and the environment. As technology continues to evolve, novel methods have emerged to combat and control dust more effectively. In this article, we will explore five advanced dust suppression methods that have gained traction in 2023.

## 1. Electrostatic Dust Suppression

Electrically charged fine mist particles form a cloud around dust particles, creating an electrostatic attraction. This causes the dust to settle faster, reducing its ability to become airborne. Electrostatic dust suppression systems are now being used extensively in construction, mining, and manufacturing industries, providing efficient dust control while minimizing water consumption.



## 2. Fog Dust Suppression

Fog cannons play a crucial role in dust suppression by emitting a fine mist, which captures and suppresses airborne dust particles. The fog produced by these systems utilizes a combination of air pressure and water to create tiny droplets that effectively agglomerate with dust, making them too heavy to remain airborne. This technique has found extensive application in large-scale open-pit mining sites, quarries, and demolition projects.

## 3. Dry Fog Dust Suppression

Dry fog systems utilize innovative technology to produce micron-sized droplets without the need for excessive water usage. These fine droplets envelop dust particles, causing them to fall out of the air. This method offers several advantages, such as minimal water consumption, the ability to target specific dust-generating areas, and reduced risks associated with high humidity. The versatility and efficiency of dry fog systems have made them a popular choice across various industries, specifically in power plants and bulk handling facilities.

## 4. Natural Fiber Dust Control

In recent years, advancements have been made in using natural fibers, such as cellulose and lignin derivatives, for dust suppression. These biodegradable and eco-friendly fibers can be applied as surface coatings or mixed with soil to

reduce dust emissions from unpaved roads or construction sites. Natural fiber dust control methods have gained popularity due to their low environmental impact and cost-effectiveness.

## 5. Nanotechnology-based Dust Suppression

Innovations in nanotechnology have led to the development of dust suppression agents that target and neutralize dust particles at a microscopic level. Nanoparticles help improve the stability and longevity of dust suppression agents while enhancing their effectiveness in capturing and agglomerating dust particles. These agents can be applied as surface coatings, additives in construction materials, or as sprays, offering versatile options for different industries.

As the world becomes more conscious of the harmful effects of airborne dust, industries are embracing advanced dust suppression methods. Electrostatic systems, fog cannons, dry fog systems, natural fiber-based solutions, and nanotechnology-based dust suppression agents have emerged as efficacious approaches to controlling dust in 2023. These innovative methods not only enhance worker safety but also contribute to minimizing environmental pollution, making them vital tools for industries across the globe.



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# Minerals and Location found in Zimbabwe

Agate	Nyamandhlovu, Chikomba, Lupane
Aluminum	Mutare, Nyanga, Mwenezi
Amazonite	Nyamandhlovu, Rushinga
Amethyst	Nyamandhlovu, Hurungwe, Hwange, Makonde, Lupan
Antimony	Kwekwe, Bubi, Mberengwa, Kadoma, Shurugwi
Arsenic	Bubi, Shurugwi, Mutare, Gwanda
Asbestos	Masvingo, Gwanda, Matobo, Mberengwa, Insiza, Makonde, Umzingwane
Aventurine	Masvingo, Beitbridge
Barites	Kwekwe, Mwenezi
Beryl	Hurungwe, Kariba, Goromonzi, Harare, Mudzi, Rushinga, Mutoko, Bindura, Marondera, Gutu, Buhera, Bikita, Chegutu, Hwange, Mberengwa, Gweru
Bismuth	Gwanda, Insiza, Goromonzi, Hwange
Cesium	Mudzi, Bikita, Goromonzi
Calcite	Hwange, Bindura, Chiredzi, Mwenezi
Chromium	Mberengwa, Guruve, Makonde, Gweru, Kwekwe, Shurugwi, Chegutu, Kadoma, Gwanda, Insiza, Masvingo, Chirumanzu
Citrine	Marondera, Harare, Goromonzi
Clay	Harare, Bulawayo, Gwanda, Gweru
Coal	Gokwe, Chiredzi, Beitbridge, Mwenezi, Hwange, Lupane, Binga, Kariba, Hurungwe, Bikita
Cobalt	Kwekwe, Insiza, Shamva, Bubi, Bindura
Copper	Makonde, Kadoma, Mutare, Chirumanzu, Chegutu, Kwekwe, Shurugwi, Beitbridge, Gokwe, Bindura, Chipinge, Bikita, Insiza, Makonde, Harare, Bulawayo, Shamva, Chiredzi, Nkayi, Mudzi, Chegutu, Bindura, Kwekwe, Hurungwe, Bubi, Makonde, Bikita, Gwanda, Masvingo.
Cordierite	Hurungwe, Beitbridge, Chimanimani, Rushinga, Makuti
Corundum	Beitbridge, Chiredzi, Shurugwi, Marondera, Mberengwa, Mazowe, Rushinga, Insiza, Goromonzi, Wedza, Makoni
Diamond	Gweru, Bubi, Beitbridge, Binga, Mwenezi, Mutare, Chivi
Diatomite	Hurungwe
Dolomite	Mutare, Beitbridge, Makonde, Mudzi, Masvingo, Rushinga.
Emerald	Gutu, Masvingo, Insiza, Mberengwa, Hurungwe.
Feldspar	Harare, Bikita, Umzingwane, Goromonzi
Fireclay	Hwange, Chiredzi, Kwekwe, Lupane, Nkayi, Kadoma, Kwekwe
Flint clay	Mwenezi, Beitbridge
Fluorite	Hwange, Guruve, Binga
Garnet	Beitbridge, Hurungwe, Mudzi, Guruve, Rushinga, Marondera
Graphite	Hwange, Hurungwe, Kariba, Makonde
Gypsum	Beitbridge
Gold	Every district in Zimbabwe
Iron	Kwekwe, Mberengwa, Harare, Kwekwe, Buhera, Gweru, Charter, Chiredzi, Masvingo, Mazowe, Kadoma.



# Minerals and Location found in Zimbabwe

Jade	Masvingo
Kaolin	Kwekwe, Mutare, Bubi, Hwange, Kadoma, Mazowe, Harare, Umzingwane, Nkayi, Chegutu
Kainite	Hurungwe, Nyanga, Mudzi, Rushinga
Lead	Mberengwa, Kwekwe, Gokwe, Mutare, Wedza, Hwange
Limestone	Mberengwa, Gwanda, Bindura, Shamva, Mazowe, Kadoma, Umzingwane, Gweru, Chegutu, Chimanimani, Mudzi, Harare, Hurungwe
Lithium	Goromonzi, Mudzi, Buhera, Bikita, Chegutu, Hwange, Harare, Insiza, Rushinga, Mutoko, Mutare, Hwange
Magnetite	Gwanda, Nyanga, Kadoma, Mwenezi, Insiza, Buhera, Mberengwa, Beitbridge, Gweru
Manganese	Kwekwe, Gweru, Makonde, Mberengwa
Mercury	Bubi, Kadoma
Mica	Hurungwe, Rushinga, Kariba, Hwange
Molybdenum	Kwekwe, Insiza, Shurugwi, Makonde, Chipinge, Gweru, Mutare
Mtorolite	Guruve, Mutare
Nickel	Bubi, Makonde, Kwekwe, Insiza, Guruve, Shamva, Shurugwi, Matobo, Chegutu, Bindura, Gweru.
Ochre	Gweru, Kwekwe
Palladium	Kwekwe, Makonde, Shurugwi, Chegutu
Phosphate	Buhera
Platinum	Kwekwe, Makonde, Shurugwi, Chegutu, Centenary
Pyrite	Shurugwi, Gwanda, Mazowe, Kadoma, Bulilimangwe, Shamva, Hwange.
Salt	Mwenezi
Sapphire	Mudzi
Selenium	Makonde
Silica	Gweru, Kwekwe, Makonde, Chegutu, Gokwe, Harare, Goromonzi
Sillimanite	Hurungwe
Silver	Makoni, Makonde, Kwekwe
Talc	Bubi, Guruve, Insiza, Nyanga, Mutare, Mt Darwin, Mberengwa, Goromonzi, Mutoko, Wedza, Kwekwe, Makoni
Tantalum	Hurungwe, Guruve, Kariba, Mudzi, Mutoko, Shamva, Bindura, Harare, Goromonzi, Murehwa, Mt Darwin, Rushinga, Mazowe, Marondera, Gutu, Masvingo, Buhera, Bikita, Mutare, Hwange, Chivhu, Mberengwa, Chimanimani, Makoni, Insiza
Tin	Hurungwe, Mudzi, Shamva, Bindura, Goromonzi, Harare, Rushinga, Mt Darwin, Nyanga, Gutu, Bikita, Hwange, Masvingo, Mutare
Topaz	Hurungwe, Gweru, Mutare
Tungsten	Hurungwe, Kariba, Shamva, Mazowe, Rushinga, Bindura, Guruve, Mt Darwin, Harare, Mudzi, Goromonzi, Bulawayo, Insiza, Matobo, Gwanda, Umzingwane, Bubi, Buhera, Mberengwa, Kadoma, Bikita, Shurugwi, Mutare, Chipinge, Chegutu, Kwekwe, Chiredzi, Wedza, Gweru, Hwange, Masvingo, Makoni
Vanadium	Mt Darwin, Guruve, Bulawayo
Vermiculite	Buhera, Mudzi
	Zinc
	Kwekwe, Gokwe, Nyanga



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