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IN ZIMBABWE

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Minining Industry

Ready for Women's Inclusion?



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Reap the rewards of an industry poised for remarkable growth



Keith Sungiso

THE CLEAR PERSPECTIVE



In an industry traditionally dominated by men, the invaluable contributions of women in Zimbabwe's mining sector deserve recognition and applause.

From technical roles to administrative positions, mine ownership, women have been breaking the set barriers, challenging stereotypes, and driving positive change. Their resilience, expertise, and dedication not only enhance the industry's diversity but also enrich its collective expertise.

As we acknowledge Women's month Mining Zimbabwe has taken the opportunity to provide our platform for women in the industry to tell their story.

From Mining Engineers, Metallurgists, Geotechs, and many more we celebrate the remarkable achievements of women in this tough industry.

Their passion, talent, and leadership serve as a beacon of inspiration for future generations, showcasing the transformative power of inclusion and equality.

Here's to the remarkable women shaping the

future of mining in Zimbabwe and paving the way for a more inclusive and equitable industry.

I am immensely grateful for the support rendered by our sponsors, contributors, advertisers, and readers who make it possible for us to bring you issue after issue, month after month.

Happy reading, and may your ventures be prosperous!



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Is the Mining Industry Ready for Women's Inclusion?



The Mining Industry for a long time has been labelled as “a men’s only world.” In line with changing social trends which have seen women step up and occupy both technical and administrative roles across industries, the Mining Industry has also opened to promote the recruitment of women across all professions.

By HR Manager

For a while now, the industry has been measuring its performance in the drive to incorporate women as a percentage of the total headcount. Using the percentage measure most mines have struggled to go beyond 10%. Any mine with more than 10% female employees I viewed to be doing well in the gender diversity element. 10% is at face value a very low performance mark however in this case we are applauding it because we are coming from a background where it was possible to find percentages close to zero.

Now that the presence of women in the mining industry is no longer an element of debate and all mines are now tracking this diversity factor, it is time we evaluate experience hence the question Is “the Mining Industry ready for Women's Inclusion? “

This article serves as an evaluation of the

experience of the few women in the mining industry with a specific focus on the challenges raised by some women. It has been noted that the experience of women in the mining industry cannot be generalised as it differs from company to company and from person to person. When solicited for perspectives a mixed bag of satisfaction, dissatisfaction, frustration, disappointment, and disgust was recorded. Some women expressed contentment satisfaction as well as a sense of career fulfilment.

Those with positive experience were largely doing administrative work and stationed at Head offices or administrative centres. Those who are in the technical fields were the most critical in terms of their experience sharing their struggles in trying to be assimilated into this male-dominated world. Most women engaged for experience perspective acknowledged that the industry had made strides in increasing their numbers, but more still needs to be done to make them feel at home and part of the mining community. They feel the “Mining industry software” (Mindset) is still designed for male employees and it needs to be redesigned to be unisex.

Below are comments from some women engaged largely sharing their challenges and opportunities for improvement;

- There are two types of men in the mining industry. The first group supports change and sees the value in it. To them, women in mining bring diversity and play a complementary role in achieving greatness. These individuals play a significant role as change agents and make women's integration and inclusion much easier and quicker. The other group of men continue to enforce stereotypes, which works against the spirit of gender diversity. They will not voluntarily share their knowledge and experiences with women in mining. This group of men are reluctant to incorporate and actively support women as they pave their careers in the industry.

- Some women feel the treatment of pregnancy and maternity leave remains an area shrouded in stigma, discrimination, and stereotypes. Some managers/supervisors are not socially and professionally equipped to manage women-employee relations with reference to pregnancy and nursing women. One woman was told, “If you want to have kids, do not study engineering”. Such sentiments may instil doubt and fear in women who are already dealing with some gender-specific challenges. It is therefore important to include the topic of diversity management in any supervisory or managerial development program.

- Some women lamented that work-life balance is difficult to achieve in the mining industry. Working continuous overtime with some meetings being conducted after normal working hours when a woman must attend to her motherly duties is frustrating. Being requested to consistently put up longer hours and extended meetings exerts more stress and pressure on women because it significantly reduces their mothering at home. There was an observation that the location of some mining operations doesn't support family setup hence it takes women away from their families for the duration of their working period. They agonisingly become remote or telephone mothers thereby compromising the quality of their preferred motherhood.

- Recreational activities in mining mostly favour men, for example, golf, late-night cocktails and cycling. When a woman decides to join these activities, they are sometimes stereotyped that "they love men". Some mines have done less to ask women what recreational facilities they would prefer and establish women-friendly social ecosystems. The current mining industry's social amenities encourage and pressure women to fit into the man's world instead of being allowed to be themselves and avail women-friendly recreational facilities.

- An observation was made that most Personal Protective Equipment (PPE) are often not designed for women in mining, with belts, overalls, work suits and shoe sizes remaining a problem to suit women.

- Most facilities are inadequate, uncomfortable and do not meet women's needs. Typical examples of facilities for women will be long mirrors, hair driers and sanitary bins in the change houses on the surface and underground toilets. It is very hard to change sanitary wear underground and most women indicated that they always wear double sanitary towels to prevent incidents. The toilets do not have sanitary wear for women to use in case of unexpected menstrual periods. Women who are breastfeeding have challenges with expressing milk at work due to lack of proper facilities and they resort to expressing in cars or toilets which is not hygienic.

What can the mining industry do to prepare the inclusion of women?

Maintaining diversity requires solutions and innovations that ensure a woman's comfort and inclusion while maintaining

her dignity and femininity in the industry.

- Embracing a culture of inclusion is critical to ensuring that diverse talent is strategically managed and nurtured to deliver successful business outcomes. Diversity and inclusion should be part of the key values and development of Diversity and Inclusion policy.

- Diversity and inclusion training for both men and women in mining is essential. The training will reframe the attitudes and demystify the stereotypes some men have about women in mining.

- Redesign PPE clothing to attract women. The mining industry needs to design, and supply fit-for-purpose protective clothing for women, for example, two-piece overalls, maternity overalls and PPE suitable for women.

- Enhance the work environment with flexibility of working hours. Adoption of hybrid work arrangement is crucial to ensure that women balance their home and work needs.

- There is a need to understand the context in which current mines operate regarding women workers and what are the requirements to change the industry's male-oriented set-up based on a changing mine personnel profile. For example, how work is organised in underground mines often relies on the physical capacity of an individual to do work. In contrast, the mining industry should be exploring ways to make mining more suitable for the 21st-century workforce that accounts for women. The mining industry needs to re-engineer aspects of the job and leverage on mechanisation and automation, which can enable more women to work more efficiently in the

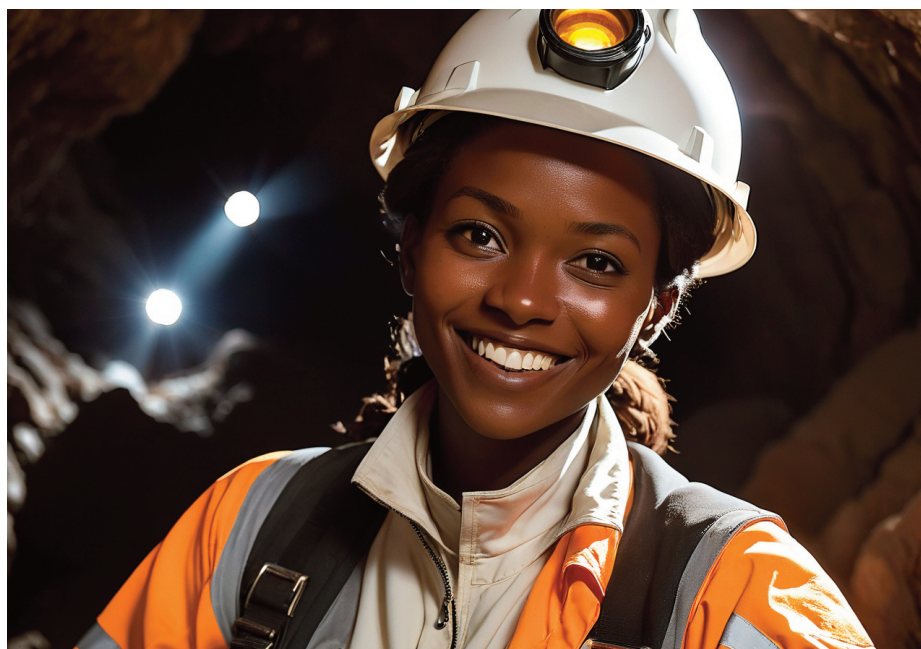
operations of the mines.

- Establishing Women in Mining Committee in the organisation and countrywide to create an empowering network to inspire, support and develop the progression of women working in the mining industry by providing access to education, skills development, mentorship, and representation. Most countries have Women in Mining Committees such as Women in Mining South Africa, Women in Mining Ghana, and Women in Mining UK, just to mention a few.

- "Women in mining" champions should be appointed in Departments. Anglo Coal in South Africa, for example, has appointed female champions for each major technical and management discipline and has a special task team, also involving senior male managers, to drive progress throughout the business. Results of these efforts include the establishment of childcare facilities, the creation of suitable women-only toilet facilities and the development of a Code of Good Practice for pregnancy in the workplace. (Anglo-American Sustainable Case Studies, 2016).

- Mines have to be committed to driving employment equity goals and enhancing diversity through developing the skills of women across the organisation and improving access to career advancement opportunities. Mentorship programmes and programmes to train female mine-workers and prepare them for the working environment are crucial.

In order for the mining industry to be completely ready for women in mining, the industry must address the issues highlighted above to create a diverse and inclusive work environment.





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We Go Further...



Yeukai Mapfaka

S.H.E Manager at R Davis & Co

Who is Yeukai Mapfaka?

Thank you for this opportunity to be interviewed. My name is Linda Yeukai Mapfaka, am 30 years old, and currently employed as a SHEQ Manager at R Davis & Company. I am a results-driven internationally (NEBOSH) qualified Safety, Health, Environment and Quality (SHEQ) Manager with 6+ years' experience in underground and open cast mining (loading, hauling, drilling, and blasting). I also have experience in civil construction (water and sewer works, tailings dam and building construction), earthworks and heavy equipment safety and tender processing. My expertise is in developing and implementing SHEQ management systems, policies, procedures, safety programs, conducting safety audits and ensuring regulatory compliance. Adept at coaching managers and employees on safety policies, procedures, and safety best practices to achieve established safety goals and maintain a safe and healthy work environment.

Your educational background includes a Master's in Environmental Health and a Post Graduate Diploma in Sustainable Project Management. How have these qualifications shaped your approach to Safety, Health, Environment, and Quality (SHEQ) management?

My educational background enhanced my approach to SHEQ management for the

better. Previously I only worked with set standards, targets, and objectives, however after educational advancement, I then understood the project cycle from the start up to the end of the project, how to mobilise resources, solve complex conflicts and how to deal with special groups. All that I have mentioned has turned me to use a proactive approach to SHEQ management, putting in place controls prior to any complaint, gap or accident. Also, I learnt to appreciate the importance of continuous improvement within a system which I then implemented within our system. The advancement also gave me confidence in making decisions, I can now make analysis and decisions for SHEQ systems management easily.

With a focus on underground and open-cast mining, civil construction, and heavy equipment safety, how do you integrate your experiences into creating comprehensive SHEQ management systems tailored to the diverse projects at R. Davis & Co?

One thing I love about safety is that it is the same regardless of the industrial sector, what changes is the approach, and governing regulations. I am strongly guided by ISO standards as the principles are uniform across all sectors. There are universal national regulations for example Environmental Management Act, these also cut across all,

making it easy to apply across all R Davis & Co. projects but the difference will only be the controls to be implemented depending on work scope and working areas. Then there are other regulations which are sector-specific for example SI 109 of 1990 which deals with mining only, in these cases, I then integrate sub-sectionally within our system. I depend more on standards, laws, and regulations, these help to create a system, knowing which fits where that is when I apply my experiences.

You have a Certificate in Hazard Identification and Risk Assessment. Can you provide an example of how you applied this knowledge to mitigate potential risks in a specific project?

I had one project which requested me to close out a main public road for a certain period then reopen it and still work along that road again. Closing was not a challenge but working along the road with high traffic was very risky, it required my team and the motorists to be alert always or else we risked having one employee run over by a vehicle. I had to do a baseline risk assessment and then engage everyone involved for their input. After identifying all the hazards and risk severity of each I then implemented controls which included visible caution signage, safety nets, flag men etc. I am glad no incident was recorded on that project.

In your role as SHEQ Manager, you've been successful in establishing a department and a SHEQ management system for R. Davis & Company. How did you approach this task, and what were the key challenges you faced?

I took courage on that one, I joined the company when there was no SHEQ department no SHEQ management system and I was just a site SHEQ officer not based at the head office. However within my first month, I just told the project manager then that I could not continue working like this, I needed a SHEQ management system, and I will establish it for the company. I then contacted the executives and shared my concerns which they approved, and I started to create policies, procedures, and everything for the systems. As for challenges, they were less, and I thank the executives because they were supportive. The major challenge that I faced was resistance from some employees who had negative safety behaviour, but through persistence, and more awareness I managed to overcome that.

With expertise in root cause analysis, how do you systematically identify and address the root causes of accidents to prevent recurrence?

Firstly, I established an Accident/Incident reporting and investigation procedure. This guides how all accidents are investigated within the company and who will be part of the investigation to ensure

all factors are captured. After gathering all facts, the investigation team then thoroughly goes through all scenarios leading to the accident, a tripod is done and after that, we use the five-why system to identify the root cause. After identifying the root cause, we then put control measures through an action plan and ensure follow-up on actions to prevent recurrence, and the final report is communicated to all employees to alert them and educate them.

Achieving 2,500,000 Lost Time Injuries free man worked hours is a marvellous accomplishment. What strategies and initiatives did you implement to achieve such a remarkable milestone?

First, I did a gap analysis, gave myself time to study people's behaviours, and understood how all the processes work, the types of equipment within the company through observation, inspections, interviews, and interactions. I then aligned it with the standards and best practices that I need to match up with so that I achieve zero LTI. When the gap was now fully established, I then formulated action plans and targets company-wide, site/project-specific, section or department-specific. Among other measures I targeted, training was at the top. Some of the trainings included the following, Safety culture building, Safety awards, Behaviour-based training, and know-your-machine training. All these trainings contributed to building a positive safety culture and behaviour, every

individual got to appreciate safety, a brother's keeper environment was created, and everyone is now safety cautious. I also introduced the safety award system where people would put effort to work safely to get the awards. Above all this was a team effort and I am grateful for the support that I always receive from my team.

Maintaining 100% SHEQ satisfaction during the project tendering process is impressive. How do you ensure that SHEQ considerations are seamlessly integrated into the company's overall project planning and execution?

From the tendering stage, I am always involved, I prepare all SHEQ-related documents requested for the tender meaning I get to understand the potential client SHEQ management system, the project, what it is all about, location, time of equipment to be used and number of employees. From that information I then work on a SHEQ budget for that project, encompassing all the safety-related items that will need money. So, when the initial project is awarded, I have a draft budget already and a better understanding of what is needed for the project to run smoothly, and I always ensure that the site is established incorporating all those safety issues. Also, I always engage and interact with the project managers and supervisors and all employees from the start of the project up to the end this helps to keep all of us on the same level of safety thinking.

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Your ambition is to ensure zero harm across all mines. What specific measures or initiatives do you plan to implement to achieve this goal, considering the unique challenges posed by small-scale mining operations?

Firstly, let me tell you where I drew my ambition. I grew up in the mining town of Shurugwi where there was rampant small-scale mining. When I was young, I lost people close to me who could have survived if only a little bit of safety had been considered. Living and interacting with small-scale miners taught me a lot from them but one thing I noticed is that almost 90% of them lacked basic safety knowledge. They did not understand what safety is, for example how a safety hard hat can save them or how they are risking their respiratory system with too much inhalation of dust. I am certain that if these miners are given basic safety knowledge, they will know that dust masks can save lives so do hard hats. Given an opportunity I plan on more awareness campaigns, basic free safety training on risk assessments, hazard identification, right tools to use. Many are dying in these mines because they failed to assess if it was safe to proceed or not. I will also introduce inclusion or participation. I feel we need to understand these miners, some are risking due to financial pressure. There is a need for mental health counselling to help ease the pressure, reassuring them that everything will be fine. I would also push for a subsidised personal protective clothing and equipment mechanism because currently purchasing PPE/C is expensive and these small-scale miners cannot afford it. My other initiative is to introduce safety education from even primary school level. Safety is required everywhere so if we catch them young, they will grow up appreciating good safety practices which they will execute during their small-scale mining operations, lessening the fatalities and injuries being recorded currently. I also aim to have an organisation which will venture into free consulting services, PPE donations like what gender and vulnerable organisations do. I feel like as it stands, we are closing one door but opening the other one at the same time because more vulnerable children are created as more children are losing their parents to small-scale mining operations accidents.

Can you elaborate on how you adapt your SHEQ management approach to meet the specific needs and challenges of different projects and clients, especially in the mining and civil

construction sectors?

Most of my decisions are based on best practices so is our system and the system is aligned to ISO standards which most of our clients use. This makes it easier to blend or to absorb the client's needs as it will be within the standards. However, there are some challenging needs requested by clients. When I face such a situation, I always assess the risk involved, if it puts any of the three at risk, people, machines or the environment and it cannot be controlled then I refuse and find safe ways of doing it. There is always a safe way of doing everything.

Given your experience in conducting internal legal compliance audits, how do you stay informed about evolving legal requirements and ensure continuous compliance within the company?

I always stay informed by visiting monitoring websites be it government, agencies, or regulatory bodies for example NSSA, EMA, ILO etc and I love the news so if anything new pops up I know I will find it through any of the news channels. I also attend conferences and events, like the NSSA annual SHAW conference. This helps me to get insights on the latest regulations and how best to interpret them. As for ensuring continuous compliance within the company I have integrated regulations into the company's internal processes and adapted the processes, this has worked always to ensure ongoing compliance. Also, I ensured the promotion of a compliance culture through training and workshops.



In your major projects summary, you've worked on a variety of mining and civil projects. Can you share an example of a challenging project where your SHEQ expertise played a crucial role in its successful completion?

This one was a mining project located in a forest where wild animals ranging from lions, elephants, and painted dogs were present. Wild animals are not manageable and it is illegal to kill them especially when you are the one who has invaded their natural space, so killing was out and quitting the project was not an option. The

only option was to put in place measures which allowed working in harmony with nature among other measures included setting speed limits, noise limits, studying animal paths and their drinking times and behaviour. This was a difficult period, it took a lot of training for all employees to understand the risks involved, how to behave, the importance of prompt communication and everything. I am glad we successfully completed that project with no recorded injury or fatality due to wild animal attack.

What three things do you tell any team before starting work?

I don't tell them three things rather just say one sentence "Let us protect the people, the machines and the environment". This will just alert and/or remind them that risk assessments, machine checks etc. must be done to keep safe.

What should be made compulsory in terms of SHEQ at ASM mines?

"Basic safety knowledge", like what they say knowledge is power, if one has just basic safety knowledge, they will know how to identify hazards, do risk assessments, and know what to use and how to safely use them. A lot of people are injured or dying at these ASM mines due to lack of knowledge on how to control the hazards associated with their operations.

Lebo wishes to follow your career path, what is your advice to her?

My advice to her is "Go for it Lebo, I cannot promise you that it will be easy, you will face intimidation, resistance, and rejection but may that not demotivate you, rather it must be your motivation. Another thing you must not hesitate to make decisions, as a safety personnel the ability to make quick sound decisions is crucial and it saves lives and ensures sustainable environmental management for future generations.



Besides what is Yeukai into?

Am an entrepreneur (importing goods from all over the world) and a farmer based more on poultry.

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Unveiling the Journey of Vimbai Bashukwa - Mine Planning Engineer, ZIMPLATS



Vimbai Bashukwa

Who is Vimbai Bashukwa?

Vimbai was born 30 years ago in the mining district of Zvishavane. She graduated cum laude from the University of Zimbabwe with a degree in Mining Engineering in 2016. Her mining career began with her starting a Graduate Learnership program with Zimplats Mine in the same year. Upon attaining a Full Blasting license, she was appointed as a Mine Planner in the Technical Services Division. During this period, she reported to the Planning Engineer and was responsible for long-term planning, mine design, scenario evaluation for production optimization, and reporting. In 2021, she was reassigned to assume production roles at Mupfuti Mine as an Overseer Miner and subsequently Shift Boss. The key responsibilities were leading teams to safely produce by resourcing, planning, and executing projects beneficial to production. She then moved back to Technical Services to assume the role of Planning Engineer, one which she holds to date.

Over the years, Vimbai has attained

certification in professional development courses and software training, which are instrumental in her day-to-day roles in Mine Planning.

Vimbai is an avid reader who is enthusiastic about uplifting other people in every way possible. She spends most of her free time either playing golf or helping at her mother's farm.

How do you ensure the reconciliation of mined volumes in a mining operation? Can you provide an example from your experience?

Reconciliation of ore follows the mine-to-mill value chain. The ore milled and any stockpile inventory change and the concentrators are used to reconcile the ore delivered to the plant, against mining ore delivery measurement systems. To ensure accuracy in this process, I ensure all operations comply with the terms of calibrating all measuring systems. I then determine the crushed tonnage from the ore deliveries and the change in crushed stockpile inventory as determined by survey measurements. I obtain the hoisted tonnage from the crushed tonnage and

the change in uncrushed stockpile inventory as determined by the survey. I then compare the hoisted tonnage with the surveyed blasted tonnage and if outside allowable tolerance, investigate. I then do checks and balances on the whole value chain, and if there is a deviation outside the tolerable limits, I investigate to resolve such issues.

What is your role as a Mine Planning Engineer?

I work in the Technical Services Planning Department whose functional head is the Planning Manager. I have a team of short and long-term Mine Planners and a Planning Clerk. I am responsible for coordinating all mine planning activities centrally and for the short-, medium- and long-term planning for the mining operations. I also do scenario planning for strategic decision-making by management. My role also involves budget formulation, ore accounting, production tracking, and performance reporting. I am also involved in the technical and feasibility studies for mining projects.

Years back as a female Shift Boss leading a team of 36 members, can you share a situation where you had to address a safety concern or enforce operating standard procedures? How did you handle it and do men have an issue listening to you?

During my first days of working with my team, I had to get a support preparation team to re-do the preparation of a working area, after they had not addressed misfires and barred down the working area. I disciplined the responsible team leader and coached the other team leaders and overseer miners in my team on the dangers of high-risk tolerance, and I highlighted that I would not tolerate such behaviour.

I have had instances during my career where I faced resistance from men – I have learned to be confident, be assertive, know as much or more than they do and always ensure professional conduct.

Describe a time when you had to plan and execute capital projects. What challenges did you encounter, and how did you ensure the success of the projects?

When I was a Shift Boss, we had a ventilation shaft drilled in our section. My role was to provide mining services such as dust suppression, dewatering, and ensuring the hole did not choke by lashing out the reamed muck. This was at a time when we were experiencing equipment reliability challenges, and we had to balance between production and projects using the available equipment. I was also involved in the development of a portion of the orebody, where we were executing a mine design in which I had input during my days as a mine planner. I had to assist the team in comprehending the mine design as it differed from the one previously used.

In both projects, target setting, producing an order of priorities, communication to stakeholders, and management reviews were key to the success of the projects.

In your role as a Mine Planner, how did you approach production sequence planning and underground infrastructure development?

When planning operations, we target areas where the mining method has higher productivity and less dilution first to optimize profitability. We also track development across major structures to

avoid sterilizing a mining area and commission key underground infrastructure. We refine production schedules in the short to medium term according to available resources or infrastructure.

Given your proficiency in Maptrek Vulcan Software, how do you use it for underground mine design and optimization? Can you highlight specific features or tools that you find most valuable?

I use the Vulcan Underground tool for mine design. The tool allows me to design ramps, development drives, panels, and pillars according to mine design criteria for that area. For scheduling and optimization, I am more proficient with Datamine scheduling packages. I enjoy utilizing shortcuts in both software, which are time-saving.

How do you approach the preparation of daily, weekly, monthly, quarterly, and annual reports for both operational and executive levels? What tools or software do you typically use?

The information is structured for each audience, and we work within stipulated deadlines. I ensure coordination with stakeholders who provide input for timely report generation. Various MS Office packages are used, and we maintain accuracy using templates and a central source of information, reviewing all parameters before sending reports.



Describe a situation where you had to present complex technical information to management. How did you ensure effective communication, considering the diverse audience's background?

I have presented mine designs, ore reserves, and life of mine scenarios in our planning sessions, with diverse audiences including metallurgists, finance, human resources, and other non-technical managers. I use diagrams and plain language, providing relatable examples to express technical points clearly.

Can you discuss how your JORC Code Reporting certification has influenced your approach to reporting exploration results, mineral resources, and ore reserves?

My certification ensures transparency, materiality, and competence in reporting, enhancing understanding of reporting principles, formats, and key inputs, thus ensuring accurate and reliable reporting.

How have your certifications in Maptrek Vulcan Software and Full Blasting License contributed to your ability to plan and execute mining projects effectively?

My software proficiency aids in producing accurate plans and timelines, while my blasting license training ensures awareness of legal safety requirements, enhancing my ability to execute projects safely.

With your membership in AusIMM, how do you stay updated on the latest developments and trends in the mining industry?

I receive the AusIMM bulletin, access updates on their website, and interact with other members to stay abreast of industry developments.

Your thoughts on those who say Mining is a men's world?

Mining is not gender-sensitive but requires resilient individuals who embrace calculated risks, adapt easily, and go the extra mile, qualities not exclusive to any gender.

Chiedza wishes to be like you. What advice would you give her to help her get to your level?

Chiedza should anticipate industry challenges, never stop learning, adapt, and seek mentorship from industry pioneers breaking barriers. With determination, she can achieve her goals in this dynamic field.

Thelma Nyabanga:

Leading the Way as Acting Metallurgical Engineer at Eureka Gold Mine

Thelma Nyabanga is a 26-year-old ambitious lady who graduated from the University of Zimbabwe with her Bachelor's in Metallurgical Engineering in 2020. She completed her Master's in Mineral Processing and Extractive Metallurgy in 2023. She joined Eureka Mine in 2021 as a graduate learner and has recently been promoted to Acting Metallurgical Engineer. She is also a wife and proud mom of 2.



Thelma Nyabanga

Mining Zimbabwe had a one-on-one with Nyabanga and here is our interaction.

In your current role as Acting Metallurgical Engineer, you mention supervising and monitoring various plant operations. Can you share a specific instance where your skills in process optimization and problem-solving significantly improved plant efficiency at Eureka Gold Mine?

Well, I worked on a project where I developed a model for tracking our major consumables, which came as a major cost-saving initiative as we now get to control consumptions before they go out of hand, monitor daily and weekly consumptions against the budgeted targets, and apply corrective measures where necessary.

As a Process Metallurgist, you were involved in developing and maintaining quality assurance systems. How did you contribute to ensuring quality standards in mineral processing and any continuous improvement initiatives you implemented?

As part of process optimization, every day I conducted a thorough analysis of the processing operations, identifying areas of improvement, identifying bottlenecks, and proposing optimizations to enhance overall efficiency and product quality. I initiated continuous monitoring systems and utilized data analytics to identify trends, anomalies, and optimization opportunities in real time, which allows for timely intervention to address issues.

In your role, you monitored and adjusted

the production process using statistical process control. Could you elaborate on how statistical analysis of processing parameters and metallurgical testing results has helped in achieving set targets at Eureka?

By analyzing historical data on processing parameters such as grind, and reagents dosage, among others, we can establish control limits and early detection of deviations from set targets. This allows for prompt corrective action, therefore minimizing the impact on product quality and process efficiency.

In your previous roles, you mentioned overseeing plant operations using advanced control systems like SCADA. Can you share how these systems enhanced operational control and contributed to achieving the target results?

SCADA plays a crucial role in overseeing plant operations in mineral processing through real-time monitoring, centralized control, historical data analysis, alarm management, to name a few. And by leveraging these capabilities, set targets are achieved more reliably, efficiently, and cost-effectively, ultimately driving overall plant performance and profitability.

With a Master's degree in Mineral Processing and Extractive Metallurgy, how has your academic background influenced your approach to solving real-world challenges at the large-scale mineral processing plant?

It has helped a lot as I now have a deep understanding of the fundamental principles that drive our processes which allows me to analyze complex problems from first principles. Through coursework and research projects, I honed advanced analytical skills that enable me to systematically analyze data, identify patterns, and draw meaningful conclusions. Generally, I gained expertise in process optimization techniques like experimental design and statistical analysis.

As a leader, you have men working under you. As a 26-year-old woman, do you face any challenges or resistance working with men who at times will be ages closer to your parents?

Part of my management training was to learn interpersonal skills and communication proficiency and these skills have worked well in my favor. Most of the team are men and we have developed a good working relationship and we have mutual respect. The trick is to communicate effectively what you expect from them beforehand and clearly set targets all the while assuring them that we are a team.

With strong analytical skills, how do you use data analysis to drive decision-making in metallurgical processes?

It's a requirement for the job of a metallurgist to have an inquisitive mind to question why is there and what could be done to better it. By systematically analyzing data, I get to identify opportunities for optimization and implement changes. Data analysis forms the basis of continuous improvement initiatives.

Gurue is deep in the rural areas, and as a young woman from Harare, how has moving to such a remote area affected you?

I have adjusted positively to the place and its peacefulness. My husband has been very supportive from the get-go and has also adjusted quite positively to the move. I have no regrets so far.

Thoko is inspired to be like you. What's your advice for her to excel like you?

Go for it, don't doubt yourself, and anything is possible if you put your head to it what's needed is the drive, focus, and determination.

Besides Mining business, what's Thelma into?

I'm a family person. When I'm not at work, I focus on my kids to cover up for the lost time.

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Senzeni Moyo

Geotechnical Officer and Council Member of ZINIRE

Can you share your personal experience of entering the mining industry as a woman? What motivated you to pursue a career in this field?

I joined the platinum mining industry as a Geological technician, which required me to work on a shift schedule. The night shift was difficult and draining at first. For 4 years, I was the only lady on my production shift before I was joined by a few more ladies. The initial period was tough, as one had to prove their equal capabilities on the job. As my first focus was on proving myself, I gained confidence in my job faster and earned respect from my male colleagues. My honours go to all my male colleagues I worked with on this shift. My motivation to join the mining industry was mainly due to my resilient, disciplined, and risk-taking character which led me to choose a career path that is not very common among women.

You've been Treasurer at ZINIRE and a member of various professional affiliations. How has your involvement in these organizations contributed to your professional growth and the advancement of industry standards?

My involvement in various Rock Engineering, Geology, and Mining professional institutions has assisted in my interaction with high-level professionals and obtaining technical skills from original expert sources. Rubbing shoulders with high-level professionals is a lifetime experience on my professional front. Professional institutions always provide the latest information and news about my career path. My inclusion as an executive member of ZINIRE

ignited an interest in other ladies to join the Rock Engineering profession. Organizing technical visits conferences and collaborating with the Young Rock Engineers Foundation has allowed me to pass on my knowledge and skills as an executive member of ZINIRE. The creation of a platform for the continued interaction of professionals has assisted the industry in updating practices and standards within the working environment.

As a Geotechnical Officer, what have been your key achievements and responsibilities during your tenure, both in your current role and in previous positions within the company?

My responsibilities span from rock engineering designing to quality assurance and control. The focus of my responsibilities is on the management of regional ground stability in mining excavations, including the prevention of localized fall of ground incidents and accidents. The key functions include designing, implementing, and monitoring stable excavations through mining layout and support design. The major achievement in my role is in participating in producing competent rock engineering designs that ensure stable mine roof support and a safe working environment for mine workers.

Could you elaborate on your experience in database management and its importance in the context of rock engineering standards and procedures?

Database management is crucial in rock engineering as all designs and recommendations depend on the raw data provided. Collecting information as mining progresses is as important as analyzing the data consistently. Consistency in data analysis will provide early warning signs in the event of a change in the geotechnical environment or process. Standards and procedures play an important role in implementing design recommendations in underground working areas. My experience has taught me that procedures for database management are equally important, as they provide a quality control measure on the information provided from various sources.

How do you approach quality assurance and control in rock engineering, ensuring adherence to industry standards and best practices?

Quality assurance and control are vital for ensuring the accuracy of rock engineering recommendations. They act as a checkpoint for validating assumptions, conceptual models, and values of rock mass properties used in design calculations. The principle of 'doing it right the first time' is crucial in minimizing or eliminating potential flaws in the initial stages of a model, design, or implementation process. Incorrect data collection, including inaccurate assumptions, can lead to disastrous consequences during ore extraction. Therefore, it is critical to ensure the accuracy and validity of all inputs and implementation processes to prevent catastrophic failures.

Your role involves project implementation and control. Can you provide examples of successful projects you've managed, and how you ensured their successful completion?

Mining a box cut, creating portal entrances, and establishing declines to reach the reef position from the ground level was a major experience in my career. This job demands great attention to detail to ensure success, as the life of the mine depends on it. The stability of a portal entrance is crucial for the long-term operation of a mine. I gained experience in slope stability analysis and monitoring when I was given a rock engineering and supervision role in an open-pit project. The underground projects have focused on designing large crusher chambers and silos in varying geotechnical complexities. Other geotechnical projects include the

review of surface settler pond structures and the rehabilitation of long-standing box cuts.

You've been involved in training and development for best practices. How do you identify training needs, and what strategies do you employ to ensure effective training delivery?

In order to determine the training requirements of workers in the mining industry, it is important to analyze leading indicator trends in various mining activities. The mining process involves several different activities such as drilling, excavation support, sampling, charging, blasting, and lashing. Each of these activities requires a unique approach. By monitoring and analyzing incidents and accidents related to rocks, I can identify the key areas that require upskilling. This will provide a better understanding of the areas where workers need to be trained to improve their performance and safety at work. Planned Job Observations (PJOs), workshops training reviews, and impact reviews are tools that assist in identifying the training needs.

Can you share insights into your involvement in continuous improvement initiatives, particularly in implementing systems and procedures to enhance mine support and performance?

My role in the central department includes researching and identifying the relevant ground monitoring systems, providing procedures for monitoring, and implementing the monitoring systems. The continuous improvement initiatives include the introduction of geophysical scanning equipment for slope stability monitoring and underground structural mapping processes. Geophysical scans assist in the identification of unstable ground conditions beyond the surface of an excavation. The introduction of real-time monitoring instruments such as closure sensors, stress meters, and seismic stations has improved the tracking of deviations to provide early warning signs within underground excavations.

Your educational journey includes pursuing an MSc in Mining Engineering (Rock Engineering). How do you foresee this advanced degree impacting your career trajectory and contributions to the mining industry?

The MSc in Mining Engineering program has the potential to enhance my educational and professional technical

capabilities and enable me to achieve new heights in my profession and career. This program's advanced level of knowledge will equip me with the necessary skills and expertise to become a highly proficient mining professional. With this knowledge, I aspire to become a successful and widely respected Rock Engineer in the mining industry. Additionally, as a researcher, I will utilize my skills to document technical knowledge in areas that require further exploration.

What advice would you give to young women considering a career in mining, based on your own experiences and insights?

A career in the mining industry demands an individual who is focused, principled, and steadfast. It requires someone with a strong character who can easily adapt to change. Once you become accustomed to the environment, the technical, educational, and financial benefits far outweigh the challenges you may face. Working in a male-dominated environment is possible.

Finally, could you elaborate on your interests in technical research and project management, and how these additional skills complement your role as a geotechnical officer?

The mining industry is becoming increasingly automated and digitized, and my research interests will help to improve processes within my department. As a Geotechnical Officer, it is my responsibility to ensure consistency in implementing business improvement initiatives and supervising major rock engineering projects. Staying up-to-date with the latest technological advancements and best practices is crucial for enhancing safety performance within the company. The basic principles of project management, which include planning, organizing, leading, and controlling, have assisted in the successful completion of major projects.

Besides the mining business, what are you into?

My extracurricular activities are focused on the educational front. Being a Chairlady at a primary school has helped me gain insight into the needs of children and their upbringing. My dream is to be able to assist on the educational front, especially towards the less privileged children in various societies. I wish to share my expertise and help the underprivileged reach their full potential.



The Gem

- MINING RECRUITMENT SPECIALISTS -

Nyasha Gwata

Managing Consultant for
Mining Recruitment Specialists - The Gem

Tell us about the GEM

The Gem is a Zimbabwean enterprise established in January 2021, privately owned and dedicated to facilitating connections between corporations within the mining sector and proficient professionals across Africa. Our core emphasis lies in the provision of adept personnel for executive, specialist, and craft roles on temporary, contract, or permanent terms. Additionally, we extend our services to facilitate placements within the Southern African Development Community (SADC) region, while also catering to the needs of corporations beyond Zimbabwe's borders.

How does your recruitment process work?

Our clients engage our services for recruitment support by providing detailed job descriptions for the positions they seek to fill. These descriptions serve as the foundation for crafting compelling advertisements distributed across our diverse advertising platforms to attract suitable candidates.

Upon receipt of applications, we meticulously screen candidates to identify those who meet all criteria outlined by our clients. Our rigorous selection process includes thorough interviews with top candidates to ensure alignment with the role's requirements.

Subsequently, we present a curated selection of the most promising candidates, typically ranging from 5 to 7, for the client's consideration and interview scheduling. We facilitate interview arrangements on behalf of the client and oversee negotiations during the offer stage with the chosen candidate.

Following the candidate's successful onboarding, we maintain ongoing communication with both the employer and employee throughout the probationary period to facilitate a seamless transition and ensure mutual satisfaction. At The Gem, we recognize that our commitment to excellence extends beyond mere placement; we cultivate enduring relationships to facilitate continuous engagement and progress monitoring from both employer and employee perspectives.

What advice would you give to mining job seekers?

For mining job seekers, it is imperative to

thoroughly assess your qualifications against the requirements of the position you are pursuing. Merely meeting a fraction of the criteria is insufficient, particularly when engaging with recruiters. It is only present candidates who fulfil all specified criteria, not just a portion.

Ensure that the qualifications and competencies that render you suitable for a role are clearly articulated and readily accessible on your CV. Tailor your resume to align with the specifics of each job advertisement, highlighting relevant skills and experiences that directly address the stated requirements.

Remember, a one-size-fits-all approach to CVs is ineffective. Take the time to carefully review each job posting, ensuring that your CV emphasizes how your qualifications align with the role's demands. This attention to detail can significantly enhance your prospects in the competitive mining industry job market.

What are your top 3 interview tips?

1. Familiarize Yourself with the Employer

: Prioritize thorough research on your prospective employer to gain insights into their values, culture, and recent developments. This knowledge demonstrates your genuine interest and preparedness during the interview.

2. Understand the Position and Its Key Performance Indicators (KPIs):

Take the time to comprehend the intricacies of the role, including its responsibilities and performance metrics. Be prepared to articulate how your skills and experiences align with the position's requirements and contribute to its success.

3. Make a Lasting Impression:

Approach the interview with confidence and professionalism, knowing that first impressions are often lasting. Present yourself authentically and professionally, highlighting your strengths and suitability for the role. Remember, opportunities for second chances in interviews are rare, so strive to showcase your capabilities effectively during your initial encounter.

Looking ahead, what would you like to see in terms of gender equality and female representation within the mining industry?

In the future, I wish to see a significant

increase in gender diversity and female representation throughout all facets of the mining industry. This encompasses a broad spectrum of roles, ranging from exploration and mining operations to mineral processing and sales. By fostering greater inclusivity and opportunities for women within the sector, we can tap into a wealth of diverse perspectives and talent, driving innovation, sustainability, and overall industry advancement.

What do you wish to see in the years to come in the recruitment space?

In the years ahead, I envision an expansion of employment opportunities within the recruitment landscape, particularly in regions such as Zimbabwe where there exists a surplus of qualified and experienced candidates relative to available positions. Despite the abundance of talent in Zimbabwe, the current reality often sees a disproportion between the number of applicants and the actual employment opportunities.

Any upcoming services that you would like the mining community to know about?

The Gem is currently developing a new service aimed at offering mining companies access to attachment students and graduate trainees at no cost. These candidates will undergo a specialized short course designed by The Gem to impart essential skills, facilitating a smoother transition from university to the workplace. By bridging this gap, we aim to provide valuable support to both mining companies and aspiring young professionals within the industry.

When you are not working, what do you do?

I prioritize spending quality time with my spouse and children. We love travelling together and playing tennis. I also spend a lot of time reading self-development books and parenting books.

I am a strong believer in giving back to the community. My husband and I support underprivileged children with tuition fees and other basic needs.



Africa should create its own diamond markets

African diamond producers have been implored to create alternative markets that are not manipulated by superpowers to ensure the trade of diamonds is beneficial to the continent.

Speakers at the 9th Ordinary Meeting of the African Diamond Producers Association (ADPA) of the Council of Ministers held in Victoria Falls recently, expressed concern that Africa should create an alternative market for diamonds that is immune to manipulation.

The African continent contributes more than 60 per cent of global natural rough diamond production, making it the key source of the mineral commodity. Consequently, the continent's voice should be heard, and opinions respected on an equal basis, impacting the global market. There are proposed unilateral restrictions on the trade of natural diamonds being imposed by some market players without extensive consultations.

Addressing delegates at the 9th Ordinary Meeting of the ADPA Council of Ministers, the ADPA Chairman and Zimbabwe's Minister of Mines and Mining Development, Hon Zhemu Soda, highlighted the dangers posed by lab-grown diamonds to natural diamonds, calling on African countries to create a diamond-conscious market in Africa.

"As we meet today, let us foster a spirit of unity, collaboration, and mutual respect to tackle the challenges that are evident in

our diamond sector. Lab-grown diamonds are a present threat to our natural diamonds, and we should be cognizant of that. Lab-grown diamonds should not be compared to the beauty and appeal that our natural diamonds have. There is a need for us to be aware of the demands of present-day diamond consumers to keep our natural diamonds having the market edge," Minister Soda said.

During his official opening remarks, President Emmerson Mnangagwa said ADPA should protect natural diamonds through the creation of markets and marketing strategies that glorify natural diamonds.

"The threat of synthetic diamonds cannot be understated to the natural diamond producers. We must protect the natural diamond sector and the good that natural diamonds bring to our communities and nations. Nothing can be comparable to the beauty of Mother Nature's diamond derived from the belly of the earth. However, mining is ecologically disruptive and should be done in a responsible manner using principles that minimize environmental impacts on our ecosystems. The United Nations Sustainable Development Goal 12 on ensuring sustainable consumption and production patterns sets out how mining operations

ought to be conducted. Mining activities should be conducted in a manner that achieves sustainable management and efficient use of natural resources. I, therefore, encourage the maintenance of high ethical standards, good extractive practices, and peace with communities to protect our diamond industry," President Mnangagwa said.

Moses Engadu, Secretary-General of the Africa Minerals Strategy Group, said the representatives of ADPA need to assert the African position on matters of diamond production, trade, and pricing.



Minister Zhemu Soda



"Over 60% of the rough diamonds are made in Africa, but we don't have a voice. These decisions are being made somewhere very far across many oceans, and nobody is taking into account the implication to be able to implement them, whether infrastructurally, socially, economically on our countries and our people," Engadu said.

Africa needs to think beyond cutting and polishing to adding value to diamonds - Mtisi

Africa needs to consider avenues beyond mere cutting and polishing when it comes to adding value to diamonds, remarked Shamiso Mtisi, Deputy Director of the Zimbabwe Environmental Law Association (ZELA). He emphasized that African nations, in their pursuit of ensuring that rough diamonds contribute significantly to economic growth and social development, must broaden their scope of value addition and beneficiation concerning these precious stones.

Addressing attendees at the ongoing 9th General Meeting of the African Diamond Producers Association (ADPA) Council of Ministers, Mtisi urged Africa to adopt a more comprehensive understanding of value addition and creation. He highlighted the importance of innovations across the spectrum of diamond mining, dealing, marketing, and importing.

Mtisi emphasized that value addition to rough diamonds encompasses not only cutting and polishing but also social, human rights, and environmental innovations. These enhancements not only increase the intrinsic value of diamonds but also evoke emotional responses in consumers, leading them to purchase diamonds at a premium.

Moreover, Mtisi stressed the significance of Environmental, Social, and Governance (ESG) considerations for diamond miners. He underscored the necessity of integrating such aspects into the diamond mining process to imbue diamonds with emotional significance.

"We must transcend the conventional approach of merely cutting and polishing rough diamonds to realize their full potential. The intrinsic value of diamonds lies not only in their physical properties but also in the emotional connections consumers forge with them. Therefore, I contend that value addition encompasses social, human rights, and environmental innovations that augment the perceived worth of diamonds, prompting consumers to invest in them at a premium. Consequently, factors such as ESG frameworks and responsible sourcing standards play a pivotal role in this value-addition process," he elaborated.

Furthermore, Mtisi emphasized the growing importance of sustainable and

responsible mining practices in response to global trends and consumer preferences. He advocated for African diamond mining companies to prioritize labour rights, environmental conservation, and social values to enhance the emotional appeal of diamonds.

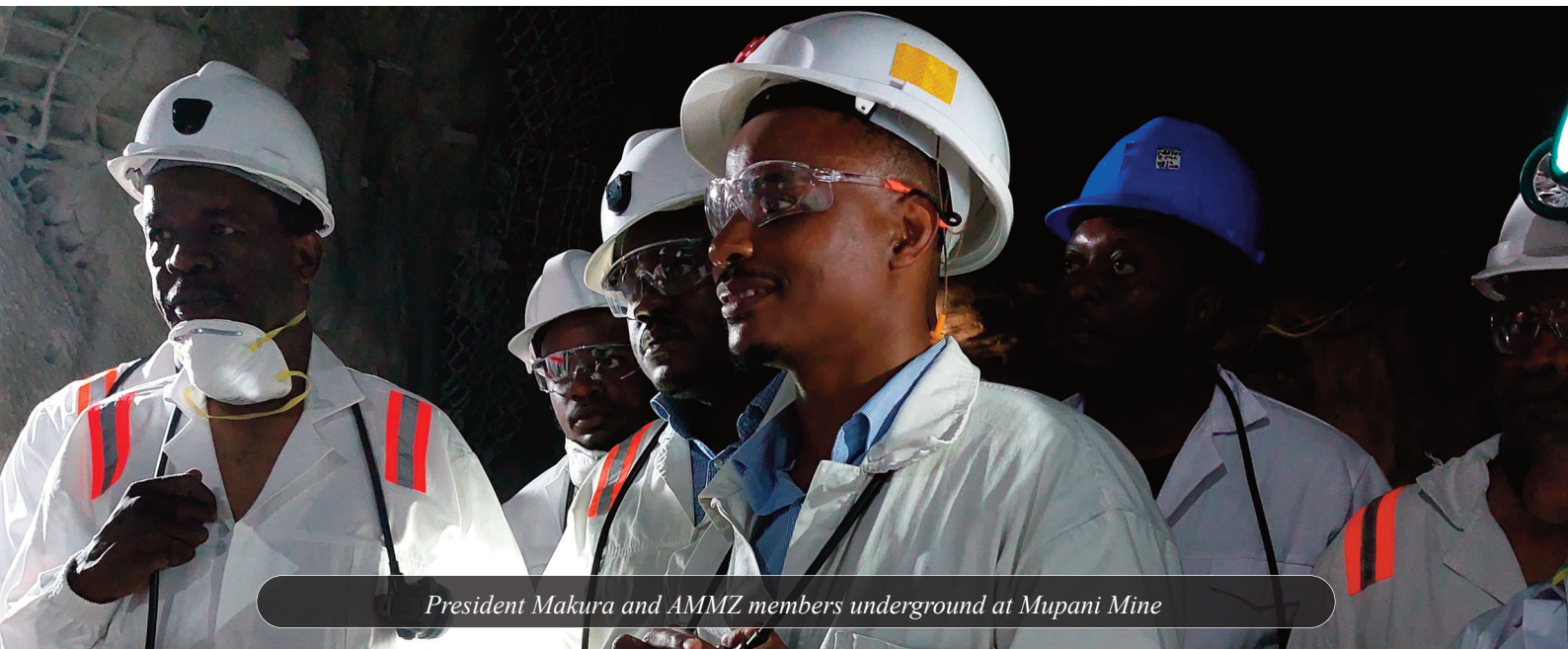
In addition to individual efforts, Mtisi proposed a regional approach to value addition and beneficiation. He recommended the establishment of a regional hub to promote diamonds within the continent and advocated for investment in traceability infrastructure to ensure transparency and accountability throughout the diamond supply chain.

Mtisi emphasized the need for robust policies that promote transparency and benefit local communities. He highlighted the potential of regional collaboration, such as that within the African Union and the Southern African Development Community (SADC), to facilitate the effective implementation of value addition programs.

In conclusion, Mtisi emphasized the importance of a multifaceted approach to diamond value addition, encompassing social, environmental, and economic considerations. He called for concerted efforts at both national and regional levels to realize the full potential of Africa's diamond industry.



Mine Managers thrilled with Mupani's automated operations



President Makura and AMMZ members underground at Mupani Mine

The Association of Mine Managers of Zimbabwe (AMMZ) is enthusiastic about the transformative impact of automation on mining production and safety at Zimplats' Mupani Mine in Mhondoro Ngezi.

Rudairo Mapuranga

At the first technical visit of 2024 held at Mupani mine on Friday, the AMMZ asserted that technology will revolutionize the mining sector, generating new job opportunities beyond current recognition.

Mupani Mine is the first mine to successfully undertake autonomous mining on a narrow riff pillar in the world, thus giving the AMMZ the reason for information exchange with the mine's Management.

Speaking to Mining Zimbabwe on the sidelines of the technical visit, AMMZ President Engineer Abel Makura said automation at Mupani Mine would go a long way in helping mitigate the challenge of softening commodity prices through increased production.

"The autonomous dump trucks and the level of technology around them, the operation, and monitoring itself make mining much easier. In terms of technology, it is obvious that when full implementation of all other production units, maximum utilization of available time will be made. And under the current environment of depressed commodity prices, those challenges can be offset by

increasing production realized from this noble use of technology.

"Instead of just working hard to produce whatever we have to produce, we are now getting our output from working much smarter, and that is a positive. And we hope that all the learnings that will be gained from the operation of Zimplats can also be put to good use by other operations," Engineer Makura said.

According to Makura, while there is a widespread belief that automation will lead to job losses and a decrease in employment by mining firms, however automation at Mupani Mine has proven that there is a creation of new roles in mining and automation is increasing jobs than reducing them.

"What I would look at is that jobs are just being transferred. Where the jobs were mainly involving people doing the actual work, the jobs are now transferring to people who are doing the monitoring.

"So it's work that has been moved from a lower level to a higher level, which is a positive. And for every job that has been replaced by technology, it's somehow replaced in a different context, and it's going to assist. Also, look at safety, so it's not that they are the only providers that are there in terms of providing that LTE technology. It's an opportunity that would have been created for them. So when they are now involved in that, they also create jobs on the other end. So we wouldn't say

that automation is a threat to jobs. We would take it from the point of view that it's increasing the number of jobs," he said.

Also, speaking to Mining Zimbabwe, Association of Mine Surveyors of Zimbabwe (AMSZ) Secretary-General Takunda Paul Mubaiwa said there are benefits in adopting automation. He said the technology goes a long way in creating new duties in mining than taking away jobs.

"We came to explore groundbreaking technology being used by Zimplats' Mupani Mine so that we can learn from it. As surveyors, we participate in automation, we help in the programming and generation of maps, and anything of automation in mining is centred on surveying.

"The advice to other mines is their benefits in adopting automation, people should continue and endeavour to take technology as it comes. It is there to help, it doesn't necessarily replace the person per se but it advances in roles and duties and working in a safer environment," Mubaiwa said.

About the AMMZ

Also known as the technical arm of the Zimbabwe mining industry, the AMMZ is a vehicle for information exchange and dissemination of good practices and seeks to promote the study and growth of Mining and allied disciplines in Zimbabwe.

Metso's new app for remote process control of crushers and screens

Metso is expanding its software offerings with a new app called Metso Remote IC. Metso Remote IC is used for the remote control and monitoring of the crushing and screening process, and it wirelessly connects all Lokotrack crushers and screens at the site.

With the Metso Remote IC app, operators can view all the Lokotrack train machines and their main process parameters using a single dashboard. The feeder and crusher settings can be adjusted safely from the excavator cabin, and the overall visibility of the process allows the operator to adjust the feeding for an ideal production level. In problem situations, the Remote IC automatically stops the feeder, preventing overloading. It also alerts and provides a reason for the stoppage, making it quicker and easier to get back to operation. With a lower overflow risk, the process can be run closer to maximum capacity.

"One of the key features of the Remote IC is that there is no need for the operator to exit the excavator cabin to adjust the crushers or to stop the feeder in an overflow situation," explains Toni Peltomäki, director of automation at Metso's aggregates business area. "The ability to control and monitor the crushing and screening process from a single application has a significant impact on safety and eventually process productivity, since unnecessary process stops can be avoided."







The Remote IC app can be operated by one person and viewed by many. Everyone at the site can view the main process

parameters and alarms. For example, the wheel loader driver can acknowledge the alarm and fix the problem.

"We are constantly developing our products and digital tools to help our customers improve their productivity. Remote IC not only increases the productivity and safety of the plant, but it can also positively impact the employees' experience and help attract

new skilled workforce," says Renaud La-pointe, senior vice president at Metso's aggregates business area.

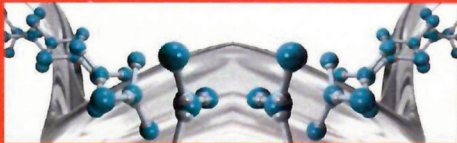
The Metso Remote IC app can be used on Android tablets or mobile phones. It is available for all new Lokotrack models and can also be installed as a retrofit to all models that have Metso Metrics installed.

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Hitachi begins taking orders on new ZW-7 series wheel loader

Hitachi Construction Machinery Americas has started taking orders for the ZW310-7 wheel loader from select authorized dealers. The ZW310-7 is part of the new ZW-7 series which was announced at Hitachi Construction Machinery America's first appearance at CONEXPO-CON/AGG in 2023.

The ZW310-7 wheel loader includes features that offer operator comfort translating to increased operator productivity and will be offered in a base model and a premium model.

"Operator comfort was a key design priority with our new wheel loaders series. A lot of work went into the cab to make it more comfortable to operate. The new pressurized, quieter cab has easier-to-reach seat-mounted controls, reducing operator fatigue," said Matt Koester, wheel loader product manager at Hitachi Construction Machinery Americas.

Both the base model and the premium model include a standard fully adjustable, heated air ride seat that incorporates a seat-mounted armrest with ergonomic electric over hydraulic controls. The armrest and controls adjust forward or reverse to comfortably accommodate operators of varying sizes.

Both models have Approach Speed Control which gives the operator control of the top speed selected during v-loading. A payload checker allows the operator to weigh and log material moved, and a power-up feature anticipates power requirements. All these new features lead to less operator fatigue and more efficient operation.

The premium model will include the Aerial Angle peripheral vision camera system providing a 270-degree bird's-eye view of the machine's immediate environment.

The new wheel loader's updated features also include improved traction with a limited-slip differential and a four-speed powershift transmission and lockup torque converter.

An intelligent automatic reversing hydraulically driven fan and wide-fin radiators are included as standard to prevent clogging. Easy-access filters and improved access to components simplify daily maintenance. Using telematic tools to monitor machine health also helps boost uptime.

The ZW310-7 will have ConSite Air to remotely monitor the operational status and alert owners and operators to upcoming maintenance needs, allowing for both remote diagnosis and software updates. The servicing dealer can quickly troubleshoot issues that may arise with the ConSite response team to rapidly resolve issues to keep projects on schedule.



GM and Komatsu to develop a hydrogen fuel cell mining truck

General Motors and Komatsu will co-develop a hydrogen fuel cell power module for Komatsu's 930E electric drive mining truck. GM and Komatsu will jointly design and validate the technology.

Hydrogen fuel cells are lightweight, quick to refuel, and are ideal for electrifying applications traditionally powered by diesel engines. Hydrogen provides an effective method to package large quantities of energy onboard the vehicle without compromising payload carrying capacity.

HYDROTEC business. "Mining trucks are among the largest, most capable vehicles used in any industry, and we believe hydrogen fuel cells are best suited to deliver zero emissions propulsion to these demanding applications."

Komatsu's fuel cell-powered mining trucks will provide an additional pathway for decarbonization beyond battery-trolley or battery-static charging solutions without the need for additional charging infrastructure within mines.

cited to be working with GM on this important solution for a haulage offering without tailpipe emissions."

GM and Komatsu intend to test the first prototype HYDROTEC-powered mining vehicle in the mid-2020s at Komatsu's Arizona Proving Grounds (AZPG) research and development facility. This vehicle will be powered by over 2 megawatts of HYDROTEC power cubes.

GM has been conducting fuel cell research



Fuel cells also provide a zero tailpipe emissions solution for vehicles with extreme hauling requirements, like the Komatsu 930E mining truck which has a nominal payload of 320 tons. These vehicles typically operate at a single mine throughout their life, which simplifies the challenges of sizing and deploying an effective hydrogen refuelling infrastructure to service the vehicle fleet.

"At GM, we believe fuel cells can play an integral role in a zero-emissions future, helping to electrify heavier-duty applications beyond passenger vehicles," said Charlie Freese, executive director of GM's Global

Komatsu has set a target of reducing its global emissions by 50 percent by 2030 and a target of achieving carbon neutrality by 2050. GM's target is to be fully carbon-neutral in both products and operations by 2040.

"Finding new ways to power the equipment our customers need to do the vital work of mining and construction is a critical part of our commitment to supporting a more sustainable future," said Dan Funnell, vice president of North America engineering and development for Komatsu. "This is essential work that requires cross-industry collaboration, and we are ex-

and product development for more than 50 years and is one of the only companies with technology platforms for both lithium-ion batteries and hydrogen fuel cells. GM and Komatsu believe these technologies can help spur the adoption of lower-emission mobility solutions and help other industries beyond passenger vehicles meet their sustainability goals.



Mitigating the Risk of Loading Blast Holes with Jevons Robotics & RCT Technology

The drill and blast method of surface mining just got a whole lot safer thanks to Jevons Robotics and RCT.

The companies joined forces to deliver a safer alternative to carrying out blast quality assurance, loading or stemming, replacing it with a single battery electric machine able to carry out the process on any bench condition including severely contoured or cavity filled ground.

Jevons Robotics can now deliver explosives or stemming via their ARTEV6000 product using an RCT's remote control set either via Line-of-Sight or Teleremote control.

Implementing this technology has eliminated the need for personnel to conduct quality assurance or load the blast holes manually which removes exposure hours associated with highwalls, cavities and fatigue.

RCT's Custom Manager David Wright said this project was different to any job done before and therefore our specialised bespoke department given the job.

"It is the first time we have remote controlled this type of vehicle carrying out this job scope," said Mr Wright.

"We were able to use standard loader code, getting it on the machine and talking to the machine," he said when asked about the execution of the project.

"The job, in its manual state is well-known as being high-risk which also makes the role difficult to not only recruit for but then retain the staff. The great thing about the Jevons platform is that it can be used for a variety of applications on a mine site to remove additional hazards and its flexibility is something that will bring great value to the industry, so we were so pleased to be able to work together on it."

Jevons Robotics CEO Todd Peate said that when Jevons were looking for a teleop and line-of-sight capability we were immediately drawn to the established competency of RCT and its deep experience in mining.

"We wanted a solution that eased our customers mind on automating this

process and we certainly have that with RCT," said Todd.

SPECIFICATIONS	
Payload Capacity	6T carrying capacity
Battery Cell Type	LFP
Voltage Range	400V-525V
System Capacity	95.52kWh
Usage Temperature	-20°C to 55°C
Cooling Method	Liquid
Peak Torque	500Nm
Peak Power	225kW
Max Motor Speed	12,000rpm
Transport Length	5,650cm
Transport Height	3,226cm
Transport Width	3,014cm
Transport Weight	6,500kg
Control Room	Containerised
Drive Train	Electric over hydraulic
Maximum Terrain Slope	15 degrees traversing slope and 12 degree cross slope



Nurturing Comprehensive Well-being in the Mining Industry in Zimbabwe

Wellness is "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (World Health Organization). Wellness is more than just the absence of disease; it is a state of complete physical, mental, and social well-being. In the mining industry in Zimbabwe, this concept of wellness is crucial given the demanding nature of the work, high-risk environments, and challenging conditions faced by workers, particularly in remote mining locations. To address the holistic well-being of individuals in this industry, the "Wheel of Wellness" introduces 8 dimensions of wellness, namely, physical, emotional, occupational, social, financial, intellectual, environmental, and spiritual.

Physical wellness is of paramount importance in the Zimbabwean mining sector due to the strenuous work and associated risks. Ensuring a safe work environment, providing safety training, modern equipment, and wellness initiatives such as fitness facilities and health screenings (pre-employment medicals) are vital to maintaining optimal physical health for employees and preventing chronic diseases.

Emotional wellness is critical for mining industry employees facing challenges like long working hours and separation from families. Support for emotional wellness can be provided through mental health programs, access to counselors or mental health specialists using medical aid facilities, stress management courses, and fostering a culture that encourages open dialogue on

mental health issues.

Occupational wellness focuses on creating a work environment where employees feel valued, have opportunities for professional development, fair labor practices, and clear career pathways. Recognizing employees' achievements and investing in their ongoing development through training can boost job satisfaction and loyalty.

Social wellness is essential, especially in remote mining locations where employees cannot live with their families at the mining sites. Fostering a sense of community through team-building activities, social gatherings, and involving families in mining-related events can enhance social connections and support networks among employees. For example, including employee spouses in commemoration events such as Workers Day.

Financial wellness impacts employees' stress levels and overall well-being. Providing fair compensation, health insurance, retirement plans, and financial education programs can empower employees to make informed decisions about their finances, manage debt, and plan for retirement. Organizations such as NSSA and MIPF can offer financial programs that equip employees with the right knowledge and ideas to prepare for life after employment.

Intellectual wellness involves continuous learning opportunities for employees through vocational training, leadership programs, and research initiatives.

Encouraging innovation, knowledge sharing, and problem-solving can lead to improvements in operational efficiency and safety standards within the industry. Furthermore, the company may offer school fees assistance programs.

Environmental wellness is critical for sustainability in the mining industry, involving practices that minimize negative impacts on the environment and promote eco-friendly initiatives. Embracing sustainable mining practices, investing in technologies to reduce environmental harm, and rehabilitating mining sites are essential components; policies for the environment should be in place and known by the community.

Spiritual wellness fosters a sense of purpose, integrity, and community within the mining industry. Operating ethically, respecting cultural practices, and engaging in fair trade practices can enhance spiritual wellness among employees and build trust within the workforce. The company may introduce training programs for managers on cultural diversity.

By incorporating these 8 dimensions of wellness into the mining industry in Zimbabwe, companies can create a supportive and resilient workforce capable of overcoming challenges and fostering long-term success. Prioritizing comprehensive wellness initiatives benefits individual employees and enhances the overall sustainability and prosperity of the mining industry in Zimbabwe.

How platinum prices will affect value chain in the mining industry in Zimbabwe?



The softening of commodity mineral prices is poised to affect the entire mining value chain in Zimbabwe, with the country's biggest miner, Zimplats,

already implementing measures to mitigate the situation to the detriment of other stakeholders in the industry.

Rudairo Mapuranga

Platinum Group Metals (PGM) producers in Zimbabwe have been contributing immensely to economic growth and



Isaac Kwesu

development, with the current pricing structure, infrastructure funding, Environmental, Social, and Governance (ESG) funding, and project development funding proving to be under threat.

The budget costs are going to decline, thereby negatively impacting service providers who have been benefiting from the growth drive implemented by PGM producers.

According to the Chamber of Mines of Zimbabwe CEO, Isaac Kwesu, the softening of commodity prices has a direct impact on the income of each mine currently operating, leading to dire consequences for the whole value chain.

"It is important to note that the mining value chain incorporates all aspects such as infrastructure, human resources, procurement processes, as well as technological advancements. The softening of commodity prices has a direct impact on the actual income of each mine functioning at the present moment. With limited direct income, the mines will be forced to implement cost-cutting measures on the operations of the mine—this can be by means of retrenchment of skilled labor, which then lowers the overall efficiency and productivity of the plants. As

a result, less of the mineral is produced, resulting in even lower income and the mines failing to meet their yearly production targets. It becomes the duty of other stakeholders such as product and service providers to offer more viable and sustainable solutions in the procurement processes so as to assist in achieving the overall goals of their clients. Cost-cutting measures implemented can also have an adverse effect on infrastructure maintenance by limiting growth and advancements, with only the mines focusing on maintaining the infrastructure and not improving it. The extent to which the mine invests in technological development becomes limited as a result of potential budget costs, so overall growth becomes stunted. A major risk that then arises would be the increase in illegal mining activities that the government is trying to prohibit as well as restrict," Kwesu said.

According to Mineral Economic Lyman Mlambo, while the softening of commodity prices is going to affect the whole mining value chain from exploration, extraction, and equipment and consumables supply services, government revenue is going to be affected significantly since most of the revenue was coming from PGM producers.



Lyman Mlambo

"The softening of prices is going to affect the whole value chain because price is a key factor of business viability throughout. The point of impact is mining operations. A fall in price increases the cut-off grade that can feasibly be exploited, hence reducing the mineable reserves and sterilizing resources—those that were marginally economic become subeconomic. This, along with reduced current profitability, affects the viability of the platinum miners as businesses; depending on how long the downswing is expected to last, mining may need to revise plans (viability measures, scales, etc.). The immediate result is a reduction in production levels.

"This affects the mining suppliers' business

(the upstream) because they depend on the rate of operations in the mines. This includes employment levels (with employees being retrenched, demand for technical services, consumables, spares, etc.). Material suppliers will experience reduced demand for their products, which could affect their prices downwards as well as their cash flows, whether they import their supplies or produce them.

"Of course, with mines' cash flows dampened, their capacity and progress in establishing downstream facilities (beneficiation) are dampened, affecting the drive towards the industrial transformation expected both upstream and downstream..

Government revenue is going to be affected too given the significant level of contribution of the mining sector. This, of course, affects government development programs by reducing its capital budget. This dampens mining fiscal linkages. It also affects the effective implementation of sustainability programs, such as alternative reinvestment to counter depletion or the Sovereign Wealth Fund.

"The above are the main effects in the

mining value chain, but such price downswings can have several effects on the economy as a whole, given how it depends on the mining sector. This is the vulnerability that mineral-based developing countries are exposed to - generally fluctuating prices in the short term, deteriorating terms of trade in the long term, and reduction in forex generated as well as the capacity of government to adjust its expenditure levels and navigate the downswing," Mlambo said.

According to Star Delta Electronix Business Development Manager Kundiso Chimbima, the situation may bring opportunities to service providers to implement cost-cutting measures that do not affect production.

"The softening of commodity prices has a direct impact on the actual income of each mine functioning at the present moment. It becomes the duty of other stakeholders such as product and service providers to offer more viable and sustainable solutions in the procurement processes so as to assist in achieving the overall goals of their clients," she said.





How to Spec an Articulated Dump Truck

Articulated hauler trucks efficiently transport heavy loads across challenging terrain and maneuver on tight, tricky sites. Rokbak, a manufacturer of ADTs, suggests five factors help determine what truck aligns with specific needs and operational requirements.

1. ADT capacity and load handling

Assess the application's typical load capacity and weight to specify the haul truck to handle the demands of the specific job. Consideration of the type and size of material being handled allows the truck's load-carrying body to be specified correctly to ensure optimum payload, load retention, and longevity. Body options such as side extensions for lighter materials, tailgates for free-flowing material retention, and additional liner plates for highly abrasive or large blasted rocks are all popular choices. Match the hauler to complementary equipment, such as excavators or wheel loaders, to ensure on-site efficiencies and safety.

2. Terrain and site conditions

Articulated haulers are designed to navigate challenging terrain, but the extent of their capabilities can vary. Consider performance in the particular hauling conditions, such as muddy terrain to slippery slopes or various temperature ranges. Evaluate the application and

climate, and consider the materials that will be transported. Also look at the topography of the site, including slope gradients, ground conditions, and potential obstacles.

3. Fuel efficiency and operating costs

Ergonomic design, operator visibility, and the quality of the cabin environment provide a comfortable and safe workspace. Ergonomic design, operator visibility, and the quality of the cabin environment provide a comfortable and safe workspace. Look at operating costs such as fuel consumption and maintenance. Efficiency in the use of power is as important as having a high-performance truck. An efficient, high-performing engine and responsive transmission shift control are good for low fuel consumption and environmental impact—as well as increased uptime and extended service intervals. An adaptable, perfectly balanced drivetrain provides performance and productivity in all hauling conditions, while meeting worldwide emission standards with low cost of operation. Retardation systems facilitate control of the machine and allow the operator to manage the safety and speed of the hauler—increasing efficiency and reducing wear-and-tear with shorter cycle times on the haul route.

Also look for strong aftersales support, including the availability of spare parts and maintenance services. A well-supported machine will lead to increased uptime and

lower operating costs throughout the equipment's lifecycle.

4. Operator comfort and safety

The well-being of operators leads to efficient implementation of the ADT in its application. Ergonomic design, operator visibility, and the quality of the cabin environment provide a comfortable and safe workspace that not only enhances productivity, but also contributes to employee satisfaction and retention. Haulers equipped with safety features such as stability systems with traction control, body tip inhibits, and advanced braking mechanisms help to ensure a secure working environment.

ROKBAK

5. Connectivity

Modern articulated haulers often come equipped with advanced technology and telematics solutions. These features can provide valuable insights into machine performance, fuel efficiency, and maintenance needs—helping machine owners to manage their operating costs.

-Content provided by Rokbak



Cummins Announces Field Testing Of Mining Hybrid (Diesel-Battery) Truck Solution

Cummins Inc. (NYSE: CMI) has commissioned its diesel hybrid solution in partnership with one of China's leading rigid mining truck manufacturers, North Hauler Joint Stock Co., Ltd. (NHL), demonstrating progress in decarbonization for industrial customers.

The hybrid NHL NTH260, a 220 metric ton payload mining truck, rolled off the production line in January and is headed to Baiyun Iron Mine of Baogang Group, China, to begin field testing in March. As a leading power solutions provider, Cummins' optimized hybrid system allows the truck engine to be downsized from the previous 2,500HP QSK60 to the current 2,000HP two-stage QSK50.

"We're excited to share this significant milestone in our journey to advance bridge technologies and provide our mining customers with innovative, practical decarbonization solutions," said Jenny Bush, Cummins Power Systems President, who joined key leaders from Cummins Power Systems China for the commissioning ceremony in the NHL industrial park in Bautou, China.

The truck is expected to provide a leading total cost of ownership based on initial cost

advantages, fuel efficiency and extended service life of the engine. Improved fuel efficiency directly correlates to emissions and GHG reduction. Advanced hybrids have the potential to improve fuel efficiency up to 30% dependent on the mine profile and advanced battery technology and controls integration.

"Our partnership with Cummins spans 40 years and advancing the hybridization of our equipment is another demonstration of what we can accomplish together for the benefit of miners globally," said

Haiquan Guo, General Manager, NHL. NHL produces trucks with payload range from 35 to 360 metric tons, with Cummins as the standard engine configuration."

"We are intent on enabling multiple pathways to carbon neutrality for industrial markets, including both first-fit and retrofit solutions," said Molly Puga, Cummins Power Systems Executive Director of Strategy, Digital and Product Planning. "It's partnerships with our customers like NHL and Baiyun Iron Mine that will accelerate product availability in the market and make both near- and long-term carbon reduction goals attainable."

Cummins' optimized hybrid system allows the truck engine to be downsized from the previous 2,500HP QSK60 to the current 2,000HP two-stage QSK50.



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



The Elise CBL

World's First Cab-less Remotely Operated Electric Skid Steer

The Elise CBL (Clean Building Logistics) is a cabinless remotely operated electric skid steer that manufacturer FirstGreen Industries says can take indoor and underground excavation work to a new level.

A fully remote-controlled, full-size skid steer, the Elise CBL adds safety, cleaner operation, and cost-effectiveness to the job site, according to FirstGreen. State-of-the-art technologies that include AI-powered analytics and IoT connectivity, as well as an advanced materials database, the machine is a good fit as entities worldwide move towards more sustainable practices.

Removing the cabin from the design reduces the overall machine height and eliminates the necessity for FOPS/ROPS certification. Loading capacity is improved, and weight distribution is more balanced with a lower centre of gravity that helps enhance stability. With no operator inside the machine, the risk of injury or exposure to hazardous materials is significantly

reduced making the machine suitable for high-risk uses.

The Elise CBL works with several technologies that aid in more sustainable decision making. These include a Material Optimization Processor, which uses a database of sustainable materials to recommend the most eco-friendly and cost-effective options for construction projects. The Waste Diversion System enhances sustainability by managing construction waste. Materials that can be reused or recycled are identified to ensure that waste is handled in the most environmentally responsible manner.

Predictive Energy Modelling uses advanced simulations to predict a building's energy consumption patterns and suggests changes to reduce energy usage and operational costs. Dynamic Lifecycle Tracking monitors building performance and environmental footprint on an ongoing basis, helping adapt to

changing environmental standards.

The platform integrates artificial intelligence and the Internet of Things to enhance its analytical capabilities and connectivity, allowing real-time data processing and decision-making. The Circular Economy Approach prioritizes the reuse and recycling of materials and resources, helping the Elise CBL align with circular economy principles and creating a regenerative system that minimizes waste and encourages the continual use of resources.





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- FLOUSPAR



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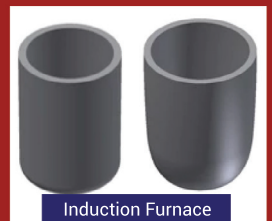
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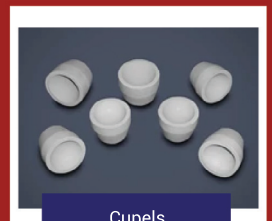
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