

INSIDE MINING

Women in Mining

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The landscape for woman lawyers in mining

Women in Business

Thriving and driving change in the industry

Health & Safety

How does the mining industry cater for women?



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EDITOR'S COMMENT

Levelling the mining playing field

Listening to speakers on the first day of the 11th Annual Women in Mining Conference, a few important factors came to light. First, there has been a paradigm shift, where women are not wanting to be recognised because of their gender that has historically made them outliers in mining industry. Rather, they want to be recognised for their capabilities, ideas and untapped potential – all of which the industry can benefit from.

Another point that was highlighted was that discussions around women in the mining industry are not and were never meant to be a direct attack on the men in the industry. At times, the topic around women in mining has been lost in translation, where it seems like there is a tug of war between men and women in boardrooms or out on-site, which is not the case.

To drive this point home, many of the speakers suggested that men needed to be included in dialogues surrounding women in mining and invited to the events. By doing so, men will get an opportunity to learn about the challenges facing women in mining, and perhaps give their input on overcoming such challenges. Suggestions such as this highlighted the need for education and collaboration among all genders when it comes to women in mining.

There is no doubt that the mining industry has made significant progress since the 1990s, when it was illegal for a woman to set

foot on a mine site. Be that as it may, the industry cannot be oblivious to the many challenges women continue to face in the mining industry. Sadly, the biggest challenge is still the safety of female miners on-site. Once again, the spotlight was shone on gender-based violence women face in the mines. On this point, the speakers universally agreed that there was still a lot of work to be done to make the mines safe for women.

Even though the industry still has a long way to go, it's good to see that certain measures are being taken to accommodate women in the mining industry. This is only fair because women no longer have to prove that they are capable of holding their own in the mining industry. They want to be recognised as individuals who have the necessary knowledge and expertise to make a meaningful contribution to the mining industry. **3S**

Dineo



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ISSN 1999-8872 Inside Mining.

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FOREWORD

Women's potential to make an impact in mining

Women have the potential to change the face and trajectory of the mining industry in South Africa.

By Thabile Makgala*

Thabile Makgala believes that women have the potential to advance the mining industry
(Credit: Philip Mostert Photography)



My view is that this is a change we should and need to support. However, for women to meaningfully participate and contribute to the industry, we need it to be robust, and enabling for women to thrive.

There is a strong business case for gender diversity. A diverse workforce has been shown to create a more inclusive culture. Diverse people bring diversity of thought to organisations, which results in better decision-making, stronger governance and improved economic performance.

It is important for mining companies to create policies that drive a gender mix of new graduate intake and that women are given fair treatment when promotional opportunities arise in the workplace. It is also vital that the industry better promotes itself to students at school level before they reach university, so that a career in the mining industry is a consideration.

Digitalisation, automation and AI will impact gender diversity in the future, as the changes are shifting the type of work being conducted. These changes will allow for operating equipment remotely, away from mine sites, which may be attractive to people who had not previously considered mining due to the physical strength needed to perform some activities in traditional mining operations.

Proactive policies and understanding

Before we reach that future, however, we need proactive diversity policies, a workplace culture that is female-friendly, policies to deal with sexual harassment and gender discrimination in the workplace, and it is vital that men understand the challenges women face and actively support equality.

We also need deliberate action that is targeted at levelling the playing field and providing opportunities to women in the industry. Pay parity between men and women should be a focus; the pay gap between men and women should be eradicated and we desperately need more women in senior leadership roles to act as examples and mentors to other women, and to influence important company decisions and take the industry forward.

As a woman who is passionate about the industry and the role women can play in advancing it, I equally believe that men and women in the industry have different strengths and qualities that, when combined, complement each other and have the ability to benefit all who work in mining. **35**

“There is a strong business case for gender diversity. A diverse workforce has been shown to create a more inclusive culture.”

**Thabile Makgala is chairperson of Women in Mining South Africa (WiMSA).*

EVENTS



Envisioning a future of gender equality

The 11th Annual Women in Mining Conference took place at Gallagher Convention Centre. Deshnee Naidoo, CEO of Vedanta Zinc International, gave a glimpse of the future with her opening speech at the event.

Deshnee Naidoo delivered the opening speech at the 11th Annual Women in Mining Conference

The conference took place from 19 to 21 February and placed a spotlight on female participation across various aspects of the mining industry. Various speakers at the conference brought to light important issues affecting women in the sector.

In her speech, Naidoo mentioned that she had various roles in the industry but being a woman in mining was the most important to her – adding that she drew inspiration from other women in the

mining industry. During her speech, she captivated audiences with her vision for the future of mining:

I would like to give you a small taste of the future I envision, that is mining 2050. Now, picture this: you open your usual mining news website and on the

landing page, among the various headlines, are stories of just as many female CEOs and entrepreneurs running mining companies, small and large scale, alongside their male counterparts. This doesn't faze you. This is the new normal of the world you are picturing.

Women feature as predominant resource company CEOs, executives and the so-called rainmakers and pot-stirrers. The industry at large has become sustainable. The news stories are not riddled with protest action from communities, occupational health lawsuits or project delays and failings. The stories recount details of the good that mining is delivering to its stakeholders, of the sustainability of mining, and of cutting-edge technology used to create waterless, energy-efficient mines, to find new mines and of stories of responsible closures where communities are left better off than prior to the mining activity.

You enter the operations of your mine and you hear that injury rates are at record lows, not just for the mining industry, but against other industrial sectors as

EVENTS

well. There is a tangible feeling of risk awareness and safety. You look at the next shift going underground that morning – there are just as many women as there are men. She's no longer the needle in the haystack or the rose among the thorns. You cannot tell which gender outnumbers the other. The women are confident, they have a look of empowerment as they enter the shaft, knowing that they are safe, that they are contributing to the production of the mine, that they are bread-winners and they can feed their families that night when they go home. Their streamlined PPE fits their physique; in fact, you don't even see a single doek underneath the hard hat. You ask one of the ladies who's her underground buddy, she stares at you blankly. She does not know what you are referring to. There is no need for the buddy system underground. The environment is safe, truly safe for a woman to work in peace, both on surface and underground. You go to the surface operations to see the operators. You see a

skilled workforce of men and women equal in numbers operating driverless vehicles in a high-tech control room, while sipping coffee at their desks. The head of mining operations comes out to greet you – she is a woman.

Lastly, imagine a world where you have events just like this one, but the purpose is to dissolve the various women in mining empowerment organisations. We have achieved our goals of the equality and integration of women in mining. We have moved on to the next issue. I want to be in that world, one world where my daughters and their daughters do not face the same challenges that we are trying to resolve today. One where they can look to a brighter future and use their talents to solve other pressing issues in the world. But please, not asking for the same equality that her mother, before her, had to fight for. **35**

“I can truly say that I'm proud of the growth that I've seen in many of the women in our business over the last four years.”



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Mashudu Lembede is a business developer at Bureau Veritas

Female leadership at its best

There was a time when the idea of woman professionals was a far-fetched one – even more so in industries perceived as being suitable for men only. Having female leaders in a male-dominated industry such as mining was previously unheard of, but change is afoot. **By Dineo Phoshoko**

Today, there are many women in leadership positions in organisations across various industries. The mining industry is one of those where many women are heading up key roles once only filled by men. Bureau Veritas is an example of an organisation that has female leadership in important divisions. **Inside Mining** catches up with two phenomenal women at the forefront of female leaders in the mining industry.

Mashudu Lembede

A geologist by profession, Mashudu Lembede is currently a business developer at Bureau Veritas. With a BSc (Hons) in Geology, Lembede's career started as an exploration geologist in platinum mines.

From a young age, Lembede always knew that she wanted to pursue a career in the mining industry. "I love the outdoors and I'm fascinated by nature," she explains. It was her love for the outdoors that drove her towards registering for a qualification in geology. She adds that, while she didn't know it at the time, getting into the mining industry was a natural progression because one tends to be driven towards something that they like.

During her career, Lembede has been fortunate to work on projects that started out as exploratory but went on to become operating mines. "It's amazing because

LEADERSHIP

not a lot of geologists get to see a project transform from a bushveld to a developed mine," she explains. When an opportunity presented itself to work for a coal mine in the Waterberg region in Lephalale, Limpopo, Lembede grabbed it with both hands. "That's where my experience with coal comes from." Here she gained experience in geology exploration and grade control. She adds that all the experience she obtained in both the platinum and coal sectors allowed her to take up her current role at Bureau Veritas and establish herself with the mining service provider.

Navigating the challenges

One of the biggest challenges Lembede faced in the mining industry was having to go on site visits – which meant being away from home for prolonged periods of time. "The work balance was a bit difficult," she explains. As a primary caregiver, it was not always possible for Lembede to take the time off required for a young family. "As much as that is a challenge for women in mining, I'm glad that the companies that I've worked for had taken on the responsibility of supporting women in mining by understanding those types of challenges and being there for the family," she says.

A challenge such as this is one that many women would relate to; however, Lembede explains that there will always be challenges faced by women in any industry. She found that, in her case, the mining companies she worked for were very practical about the challenges faced by women. She adds that, as employers, the companies were very supportive of her needs.

In addition to the support she received from organisations, Lembede explains that the support she received from family was integral in overcoming various challenges she experienced in her career. She highlights that women often feel that they must prove themselves. "You really need to prove yourself, but you also need to accept support. It's part of achieving the goals you've set." For her, achieving goals and aspirations meant accepting support offered to her by employers and family.

Life has ups and downs and when the chips are down, everybody needs something to motivate them to keep them going. For Lembede, the success of other women in the mining industry inspired and motivated her to keep going. "Personally, I'm inspired by the success of others – other women in the mining industry that have gone before me," she explains.

Warm reception

When she started out in the industry, Lembede says

that she received a warm welcome from everyone, including male colleagues. She adds that at first, it is not unusual for anyone to find themselves in a situation where they must prove themselves, especially in a new job and environment. "If you take two or three months of hard work and prove yourself, your colleagues accept you within a few months," she explains. She adds that the industry has systems in place to support female miners new to the industry. "As with any new job, you need to display an honourable work ethic with a desire to learn and be a team player."

The first day at a new job can be scary for some, especially in an industry where women are few and far between. However, for Lembede, fear was never in the picture as she hit the ground running from her first day on-site. "I don't remember feeling scared. When you have spent four years at Wits training to be a miner or a geologist, you've already gone through the scary part," she says confidently.

Instead of fear, Lembede was excited for what she believed would be an exciting adventure. Upon arrival on-site, she found that the mining companies had made all the necessary provisions to accommodate her needs. "It's quite an adventure; you get to meet different people from different parts of the world," she says.

Women in mining in SA

There is no doubt that South Africa has come a long way in terms of having greater female representation in the mining industry. Lembede acknowledges that a lot of progress has been made, although she feels that more can be done to achieve gender equality in the mining industry. "In 2020, we shouldn't be finding women in mining an intriguing topic anymore. I think we should be achieving gender balance."

In her view, mentorship would assist in achieving gender balance, as well as encourage more women to get into the industry. "Mentorship in a controlled environment with KPIs – that would make a difference," she says. Furthermore, Lembede is of the opinion that such mentorship would be effective if it came from males who have been in the industry for many years. Lembede believes that because they have been at the forefront of the industry for long periods of time, such men can share their knowledge and experiences with women who can learn and benefit.

Lembede believes the mining industry is perfect for women to establish a successful career for themselves. "Mines are very interesting; they

“With any new job, you need to display an honourable work ethic with a desire to learn and be a team player.”

LEADERSHIP

are different from anything that you will ever experience. Go for it." In addition to paying well, the industry also has a supportive culture. "Once a miner, always a miner – it's a lifelong experience," she concludes.

Beatrice Scharneck

Working in management is no easy task, even more so when one is a district HR manager responsible for human resources operations in five different countries. For Beatrice Scharneck, it's just another day at the office, as she does this daily without breaking a sweat – despite dealing with HR for more than 1 400 employees.

Having started as a petrography assistant in a coal exploration laboratory, Scharneck soon worked her way up to become an HR assistant, then HR business partner and finally HR district manager. Not only was Scharneck rising through the ranks, but she was also furthering her studies in the process.

While capturing timesheets and interacting with employees from within the payroll department, Scharneck soon discovered that her niche was in HR, realising that this was where her passion lay. "This inspired me to work my way up, as I had realised through engaging with people that I wanted to make a marked difference in the lives of others.

HR is all about people. I was passionate about making a positive impact, so I worked hard and put in those hours to get a good education," she explains.

Having worked for Bureau Veritas for more than 10 years, Scharneck explains that she has only ever experienced positivity during her career in the mining industry. She explains that the company is supportive and encourages the training and development of its employees. "The company has believed in me and provided study assistance. Over the years, I have enjoyed several promotions that have allowed me to ultimately

achieve my dream," she says.

Scharneck adds that Sal Govender, vice president of Bureau Veritas Southern Africa, played a crucial role in helping her realise her dreams. "We have a strong female component in our leadership team and throughout the business," she explains.

Working through challenges and keeping going

Different people have different ways of dealing with

“Keep your eye on the ball and remain focused on your dream; then strive to make it a reality.”

challenges as and when they arise. In Scharneck's view, doing some introspection is a useful way to cope and deal with any challenges. "I believe that change should start within a person. Regardless of a situation, we all need to introspect before we tackle any challenge to ensure we take the right approach to dealing with difficulties in a mature and appropriate manner," she explains.

Part of her job requires Scharneck to interact with people who all have different personalities. Sometimes there might be a misunderstanding that arises from personality clashes. In such cases, Scharneck believes the best way to work out such issues is through education, open and fair discussions, engagement and sharing ideas. "It is important to hear the input of both sides when having difficult discussions – and then one must keep people informed as to the outcomes. In our industry, open and fair discussion is paramount," she explains.

When things get tough, Scharneck finds that having a healthy balance between work and home life can help one get through difficult times. She maintains that constantly remembering and being aware of one's priorities is also useful when it comes to finding the perfect balance between life and work. "Family is of utmost importance and enjoying a fulfilling and rewarding career is crucial for me. My personal challenge is to ensure I have fun with both – and I do!"

Female representation in mining

According to Scharneck, the mining industry in Southern Africa has improved significantly in terms of female representation. "Over the years, we have seen more and more women in mining in Southern Africa and I think it is good to see such an inclusive environment, where fair opportunities are provided to both gents and ladies. We like progress!" She adds that the representation mix is proof that changes to support and encourage women in mining have been made.

Quoting former president Nelson Mandela, 'It always seems impossible until it's done,' Scharneck's advice for others interested in pursuing a career in the mining industry is to believe in themselves and go for it. "Keep your eye on the ball and remain focused on your dream; then strive to make it a reality," she concludes. 35



Beatrice Scharneck is a district HR manager at Bureau Veritas

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WOMEN IN BUSINESS

Being a woman in mining

Women in the mining industry have often had to go the extra mile to prove that they are as capable as, if not more capable than, their male counterparts. Lara Smith, managing director of Core Consultants, believes this should not be the case.

By Dineo Phoshoko

Having successfully run her consultancy business for the past 10 years, Smith believes that it is possible for women to be involved in the mining industry without having to undertake labour-intensive jobs at harsh mine sites. Her career is heavily involved in the mining industry, but she now seldom visits mine sites. She has been running a successful consultancy business that deals with market research and analysis in the mining industry.

Prior to this, Smith used to work for a diversified mining company as the head of research, where she was responsible for sourcing offtake agreements, analysing and valuing different companies and projects for acquisition, and looking after various portfolios.

Venturing on her own

In 2009, the global economy and markets were faring poorly. This

Lara Smith is
the managing
director of Core
Consultants

WOMEN IN BUSINESS

resulted in many mines being put on care and maintenance – including the mining company where Smith was employed at the time. It wasn't long before she got a job at a professional services company on a six-month contract basis.

During this time, Smith strongly considered whether she wanted to continue with the company on a permanent basis. "I didn't want to because most of my job was doing valuations on mining assets for impairment and write-off purposes. So, I was mostly busy recommending whether mining companies should be impaired," she explains. She adds that she thought about the impact her job would have on her career in future, if she were to return to the mining industry again.

While she was still working at the company on contract, Smith got headhunted to join a global information services company. After going on a hiring freeze, the company reversed its decision to recruit her. Although this was the case, they were still keen on having her join their company, which is when it was suggested that she start her own consultancy business. By having her own business, Smith would be able to work with the company as a consultant. That was how Core Consulting came about.

Her first job as a consultant was to write a book based on lithium mines for acquisition purposes. "I wrote about 150 pages on the lithium markets in 2009. I became known as somebody who could do long-term projections and analyses," she explains.

While writing the book, Smith realised that there was a need for locally based market researchers and analysts. She realised that most of the research and market analysis procured by South African and African resource companies was compiled and procured overseas, which didn't make sense, especially as the writers of these reports were based in cities such as London and had never set foot on a mine – unlike South African analysts, who have had real exposure to mining projects.

After the book was published, Smith was open to the idea of having a business in which she would be hands-on. She initially started out by doing subscription research and selling subscription reports. Although it took a while to get clients, with time, Smith managed to build a solid reputation, which assisted in increasing her client base.



Making a name for herself

Attending the Investing in African Mining Indaba was a game changer for Smith, opening many doors for her and her business. "The Mining Indaba changed it all for me. I always knew that the Mining Indaba was the place to see and be seen," she says. Getting to the conference was not easy, but she found a way. Because she did not have enough money to attend as a delegate, Smith called the organisers and negotiated with them, offering to speak in return for access to the conference.

After coming to an agreement with organisers, Smith was granted access and was scheduled to be one of the speakers. She initially thought that she would be speaking in front of an audience of about 20 people, but it turned out that she was the main speaker in front of more than 3 000 delegates.

"I was speaking as the only female on the main stage and the youngest." She also adds that her company was the only unknown company among established mining companies. "I spoke on cobalt, rare earths and things that were not covered at the Mining Indaba." After speaking for the first time, she managed to make a good impression and has since been invited to the conference as a speaker every year.

Although Mining Indaba gave Smith exposure to the mining industry, she quickly realised that

“You’ll find your place if you want to be in this industry.” Lara Smith, managing director of Core Consulting

DIGITALIZATION IN MINING CONFERENCE 2020

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BACKGROUND

The Fourth Industrial Revolution (4IR) is the term for the world's digital transformation journey. Every day, it gathers more pace. Here, constant innovation is inevitable. It now drives competitiveness among successful global companies.

What is also clear is the mining industry, and in particular mining in Africa, must understand where we are on the innovation curve. We need to develop strategies to not get left behind.

This requires deep knowledge of the potential impact and value of digitalization on mining and metallurgical processes. We also need to understand the Internet of (Mining) Things in both opencast and underground mines.

Automation, virtual and augmented reality, real time information management and control are all components of this journey. The underground mining environment in particular, has challenges to address.

WHAT YOU WILL EXPERIENCE

Delegates will experience, within this conference:

- Keynote speakers from around the globe who are at the forefront of Digitalization
- Case studies and live stream feeds to global thought leadership
- Live demonstrations of state of the art technologies, systems and practices
- Showcasing of the latest developments in Digitalization, applied in real mining environments
- Networking with global leaders in this area
- Interactive discussions to address particular challenges
- A platform to discuss challenges.

OBJECTIVES

The objectives of this conference are to showcase global thought leadership in digital transformation, in mining, but also in other industries, to understand the 'art of the possible', and to gain understanding of how emerging advances in these technologies and applications can be transferred into our industry. Success for Southern Africa's Mining Industry lies in Collaboration, Open Innovation, and knowledge-sharing unlike ever before. This event thus provides for a timely and appropriate platform from which to make an impact.

Whatever terminology you wish to use, it is obvious that the world of work is changing rapidly.

The Mining Industry, along the Mining Value Chain, has to be a part of this in order to remain competitive, and to reach its ambition of Zero Harm.

Mining businesses in Africa need to join this journey, to remain relevant and sustainable, or be left behind. This event is a showcase and learning experience for everyone associated with the Mining Industry, to learn about Global Best Practices, to network with global leaders in mining and other businesses, and to do so in an exciting and interactive format that we have never used before.

Be prepared to be BLOWN AWAY and to come away excited, informed and modernized!

WHAT YOU WILL LEARN

Delegates will learn where global best practice exists. Even better, how to transfer these practices into local operations. They will also learn how the challenges of change management have been addressed, and how people can be taken along this journey.

Presentations will inform on data collection, screening, transmission and analysis. The objective is real time decision making at the right level in the organisation for proactive control before things go wrong.

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WOMEN IN BUSINESS

it wasn't quite the exposure she had expected. "I remember so well that for every ten men that came up to me, nine of them wanted a date. They never wanted to give me business, so I was very disheartened," she says. One of the delegates even questioned her capabilities in the mining industry simply because she was a woman.

As disheartening as this was, Smith admits that at least one out of the ten people who approached her were genuinely interested in talking about business opportunities. From that interaction, Smith secured her first consultancy project for a German engineering company, DMT, who needed to partner on a European Investment Bank project that dealt with sulfur abatement in Botswana.

"It was the first time I'd ever earned my own real money. It was really exciting and I even flew to Luxembourg to deliver the findings to the EIB." She also realised that she enjoyed doing work that involved feasibility studies and market analysis – which was not too different from what she had done in the past, except now it was in her own capacity. She still works with DMT on an associate basis as their economic analyst.

Traditional upbringing

Coming from a traditional Jewish upbringing, she was raised to get an education and secure a job that would also allow her to be a primary caregiver to her family. She pursued a teaching career that would allow her to work and still take care of a family. She obtained a BSc with four majors, including chemistry, statistics, economics and education, and went on to become a maths and science teacher. During her degree, her modules included finance and economic majors – which would become helpful later in her career.

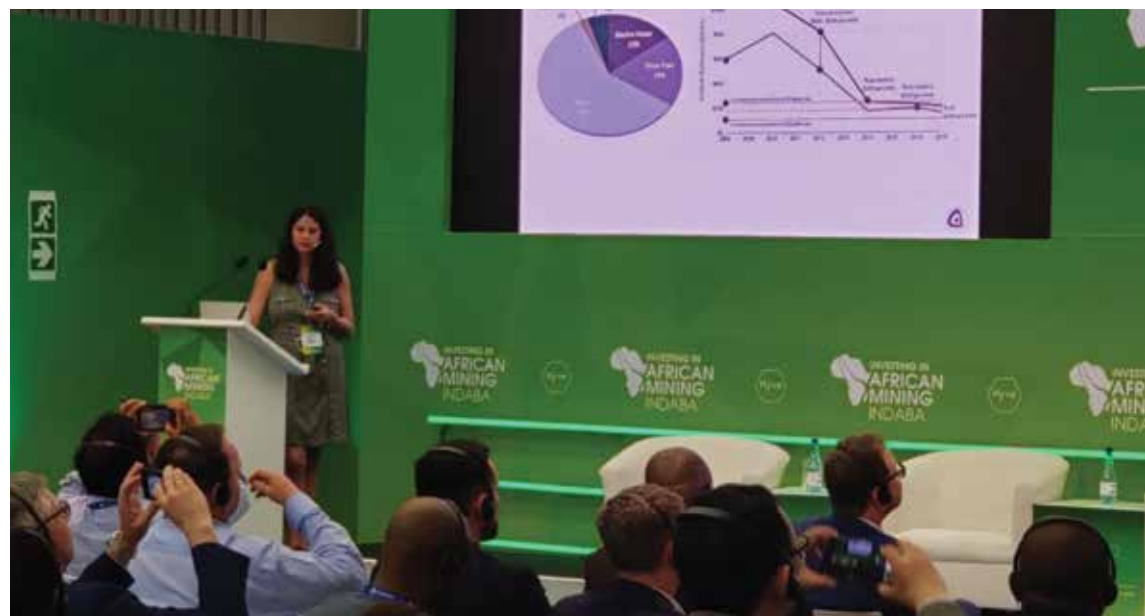
While furthering her studies, she wondered about other career opportunities outside of teaching. Since she was good at maths and statistics, her father advised her to do something that involved maths and statistics, as that would assist her in becoming an asset manager. Although she was busy with her BSc in education, Smith was determined to become an asset manager. "I remember doing the degree, taking extra financial subjects and working in the summer to get a major in economics with this view that I was studying asset management."

A job opportunity presented itself and she took it, although without much experience as an asset manager. "That's when I started analysing junior mining companies and understanding finance," she explains. All the experience gained while pursuing a career as an asset manager groomed her to become the analyst she is today.

Obstacles along the way

The road to becoming an analyst with her own successful business was not easy, as Smith has experienced some personal and career-related challenges. "A personal challenge is when you step into your own business, it's very hard to get the mindset that 'I'm it' and to get your own persona

Lara was among the speakers presenting at the Investing in African Mining Indaba



and confidence." She admits that it took a long time for her to become confident in what she was doing. "That idea of maybe not being good enough took me a long time to get right," she says.

She explains that, in business, people often start getting contracts when they get the confidence and vice versa – a catch-22 situation. The confidence issue is common for many women who often struggle because they have doubts about whether they are good enough. One of Smith's male acquaintances once told her that when clients pay for work that has been done, you should take it that have done a good job and be confident about it.

Smith also experienced other challenges where she felt like she was slightly at a disadvantage because she had not done the golf days and didn't have much experience in terms of going to underground mines – unlike her male counterparts. Being undermined by male counterparts simply because

WOMEN IN BUSINESS

she was a woman was another challenge Smith had to deal with. "If I wanted a business meeting, they only wanted dinner," she says. Even though Smith made it clear that she wanted a business meeting, most men preferred having the business meeting over dinner. This did not sit well with Smith, especially because she wanted to be known for her business ethics and acumen. When it comes to meetings, she prefers breakfast, lunch, conference calls and normal meetings during the day.

Overcoming challenges and learning lessons

It took a long time and many projects before Smith was recognised for her work and capabilities in her professional capacity. "Most people now know me. When I ask for a business meeting, they give me a business meeting, not dinner. I choose who to have dinner with," she says confidently.

She highlights that it is important to learn to say no and stand your ground when faced with situations where you feel undermined. "I think it's easier to be a woman in mining if you're truly soft and feminine, rather than trying to play the golf and drink with the boys and be the boy," she points out.

Smith believes that when women embrace the fact that they are a woman in the mining industry, they are more likely to earn respect from everyone in the industry, including the men. She adds that with time, male counterparts will soon recognise and appreciate that they are dealing with powerful women, who are good at what they do and command respect.

She once had her fingers burnt, where she went into business with someone based on a gentleman's agreement, which saw her lose out on copyrights of a report that was her brainchild. From that experience – which she admits was painful – Smith learnt the importance of having a binding contract for all stakeholders involved in any business. She also learnt how to walk away and cut your losses. "Those are hard lessons to learn," she adds.

Experience also helped in overcoming challenges. "You grow and gain confidence with experience," she explains. Not only did Smith learn from her own experiences in the industry, she also drew on the experiences of powerful mentors and icons in the industry such as Jeannette McGill. "Looking to people like that taught me a lot."

The year 2009 was difficult for many industries because of the global economic crisis, which had a direct impact on the mining and finance sectors. Smith was involved in both these industries; however, she says that being a perfectionist and never wanting to fail motivated her to keep going even when things got difficult. She was confident that if she could make

a success of her business during the economic climate at the time, then she would be able to become successful.

Female representation in the mining industry

In her opinion, female representation in the mining industry is still relatively low. "You start questioning why there are no women; maybe it's just a natural affinity to other things." During her teaching years, Smith observed how girls, from a young age, were very different to boys in that they were better at algebra and patterns compared to geometry, trigonometry and physics – subjects that were more popular among boys. She concludes that a combination of nature and the make-up of the mining industry could possibly be contributing factors to why there are still more men than women in the industry.

As a mother herself, Smith is aware of the difficulties of balancing motherhood and her career in the mining industry. "I can only imagine what it must be like for women who are underground or on-site with children," she says. In addition, time away from home because of the remoteness of the mines is another aspect that may deter women from getting into the industry. Smith says that because of the unique demands of the mining industry, perhaps it does not attract a lot of women.

To turn this around, Smith says it is important to start at early education levels, exposing girls to subjects that will allow them to pursue careers in the mining industry. Furthermore, conveying that mining has many career options and opportunities that don't require women to work hard in harsh mining environments, often located in remote areas, would also help attract more women to the industry.

She explains that mining needs accountants, finance people, marketing people, salespeople and an online presence, among others. "I think that needs to be conveyed and I think that would attract a lot of people." Smith still encourages women who prefer to be hands-on at mine sites to do so, saying that if they have a calling to be geologists or engineers underground, they should go for it.

For young women thinking about pursuing a career in the mining industry, Smith advises them to stick with the industry. "You've got to stick with something; and if it's not working, change it for you. You'll find your place if you want to be in this industry," she says. She adds that the industry has bullish and bearish years, so things could be going well one year, only to change the next.

"You've got to be prepared for the ups and downs. When it's down, you've got to know that it will rise again. Stick with it and take every opportunity," she concludes. **35**

WOMEN IN BUSINESS

Breaking barriers

Running a sustainable and successful business is not easy, even more so when you are a woman operating in a historically male-dominated industry. **Inside Mining** speaks to Lindiwe Nakedi, owner and CEO of Gubhani Exploration, who shares her experiences as a woman with a business operating in the mining industry.

As the CEO of Gubhani Exploration, Nakedi has many responsibilities, which include business development, strategic management and giving direction to the business. In addition to that, she also oversees the day-to-day operations of the business.

The fact that Nakedi had no mining background did not stop her from establishing a business in the industry.

“Because I did not study anything in the mining industry, it took a lot of learning to adjust to such a heavy-engineering-type environment. I first ran a recruitment company, which was good practice to develop a certain amount of resilience to tough market times, a good work ethic, and the people skills needed for any business,” she explains.

Gubhani Exploration’s core focus is surface exploration and core drilling services – a tough area to break into. Nakedi explains that the drilling business required a lot of dedication and perseverance to build, as well as capital. It was only after nine years that the business started growing and registering profits.

Conquering the challenges

Entrepreneurship has always been a passion for Nakedi, and she was determined to make a success of it. “I’ve always known that I would like to own my time and be able to do things that would give

Lindiwe Nakedi, owner and CEO
of Gubhani Exploration
(Credit: Cebisile Mbonani)



WOMEN IN BUSINESS

“A well-educated workforce is a very powerful and vital part of the growth of our economy.”

me financial freedom,” she adds. Flexibility would afford her the time to be a mother, among other things.

Getting to where she is today was no easy journey, as there were many challenges Nakedi had to overcome. One of them was making the transition from her humanities background to mining. “In the earlier days, I used to feel like I don’t belong in the industry but then realised

that what I needed to do was learn and improve my knowledge and understanding of an industry I had chosen to pursue a business in. Yes, it is male populated, but I’ve learnt that business is business and I don’t need to bring emotions into a situation, only facts – and facts don’t care if you are male or female,” she says.

Nakedi feels that it is highly unlikely that the challenges she faced were unique to her because she is a woman. “They were all business problems: from not being given drilling work because we are too small or do not have enough capacity to also not having enough capital or even cash flow. The build-up was slow and hard, and sadly no financial institutions or developmental financing institutions could assist us,” she explains. Such challenges are common for many businesses like Gubhani.

Nakedi and her team had to be innovative to overcome all these challenges, especially at a time when markets and the economy were not favourable, which did no favours for small businesses. “As a small company, we had to ensure that we could at least subcontract any work we got and save what we made, until we got an opportunity to buy second-hand equipment,” Nakedi says.

Another solution to the challenges was partnering with a more established organisation, which was helpful because it allowed Gubhani to tender for work and show that it could fulfil the requirements. “All but one of our pieces of equipment were self-financed and fully paid up, so what we made could go back into growing the business further.”

Female representation in the mining industry

Most of the clients and Gubhani staff are male; however, this has never been an issue for Nakedi. “I have only experienced respect. People would mostly be willing to help if I too showed them respect and was willing to learn from them,” she explains.

In terms of female representation in South Africa’s mining industry, Nakedi feels more female representation is needed, despite more women joining the industry and working at different levels in diverse professions. She stresses that such representation needs to reflect the country’s demographics, and that it needs to be at vital levels – such as in leadership positions and decision-making levels (on the board) – where it matters most to have more women represented.

According to Nakedi, one of the ways to increase the number of women in the mining industry is to change the thinking. “I believe outdated mindsets are the greatest barrier to transformation. Old mindsets about women and men need to change in the current time. I believe that work is work and it should not matter what your gender is; if a job is to be fulfilled, then let the best candidate for the role be given the opportunity to do it, regardless of gender,” she explains.

Although the industry has come a long way in terms of female representation, Nakedi highlights that there are still challenges relating to adequate PPE for women, suitable ablution blocks and a safe working environment. “All these issues require an inclusive mindset.” She points out that if the industry standards were inclusive of the needs of all genders from the start, then the industry would have succeeded in accommodating everyone in mining.

She also highlights the importance of government to focus on and invest in educating young people in South Africa. “A well-educated workforce is a very powerful and vital part of the growth of our economy. And giving better support to entrepreneurs will assist in the growth of the backbone of our economy as well.”

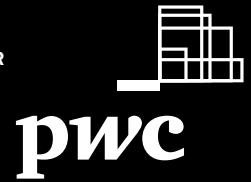
Reaping the rewards of success

Despite the obstacles that have come Nakedi’s way, she continues to persevere. She praises her parents for their support during challenging times. “Our parents were so supportive, and we just wanted to make them proud – so we had to keep going no matter what or how difficult the climb,” she says. In addition, her strong faith also motivated her to keep going.

Her advice to young people wanting to become business owners like herself is that they should be willing to put the hours into seeing their dreams come true. “They need to be willing to wait it out when things are not yet going their way, to truly dig deep to persevere, and never give up. To know that patience and a slow build-up are not useless because they build character. It is truly worth it in the end,” she concludes. **35**



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PRODUCT DEVELOPMENT

NEW IMPROVED CONCEPT



SANITECH Mining is tough and the conditions can be harsh and demanding. Sanitech is responsible for developing a range of robust portable toilets for both surface and underground use.

Sanitech's latest local innovation, the NIC (New Improved Concept) unit, has dramatically improved the hygiene and usability of self-contained portable toilets, by focusing on the underground user and especially woman in mining.

Going underground, listening to the employees and doing extensive research on different types of mines, the design team came up with the NIC – a spacious, portable solution that offers the end-user dignified, hygienic facilities. The unit has a rotating bowl that prevents exposure to human waste and a hand wash basin to improve overall hygiene. The bowl is further coated with nanotechnology that prevents debris from sticking to it. The NIC unit also offers security for women in mining, as it has a locking mechanism accessible from the inside. There is also a PPE hook, which assists the user with a place to hang up their overall, hard hat and belt.

The NIC unit is available in two different heights and can be assembled underground. This option is especially suitable for refuge bays due to door height restrictions. The NIC unit has a canister system that can take up to 85 litres of waste.

Current market

While Sanitech's patented NIC unit is fairly new to the market, the unique sanitation solution has already been embraced by numerous sites in the mining sector, including Mponeng (Anglo), Thubelisha (Sasol Mining), Booyendal (Northam Platinum), Doornkop (Harmony) and Mopani (Glencore) in Zambia.

Although there are various other competitors and products populating the market, none offer the unique advantages of the NIC unit design, particularly the rotating bowl with nanotechnology coating. At this

PRODUCT DEVELOPMENT



stage, the market remains rather open and the potential is endless.

Benefits for women in mining

The NIC unit offers numerous benefits to its users, especially woman miners. These include:

- unit is more hygienic with no exposure to waste
- lock outside as well as inside unit for protection
- unit is more spacious than traditional units – which gives women more space to take off their overalls

- unit can be fitted with all hygiene equipment – e.g. sani bins, toilet roll holders, soap dispensers and paper towel dispensers
- light fittings can be ordered on request
- hand wash basin with fresh water for improved overall hygiene
- PPE hooks inside.

NIC summary

The NIC units have changed the lives of women who work in underground mines daily. In addition, the units do not require an external water supply, as the water is housed inside the walls and topped up during routine servicing.

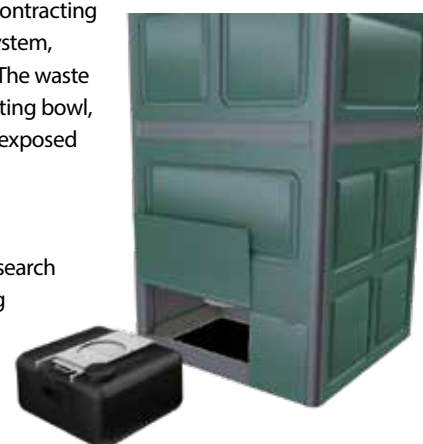
A clean bowl is presented every time and the canister is completely sealed on removal. The chances of contracting illnesses are minimal, as no flies can enter the system, which reduces the spread of airborne diseases. The waste is dumped into a concealed canister by the rotating bowl, using a simple lever. In so doing, the user is not exposed to the waste.

The NIC unit is an example of innovative approaches that accommodate women in the mining industry. Furthermore, this and other research and development initiatives indicate the mining industry's drive towards making the industry more inclusive of women. ³⁵



The NIC unit incorporates a rotating bowl with nanotechnology

The NIC unit has a canister system that can take up to 85 litres of waste



Salient features and benefits of Sanitech's New Improved Concept unit

Feature	Advantage	Benefit
Plastic components	Reduces weight, not a problem in coal and gold mines	Cheap to replace, will not cause explosive conditions in the mine
Rotating bowl	Seals system, safe, more difficult to throw foreign objects into system	Eliminates airborne contaminants, easier to clean
	Seals entrance to canister	Safe – no foreign objects can fall in
Hand wash basin	Inside unit	Drains into toilet, to assist with rinsing bowl
Canister	Canister closes	No exposure to waste, added dignity to user and service personnel
	Seals to prevent spillages	No smell/spillage, and little risk of contamination
	Handles on both sides of canister	Space for more than one person to pick up and move easily
	Canister sliding door indicator	Helps to ensure canister is sealed before moving it
Canister – 85 litre shape	Smaller than 160 litre drum – stackable	Light to carry, women can service unit, uses less space, cheaper servicing
PPE hook	A place to hang clothing, belt and equipment	Easier to use, frees up hands
Lamp bracket	Cap lamp can be hooked on to the lamp bracket	Light in the unit for the user
Water in walls	More space available	Makes the inside roomier, less clutter
Nanotechnology	Cleaner system	Cleaner, more hygienic system, less exposure to waste
Lockable door (inside and outside)	Safety feature	Women in mining experience improved safety/privacy with the added lock inside
Dry sanitation system	No pipes, cables or any connection necessary	Unit will work even without water

PRODUCT DEVELOPMENT

Passionate about science

South Africa has a severe acid mine drainage (AMD) problem, particularly in the Witwatersrand and Mpumalanga areas. It has a significant environmental impact, particularly where mining commenced prior to the promulgation of environmental legislation. The scale of the problem will increase as more mines reach end of life and there is further decant of AMD at new and often unpredictable locations.



Kerri du Preez (left) and Mariekie Gericke worked together on the cloSURE project

PRODUCT DEVELOPMENT

Inside Mining speaks with two female scientists who are involved in the development of a technology for the treatment of AMD – Mintek's cloSURE™ process.

Mariekie Gericke is the manager of Mintek's Biotechnology Division, while Kerri du Preez is a senior scientist in the division. Mintek is a state-owned science council and one of the world's leading technology organisations specialising in mineral processing, extractive metallurgy and related areas. Gericke is responsible for the division's portfolio of research and services activities, which include tank bioleaching, heap (bio) leaching, minerals microbiology, mine water treatment and waste recycling. Sourcing research funding and establishing collaborations with local and international partners form part of her activities.

Du Preez's current focus is on further optimisation and piloting of the cloSURE process. "A typical day involves spending time in the laboratory, running experiments, collecting and reviewing data and making recommendations for further process improvements. According to Du Preez, "It is very exciting to be part of the team currently operating a pilot plant at a coal mine site in Mpumalanga. Although it is intense physical work, it is very rewarding to see that the team's efforts show positive results."

The water treatment process

The cloSURE technology focuses on the treatment of AMD for application in the coal and gold mining industries. The intent is not to produce potable water, but rather to provide water that is fit for use for irrigation. "It is a low-cost, low-maintenance, low-tech, biological process that reduces the acidity of the water, as well as sulfates and metals," Du Preez says. "We can produce water of suitable quality for reuse in irrigated agriculture."

Gericke explains that the technology is aimed at treating mine waters emanating from post-mine closure or decant from abandoned mines, to produce effluents within regulatory limits specified for discharge or reuse. Du Preez adds that Mintek's mine water treatment technology aims to provide localised solutions after mine closure, where treated water could be reused sustainably by the local communities for the irrigation of food and energy crops. An alternative water resource and rehabilitated mine land have the potential to create agri-industrial hubs in order to promote entrepreneurship and employment

in local communities. The broader vision of the project encompasses skills development and new, inclusive economies around mine water in Mpumalanga.

Representation and equal and fair opportunities for all

According to the Unesco Institute for Statistics, less than 30% of the world's researchers are women. Gericke mentions that more than 40% of the employees at Mintek are women, adding that more and more women are studying disciplines that used to be male-dominated. Historically, there were few female engineers and scientists in the mining industry; however, in Gericke's opinion, this is changing based on her observation of many women across different areas of the mining industry. Du Preez echoes her views, adding there are women employed at all levels in the mining industry.

In terms of increasing opportunities for women in science, Gericke mentions that mentorship plays a crucial role. Speaking about Mintek in particular, she explains that the emphasis is on mentoring and transferring knowledge to the upcoming generation to ensure that they get a good grounding for their careers as the next group of innovators and technology developers.

For women wanting to pursue careers in science, Du Preez says – in addition to working hard and seizing opportunities – it is important to believe in yourself. "Learn as much as you can and don't self-doubt," she says. One of the unique traits about being a scientist is to be curious and question how things around you work. "That's the exciting part. For me, that's what science, engineering and developing technologies are about," she adds. Gericke's advice is for people to be passionate about their research.

Stories like these remind us that women are playing a significant role in the science and engineering arena. The future looks bright for the next generation of female researchers. **35**

“Learn as much as you can and don't self-doubt.”

Kerri du Preez, senior scientist, Mintek

PROFILE

More than just valves

Invisible Valves is a well-established valve distributor, manufacturer, rubber liner and reconditioner, which has serviced the industry globally for 38 years.

At the helm of Invisible Valves is Pam du Plessis, a multiple award winner, who currently holds the title of Africa's Most Influential Woman in Business and Government category Manufacturing & Engineering Sector for the SADC region and Africa.

The company's operations are based in Knights, Germiston, with two properties in the same street. The original premises houses huge amounts of stock, while the other is the accredited Repair and Service Centre, with a full Rubber-lining Division and assembly plant.

Training for success

The company has a clear vision and strategy for the future and continues with its original plan to grow the business year on year. Part of the strategy includes the continued education of staff and its esteemed customers.

As such, a training facility is located within the first premises, which is used for upskilling and refresher courses throughout the year. The Inval Training Centre also offers the SAVAMA Working with Valves online course to all staff members and mentees. The facility offers state-of-the-art equipment, a library and a space that is conducive to learning.

The in-house upliftment programme continues with the entire labour force being trained in all areas of the shop floor. This multiskilled programme offers the employees growth opportunities on every level. Internship and learnership programmes are also in place throughout the organisation, offering hands-on learning and experience across the full spectrum of the work environment.

A tight-knit approach

Leadership is broken down into teams, which are made up of five or less, giving the team leader capacity to interact with each team member daily. This smaller, more

intimate structure has had a huge impact on productivity as well as the overall company culture. With a strong sense of family values, the company operates as one, aligned and focused on the goal ahead.

The Sales team is broken up into four areas, in order to service the industry as efficiently as possible. Within the Projects Department, there is a resident engineer, supported by projects salespeople and a projects administrator. The external salespeople are located around the country, either linked to Invisible Valves' offices or in its branches, which are currently located in Nelspruit, Polokwane and most recently the Western Cape. Agents form part of this sales team and can be found throughout Africa. The internal team are the support structure – the solid foundation that brings the whole team together.

A range of offerings

Invisible Valves has a full range of valves and ancillary equipment on offer, with the Inval range of products as well as a premier partnership with DFC and many others. Invisible Valves has 38 years of experience in the mining sector and has completed numerous projects on the African continent and beyond.

The Rubber-lining Division offers various types of steam or chemical cure rubber grades for valves, pipes and fittings, while the plant can cure goods of up to 10 m in length. The Reconditioning Division offers an alternative to the replacement of valves and instead refurbishes to the original manufactured standards. **35**



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HEALTH & SAFETY

PPE for women

**MINE HEALTH
AND SAFETY
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IN MINING

A major challenge for the mining industry has been to introduce and ensure the full incorporation of women into the sector, by extension ensuring the provision of appropriate PPE for them.

Up until the 1990s, legislation meant that women were not permitted to work in the mining industry in South Africa. This changed when the South African Mining Charter in 2004 introduced targets urging mining companies to have at least 10% female participation in the staff complement by 2009. The provision resulted in women making inroads into the male-dominated mining sector despite the occupational health and safety challenges that favour men.

The mining industry is an inherently hazardous industry, with workers often exposed to various health and safety risks, including chemical, physical, biological and psychosocial hazards in the workplace. Some of the causes of ill health in the industry are noise, dust, vibration and performing manual tasks. The functional work capacity of workers can be affected by factors such as age, gender, injuries, health, lifestyle and anthropometrics – particularly height, weight, body mass index, body circumference and skinfold thickness.

The Act

Section 11 of the Mine Health and Safety Act (No. 29 of 1996) provides specifications on the obligations of the employer to assess and respond to the risk that employees may be exposed to while at work. It is expected that the employer would do as far as reasonably practicable within their means to determine and implement feasible and effective control solutions to substantially reduce the risk of illness or injury to employees.

Ideally it would be most preferred to eliminate the risk or substitute the hazard,

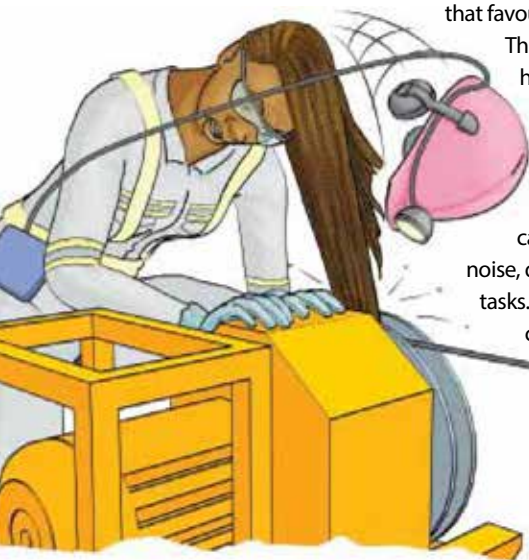
or engineer the hazard out of the process, practice or activity. However, this is mostly only successful during the design phase of processes or systems. In existing practices, the employer is often left with limited options, relying on administrative controls and personal protective equipment (PPE) to manage the identified risk where hazards are not particularly well controlled.

Furthermore, section 6 of the Act stipulates that employers must ensure the adequate supply of all necessary health and safety equipment and health and safety facilities for each employee. They must also, as far as reasonably practicable, ensure that equipment and those facilities are in serviceable and hygienic conditions.

Ensuring appropriate PPE

Previous research has shown that females generally have lower physical work capacities, physical strength and heat tolerance than their male counterparts, and that they also differ in anthropometry and body composition. However, the design of PPE for mineworkers has generally been based on male anthropometric dimensions. This may compromise women's comfort, safety and performance at work.

Owing to the physical differences between males and females, stakeholders in the mining industry acknowledged the need to conduct studies and research to determine and understand the impact of mining work on the occupational health and safety of



HEALTH & SAFETY

women, and to create a safe work environment for both men and women. The importance of looking at workers' capacity and the physical demands of their work to ensure a good health and safety fit cannot be understated – and ergonomics has much to offer in this domain.

With this in mind, in March 2012, the Mine Health and Safety Council (MHSC) completed project SIM 100904 on 'Personal Protective Equipment for Women in the South African Mining Industry'. The aim of the project was to develop comprehensive and systematic requirements to assist the South African mining industry in the selection and provision of appropriate and suitable PPE for women in mining. Such PPE should be suitable for women's body physique and enhance compliance.

The project highlighted the following:

- It confirmed the assertion that female workers in the mining workplaces have inadequate protection against risks from work-related hazards, while their personal comfort and work performance are also compromised.
- There is a possible association between the type of PPE used by women and vulnerability to skin conditions such as contact dermatitis, chaffing and rashes including bacterial and fungal infections of the feet.
- The selection, provision and use of PPE in the workplace should not only be based on hazard identification and risk assessment process, but should necessarily incorporate ergonomic and comfort aspects of users as a way of guaranteeing PPE efficacy for all workers.
- To address the specific PPE needs of women in the mining industry, PPE selection strategies should be based on a comprehensive approach that involves inputs from all sectors having a bearing on the provision and use of PPE.
- Women in mining face unparalleled health and safety challenges related to the PPE they currently use, simply because it was designed for a male physique/body structure. It is also evident that woman miners were not

happy with PPE, as it does not properly fit them.

- Ill-fitting PPE contradicts the key notion that effective protection is only achieved by suitable PPE, which is correctly fitted, maintained and properly used.
- The lack of adequate toilet facilities for women in the mines surveyed and their hygienic conditions are unacceptable and, as such, they pose the risk of women developing infections.
- There is a need to redesign PPE for woman miners to accommodate their anatomical and physiological body structures in order to ensure a proper fit, comfort and maximum protection from mining hazards.

Critical PPE

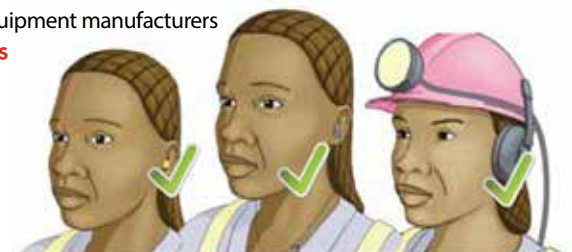
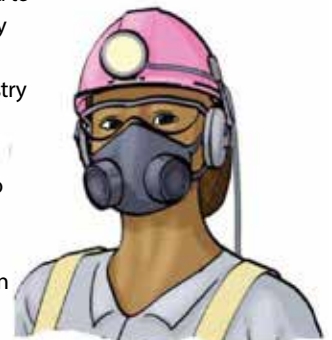
Self-contained self-rescuer (SCSR) devices are among the critical PPE items required for use by mine employees in underground operations where the risk of fires, explosions and exposure to excessive harmful airborne pollutants in the workplace has been identified. The body-worn unit is a portable oxygen source for providing breathable air when the surrounding atmosphere lacks oxygen or is contaminated with toxic gases, and is used to enable the affected employees to evacuate to a healthy and safe place with minimal impact on their health.

Some of the SCSR models currently in use in the industry have been found not to be user-friendly – particularly due to the bulky nature, weight and process related to the wearing and equipping thereof in an emergency. To this end, in early 2018, the MHSC completed research project SIM 160902 – 'Assess the Ergonomics Design of Self-contained Self-rescuer Devices for Use by Women in Mining' – in order to identify improvements that would make the wearing of SCSR devices more

acceptable, comfortable for the wearer and not hinder escape.

Findings from the study include the importance of experiential and expectation training for mineworkers using SCSRs in escape situations.

Several innovative ideas are included for the consideration of employers, employees (end users) and original equipment manufacturers of SCSRs. ³⁵



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HOLISTIC APPROACH NEEDED to close mining gender gap

The number of women working in the mining sector has increased significantly over the past 17 years, growing from 11 400 in 2002 to over 53 100 today. As such, it's more important to cater for their needs than ever before

Women represent about 12% of the entire mining workforce of 464 667; however, an area that has lagged significantly in the facilitation of women's entry into mining has been the provision of personal protective equipment (PPE), designed specifically for women miners.

This can largely be attributed to a general lack of awareness within the industry, with many still considering PPE for women as being more about adding a 'feminine touch' rather than addressing the practicalities of workwear tailored to the female anatomy.

A commonly observed trend is that many companies still procure male and/or unisex safety wear due to a lack of understanding that the anatomy of a woman differs greatly to that of a man and, as a result, the PPE procured should reflect that. Comfort can have a profound effect on productivity, which means that ill-fitting PPE could seriously impact a wearer's quality of work.

A critical consideration is thus that ill-fitting safety footwear and workwear leads to several issues, which include discomfort and pain, lowered productivity, absenteeism due to health-related problems such as

urinary infections, and even a psychological barrier to the work environment. Industrial psychologist Uma Naidoo says if one is not comfortable in their work attire, in which they spend about eight hours of the day, it could lead to frustration, poor concentration, increased breaks, and many other debilitating effects on productivity. She says workers who are uncomfortable in their clothing are not functioning at their best.

The mining industry has traditionally been a male-dominated space, particularly regarding heavy work, and – despite many strides having been made in terms of gender inclusivity – the environment still remains a tough one for women.

The most basic of challenges

It must be remembered that even performing basic bodily functions still holds significantly more challenges for woman miners than their male counterparts. For instance, consider that



“Women represent about 12% of the entire mining workforce of 464 667; however, an area that has lagged significantly in the facilitation of women's entry into mining has been the provision of personal protective equipment, designed specifically for women miners

It's important for women to have PPE designed for their anatomy

HEALTH & SAFETY

the simple task of going to the toilet can be a hardship. Often, women who work underground must walk to toilets that are up to 400 metres away from a blast site (legal requirement) just to relieve themselves.

Another challenge upon reaching the toilet is the removal of the garment. Because women are making use of a men's boiler suit, the only way to relieve themselves is to unzip the boiler suit and remove it in its entirety (from top to bottom). To do this, women further need to remove other parts of their mandatory kit, such as their hard hat, safety pack and torch battery.

Another factor that affects women's dignity is that the colour of their underground mining boiler suit is unbleached. When women have sanitary-related accidents underground, it shows up on this colour and exposes the accident to all.

Thus, the issue of anatomically inappropriate design is a critical point that needs to be explored when considering the health and well-being of female workers on the mines, as well as increased productivity.

Providing solutions with PPE

To address this, a range of safety wear that challenges the status quo that one size fits all has been designed through extensive research and consultation with women in industry. This includes a groundbreaking boiler suit for woman miners, which includes innovative features such as the V-flap at the back of the boiler suit to improve the ease with which women use ablution facilities and the inclusion of navy fabric between the hip and thigh area to prevent the embarrassment of a sanitary-related accident.

Now, when going to the toilet, the top part of the boiler suit does not need to be undone or removed, due to the V-flap design in the back. This makes it easier for women to relieve themselves more regularly rather than holding in the urge for the greater part of a shift, which compromises their comfort and increases the chances of a urinary tract infection.

The design of the boiler suit is cut according to women's anatomy, with a narrower back area and wider front area, as well as a shorter crotch-to-waist ratio. Also, women naturally have wider hips and a more pronounced posterior, which is accommodated in the design, allowing for the elasticated waist band to rest where a woman's waist line typically is.

For above-ground workers, female conti suit jackets are tailored at the back, to accommodate for a woman's narrower back, but broader at

the front to accommodate for her bust area.

This enables a woman to move freely within her jacket without restriction when moving her arms.

Trousers are also designed to have a higher waist to prevent the exposure of the back and midriff regions when bending over or raising the arms. Garments designed for men often result in trousers that sit below the belly button and place pressure on caesarean scars, and expose the upper half of a woman's posterior when she bends over.

To combat this, women have tended to wear nylon tights underneath their pants to preserve their modesty. Nylon does not absorb moisture; it keeps the skin damp during the day, which becomes a breeding ground for bacterial and fungal infections. Furthermore, because sweat is not absorbed, salt crystals remain on the skin, rubbing together and causing chafing.

In hot, humid environments, many women contract bacterial and vaginal infections due to such undergarments.

Take-home message

If the mining industry is to truly close the gender gap, more needs to be done than simply hiring women to make up the numbers. A holistic approach needs to be taken to address the physiological requirements of a female workforce to put women on an equal footing with their male co-workers. **35**



Research with woman miners was conducted to design appropriate PPE for women in various industries



Comfort and convenience are important for women working in any industry

LEGISLATION



Women in mining law

It is widely accepted that the legal profession, specifically in the mining industry, is still a largely male-led space, writes **Ntsiki Adonisi-Kgame**.

This fact presents the women in these areas with many barriers, but also countless opportunities.

Women in the legal profession face numerous issues, which include: under-representation of females at senior levels; inconsistent allocation of work; inadequate exposure; unequal pay with male counterparts; lack of promotion and business development opportunities; and failure to retain woman attorneys, particularly women with children.

Women tend to work while on maternity leave in order to remain relevant and manage competition. Furthermore, female associates consistently complain about the absence of female leadership in law firms, which feeds into their inability to conceptualise a long-term future in the law firms.

Shattering stereotypes

Notwithstanding the various challenges faced by female practitioners, there are many opportunities for women in the legal industry. As a female mining

Ntsiki Adonisi-Kgame is an executive: Natural Resources and Environment Department, ENSafrica

LEGISLATION

“We all should be mentors and lift as we climb.”

lawyer, I do work with talented female mining lawyers at ENSafrica, but the reality is that there are very few female mining lawyers in South Africa. This narrative can be changed by both the women and men involved in the mining industry.

I have been fortunate to work in and navigate my way through both the mining and legal industries, which are very male-dominated. It is not an easy task, however; as a black woman in mining law, a significant part of my job involves shattering racial and gender stereotypes.

The exposure I get from practising mining law at ENSafrica is a great opportunity for me, as I have been exposed to a range of influential stakeholders in the mining industry who have been instrumental in supporting me throughout my career. Although there has been tangible progress in terms of integrating women into the industry, women remain under-represented in the industry and it will take the joint participation of men and women to achieve better results.

Changing mindsets

The topic of women's advancement and empowerment is receiving increased attention across the globe. The Law Society of South Africa's Women's Task Team was established in 2016 for the purposes of advancing transformation and uplifting female legal practitioners in all key areas.

Research shows that the number of female students in law schools far outweighs the number of male students. Similarly, there are far more female than male candidate attorneys in law firms. However, most female practitioners exit the industry before reaching partner level.

A change of mindset is crucial to ensuring that women stay in the legal profession. This will enable the industry to adopt measures that accommodate



the needs of women with buy-in from all the stakeholders. To do this, we require both men and women in leadership positions in the legal fraternity to recognise the value that women bring to the table and to champion women's advancement and empowerment. The government also has a huge role to play in driving and implementing policies that are supportive of women's advancement and empowerment.

Implementing change

The legal fraternity needs to draft, promote and implement policies that support the advancement and empowerment of women. This should include the participation of women in business development initiatives; it should focus on the training, sponsorship, coaching and mentoring of women. Viable plans that are designed to retain females from junior to partner levels must also be introduced in the workplace. The women in the industry must pay it forward and mentor other female lawyers to have better female representation and more successful woman lawyers.

Furthermore, companies that use the services of lawyers must recognise that they have the power to influence gender diversity in the industry by requiring law firms to prioritise and brief female lawyers in key deals. It is also notable that most companies have adopted policies that encourage gender diversity; however, companies often fail to have systems in place that hold management accountable for ensuring that the policies are implemented.

Women need to be strategic in dealing with gender issues and should continue to work smart and push boundaries. The leadership in the legal fraternity and mining industry must support gender transformation. Men need to be part of the narrative to enable a change in the status quo.

The achievement of gender equality is a development that has been gaining traction globally and can be achieved! We have to be deliberate in achieving gender diversity in mining and the legal profession. **35**

FEMALE PROFESSIONALS

For the love of rocks

Geologists have something in common: the love of rocks. And it is this love that could potentially lead to the development of mines. **Inside Mining** speaks to two geologists who are passionate about the earth beneath their feet.

Evelyn Marumisa

Evelyn Marumisa is an economic geologist for the Geological Survey Department at the Ministry of Mines and Mining Development in Zimbabwe.

What does your job entail as an economic geologist?

I work in government and my department's primary role is to monitor mineral exploration activities in the whole country.

My key responsibilities are to scrutinise and summarise Exclusive Prospecting Order (EPO) and Special Grant (SG) reports and applications (these are different exploration licences) and to visit exploration areas to check the implementation of EPO and SG work programmes.

I also assist small-scale miners with geological information, attend to enquiries on different mineral commodities in Zimbabwe, acquire data on mineral resources within the country, and participate in research on economic geology aspects.

How did you get started in the industry?

When I finished school I really didn't know about geology. Actually, just after school I worked for a year as a temporary maths school teacher and then worked in a bank for about two years. It was only years later that I realised I had a passion for rocks. Thanks to the internet and my family, I stumbled upon this interesting field.

Has this always been something you've wanted to do?

No. It wasn't planned; it was just a passion I followed.

What are some of the challenges you've faced in mining in your career so far?

The biggest challenge for me was gender consciousness. In the beginning of my career, I was overly conscious of my femininity but with time I realised that it didn't work. In a male-dominated industry, particularly in the mining environment, that awareness is not necessary because it results in one's capabilities being undermined. As a result, there is possible seclusion from opportunities, and this may consequently affect one's career.

Do you think these challenges had anything to do with the fact that you are a woman?

Well, to some extent. At times you are already disqualified before being given a chance because you are a woman and stereotypically 'there are some things you just can't do'. But times are changing and these stereotypes are quickly fading away.

How did you overcome such challenges?

The proof of the pudding is in the eating. In such cases, I just had to prove myself, walk an extra mile and eventually perceptions change.

How are you received by your male colleagues?

Currently, I'm working in an environment where there isn't any gender-based discrimination. We have a relationship that's full of mutual respect.

What is your view on female representation in the mining industry in Africa currently?

There are still fewer women in the industry, particularly in managerial positions, but, over the years, we've been seeing a gradual increase in female numbers – particularly in the artisan field.

What do you think needs to change to create more opportunities for women in the industry?

There are plenty of opportunities for women in the industry, but I think that at high school level, young women and girls need to be encouraged to take up maths and science subjects so that they may qualify for mining-related programmes.

We need to also have more women in senior management and board positions in the industry; they will serve as role models to their female counterparts, who may feel as though there isn't enough room for women in the mining industry.

What advice would you give to a young woman wanting to pursue a similar career path as you?

I'd say they should go for it, never be intimidated by anything or anyone.

Is there anything you would like to add?



Evelyn Marumisa is passionate about geology

FEMALE PROFESSIONALS

Women are not competing against their male counterparts in the mining sector; in fact, when they are incorporated at various levels in the industry, they bring in a whole new unique set of skills.

Vimbayi Gengezha

Vimbayi Gengezha also works for the Zimbabwean Ministry of Mines and Mining Development, as a field geologist in the Geological Survey Department.

What does your job entail as a field geologist?

Field geology involves geological mapping (identifying different rock types, their ages as well as other characteristics) of the country and the production of geological maps. This includes writing reports describing the geological formations in an area and their relevance to mining, and their potential to host mineralisation. Field geology also entails conducting geochemical and geophysical surveys and generating potential mining targets.

How did you get started in the industry?

It all started with having a passion for the industry and getting a degree in geology from the University of Zimbabwe in 2007. Being employed in exploration companies and going through varied training at the Geological Survey have given me experience in my field of work. Actively participating in mining projects, programmes and conferences has also helped me get started, and led to professional growth.

Has this always been something you've wanted to do?

Yes, I have always wanted to be a geologist. During high school, I wanted a career that has a lot of outdoor fieldwork. I did not even know about geology at that time, until a team from the Zimbabwe School of Mines delivered a presentation on our career guidance day. The moment they presented about geology, I knew that was what I wanted to pursue.

What are some of the challenges you've faced mining industry in your career so far?

The main challenge is being left out or sidelined – not having the same opportunities as male colleagues.

Do you think these challenges had

Vimbayi Gengezha believes that being a female is not a weakness or disadvantage

anything to do with the fact that you are a woman?

Yes, it had everything to do with the fact that I'm a woman. At one project, I could not enter a high-security mining area where every person had to be physically searched. All the security guards were male, and could not search me, so I stayed behind every time we visited the site.

Some companies consider it cheaper to employ males because it is easier to cater for their accommodation. The males can share but it is a challenge when there is one female and no one to share.

How did you overcome such challenges?

Well, I raised it with management but, to be honest, sometimes it is a matter of proving you are needed in those areas where people feel they can do without you!

What motivated you to keep going in difficult times?

The understanding that every industry has its own share of problems, so you must make it work wherever you are. Flexibility will always keep us going – making adjustments where necessary. The passion for geology also keeps me going through difficult times.

How are you received by your male colleagues?

Nowadays, they receive me as their female counterpart, nothing weaker but someone who has a lot to contribute to the success of the organisation.

What is your view on female representation in the mining industry in Africa currently?

More and more women are starting to develop an interest in the mining industry, compared to the 20th century, when it was considered a man's industry. In my geology class in university, only four women graduated. The numbers have increased significantly over the years.

What do you think needs to change to create more opportunities for women in the industry?

Young women in schools should be encouraged to join the mining industry and not only focus on careers traditionally associated with women. There must be a mindset shift at a young age. Sometimes, it is not easy to change how society views women, so women ought to prepare themselves well, through education or acquiring knowledge, excel and present themselves to the industry.

What advice would you give a young woman wanting to pursue a similar career path as you?

My advice is that they should go for it. It is an exciting career, with a lot of opportunities for growth. New technologies are being introduced, creating the need to research, learn and keep up with the major players in the industry. Mineral exploration and other fields of geology are improving every day and becoming more exciting.

Is there anything you would like to add?

Let us pursue knowledge and excellence as women. Being female is not an excuse; it is not a weakness or disadvantage. Let us continuously research mining, so that we keep up with the males and the rest of the world. **35**



FEMALE PROFESSIONALS

WOMEN IN MINING

breaking ground through increased inclusion

Lili Nupen talks about the potential of women in the mining industry when they are given fair and equal opportunities.

There has been a significant shift in the mining industry since Minister Gwede Mantashe took the helm at the Department of Mineral Resources and Energy, including a feeling of collaboration, and a willingness to listen and engage with all stakeholders in the industry.

There is a real drive to include women in mining, which is apparent in the 2018 Mining Charter, which requires mining companies to include women at all levels of employment, as well as at shareholding level. Mining companies also benefit from procurement credits if they utilise a percentage of their procurement spend on goods and services of woman-owned and -controlled companies.

The mining industry is typically a male-dominated industry and has been since inception; however, I've found that mining companies are increasingly utilising the skills of women as a result of their invaluable expertise and industry knowledge.

This means that there are significant opportunities for women to build businesses that support various elements of mining, above ground, in training and development, equipment supply, as consulting engineers, legal representatives, or in meeting other requirements mining houses have.

Shifting demographics

With the 2018 Mining Charter and other applicable legislation requiring women to be included in all aspects of mining, including the mineral extraction teams working below ground, there are also significant opportunities for women in other areas too.

It's become apparent in the last couple of years that the demographics within the mining industry are changing from a male-dominated industry to one where women are stepping up to the plate and taking on roles in all facets of the industry.

It is evident that there is a focus on diversifying the industry to ensure such participation by women,

despite the complexities of the underground environment. From an increase in the appointment of woman CEOs at mining companies, to benefiting from a compliance perspective in the procurement phase, and as specific targets are continuously being set for greater inclusion of women at all levels of employment (from board level all the way to junior management), we're making great strides!

A great example is that of Mpumi Zikalala, managing director of De Beers, who joined the business as an ore processing engineer, and worked her way up to her current leading executive role.

Making diverse voices heard

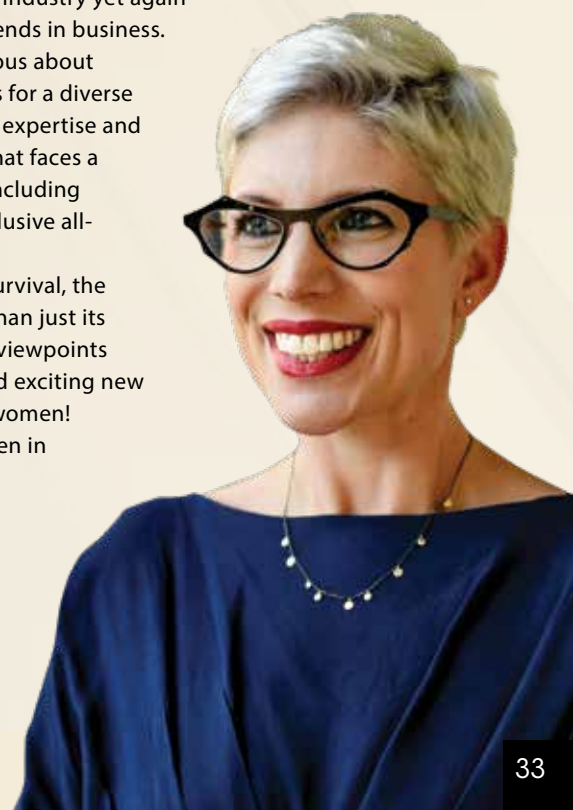
This encouragement and inclusion of women in all facets of the industry could create an excellent precedent for other industries, ideally creating a knock-on effect of real change across the South African economy, with the mining industry yet again having the potential to set new trends in business.

It's time that businesses get serious about inclusion and create opportunities for a diverse range of employees who have the expertise and insights to revitalise an industry that faces a range of threats and challenges, including leadership in mining being an exclusive all-white-male-dominated group.

As it creates new strategies for survival, the industry needs to diversify more than just its product mix. It needs to embrace viewpoints provided by bright, passionate and exciting new role players – many of whom are women!

In other words, it's time for women in mining to stand up and be heard, to showcase their insights and expertise, and to add their considerable value to conversations – and actions – about the future of mining in South Africa and elsewhere in the world. **35**

Lili Nupen is the director and co-founder of Nupen Staude de Vries Incorporated (Credit: Robyn Davie Photography)



INDUSTRY

Comfort and convenience for women in mining

A major challenge for the mining industry has been to introduce and ensure the full incorporation of women into the sector, by extension ensuring the provision of appropriate PPE for them.



Female employees at Exxaro no longer have to grapple with the challenge of finding professional and leisure wear that is both comfortable and fits. Following a redesign of their protective clothing, to suit the female body shape, worries about ill-fitting clothing, hard hats and footwear are a thing of the past.

The redesign of the personal protective equipment (PPE) clothing is just one initiative undertaken by Exxaro's Women in Mining (WIM) committees to attract more women to mining and empower the females who work in this male-dominated industry. Women represent only 13% of the mining labour force of 464 667, according to the Minerals Council South Africa.

"The PPE we provide to our female employees who work on the mines is much more comfortable than it

was previously," admits Vanisha Balgobind, executive head: Human Resources and chairperson: Women in Mining, Exxaro. "And it is all thanks to the WIM committees, who are passionate about who they are and their contribution to their work."

Committed to empowerment

Balgobind says Exxaro strives to ensure that their commitment to woman empowerment at all levels not only makes a difference to Exxaro, but the mining industry itself. "Establishing the committees was a positive step to empowering women in mining. And the PPE was identified as one of many things that didn't cater for women who work on/in mines. So, we set about redesigning the uniform, so that it is more accommodating to women," she says. Balgobind says

Self-defence courses have been introduced by Exxaro's WIM committees

INDUSTRY



the designers designed three types of uniforms and piloted them at sites to get feedback from female miners before rolling them out throughout their mines.

Among many initiatives, some of the highlights or improvements made by the WIM committees are: make-overs of changing rooms to have a feminine touch; self-defence courses; Women's Day celebrations; and embracing male counterparts in ensuring Exxaro is successful, celebrating their uniqueness and oneness for the betterment of the organisation and society.

Furthermore, to protect the women who work underground, underground toilets are reserved for women's exclusive use, as they are secured with locks to which only the women have the access codes. There is also a project under way called 'Women in

distress button', where lamps used by women are to be upgraded to include panic buttons.

To further ensure their safety, all female miners have a direct hotline to the CEO, to whom they can report any victimisation, assault or issues, says Balgobind.

Networking and other opportunities

As part of the woman empowerment strategy of Exxaro, the WIM committees have also established a female networking forum where female employees can discuss work-life balance, family demands, how to deal with pressure in the boardroom and other leadership issues, across the business.

Women working in mining at Exxaro are exposed to opportunities in official Exxaro programmes involving schools, communities, learnerships, bursars and graduates, and professionals. These women also get exposure in fields like mentorship, development, succession and career planning, woman networks, coaching and building self-esteem.

A conducive environment

"The environment is one that I believe is conducive for women," says Ling-Ling Mothapo, senior engineer: Metallurgy, Exxaro. "There's no focus on the fact that you're a woman; instead, the focus is on what needs to be done to get the job done properly."

Says Shelva Mudanabula, a mechanical fitter and millwright: "They [Exxaro] make us feel comfortable and, with programmes like Women in Mining, we can openly discuss our issues as women. It makes me feel special and allows me to feel like I'm capable of doing anything."

This praise is validation for Balgobind, who says all credit must go to the WIM committees for their hard work and commitment to women's role in the organisation.

"Exxaro is serious about how women are treated at Exxaro. Exxaro believes that women should feel as if they're being considered in the workplace – that their needs are being met and the necessary changes are being put in place to enable them to succeed. This is testament to that," she says.

Balgobind says that while the primary focus is still on empowering women, who comprise a fraction of the total workforce, the WIM committees will turn their attention to male employees in the coming year, where the focus will be on celebrating diversity and working together to achieve the Exxaro strategy.

"One of the focuses for the next year is to bring men into the WIM committees so they become aware of challenges women face in mining. In line with our mission, we want to power possibilities not only for our female employees, but for all employees in Exxaro," she concludes. **35**

INDUSTRY

DIGITALIZATION IN MINING CONFERENCE 2020

The Southern African Institute of Mining and Metallurgy is hosting a conference on 12 and 13 May 2020 on digitalisation in the mining industry, in Riversands, Fourways.

This conference takes place every two years and covers a rapidly evolving topic. It is exciting to note that the pace of development in this area produces new knowledge each time the conference is held.

There is 'much ado about something' in the global environment concerning the move of business towards digitalisation and Industry 4.0. According to Deloitte, "The world of business is undergoing a dramatic transformation as customers, products and distribution channels are fundamentally digitally orientated, thus requiring underlying company processes to turn digital".

At the same time, employees and stakeholders are data-enabled, meaning that the fundamental structures and relationships within the business are changed, resulting in rapid decision-making, an enabled and informed workforce, and no place to hide from poor execution or performance.

Lagging locally, or not?

While many sectors of business have moved very quickly into a digital world, embracing artificial intelligence, the internet of things, blockchain and machine learning, the mining industry has largely lagged behind.

This is especially the case in South Africa, where deep-level, labour-intensive and conventional mines have limited digital infrastructure, and the perceived threat of job losses as a result of digitalisation has put the brakes on development in this area.

On the other hand, in the opencast mining world, and in highly mechanised mining operations, progress has been impressive, and case studies from these operations show the way as to how digitalisation and Industry 4.0 can not only enhance the profitability and

efficiency of operations but can lower costs sufficiently to allow previously uneconomic deposits to be exploited profitably, thereby creating new jobs and preserving old ones.

Challenges faced, opportunities abound

Of course, this does not come without new challenges and risks. Most importantly, the implementation of high-tech, real-time data capture and analysis has a social impact in terms of the skills required to operate in a digital world, and understanding this is a vital part of the transformation. So, an understanding of both the impacts and benefits of digital transformation is essential for employees, employee organisations and communities. Of comfort in this regard is the unproven notion that compared to other sectors, the impact of digitalisation on jobs in mining is probably less significant.

Notwithstanding these challenges, for the mining industry to remain sustainable and competitive, it must undergo the digital transformation, or be left behind and become redundant. For digitalisation to be successful, it must be seen as integral to the business model and strategy, and not as some form of add-on simply championed by the IT department.

Thus, this conference is aimed at not only showcasing new and exciting digital technologies but also at sharing case studies where the impact on the business is demonstrated.

The conference is aimed not only at the 'techies' but also importantly at business leaders and stakeholders, so that the new world of digitalisation and Industry 4.0 is demystified, such that the new world can be embraced rather than feared. **35**

INSIDE MINING

3S Media will publish three *Inside Mining* handbook-style publications during 2020. These upmarket glossy Special Interest Publications are each focused around a single theme and offer engagement on the key issues currently affecting the mining industry. They will include leadership insights and face-to-face interviews with various captains of industry.

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