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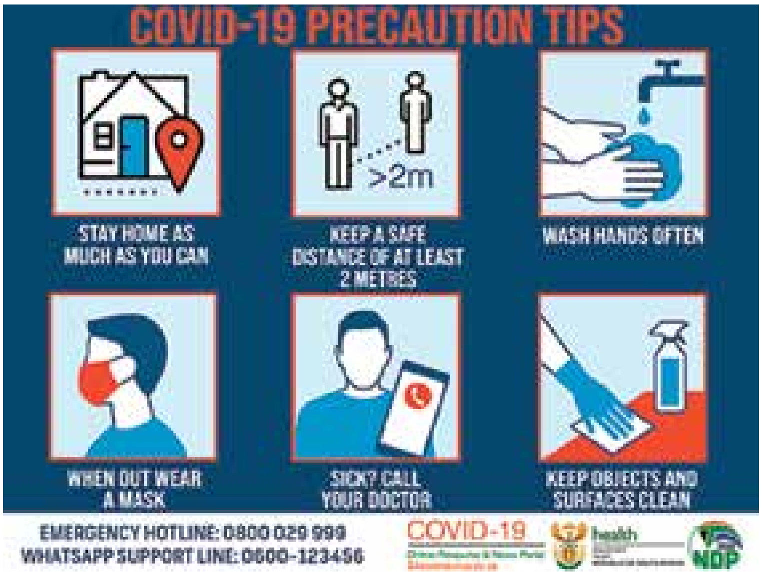

Arcadia looks to support lithium demand.

Is COVID-19 fast-tracking development of intelligent mining equipment?

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New energy vehicles boost demand for battery metals, says Afriforesight

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FINDING THE SILVER LINING

Nelendhre Moodley

The havoc wreaked by the COVID-19 pandemic on the economy has been much worse than expected, with Statistics SA announcing an economic contraction by 51% in the second quarter of 2020.

According to statistician-general Risenga Maluleke, this is the first time in the history of South Africa that the economy recorded negative growth in four consecutive quarters.

The already limping manufacturing sector was the sector most affected by the pandemic, having contracted by a staggering 74.9% in the second quarter of the year.

"Plagued by work stoppages and lower demand for steel, factories specialising in metals and machinery were severely affected," Stats SA said.

Added to that, air travel, which came close to a complete halt, contributed to the fall in economic activity in the transport and communication industry.

There was also significantly less activity by rail and road freight operators owing to restrictions on the production and movement of various goods.

Given the restrictions, consumers increased their spending on communication services, especially data.

Innovation around communication services has opened up the world, with Zoom and Teams becoming the order of the day for both business and personal communication – essentially ensuring that access to the global arena is just a mouse click away.

> "The manufacturing sector contracted by a staggering 74.9% in the second quarter of the year."
> – Stats SA

Although a number of people have returned to work, working from home has become a norm for many people, including those in the media industry.

It seems that given the tough economic climate, many companies that are able to allow employees to work from home are contemplating this option as a permanent way of life.

Will it work or are we just creatures of habit eagerly waiting to return to the fast-paced corporate life? With a move to Level 1 restriction, it's a matter of time before we find out.

Meanwhile, in line with the need to innovate, stay alive and remain relevant, *SA Mining* took the leap and launched its first online edition – *Industry Snapshot*.

This move is aligned with the need to satisfy the class of consumers looking for cost-effective options and value additions.

Industry Snapshot is a short, sharp, informative read that has received massive interest and certainly much investment appetite. The alternate monthly publication is meant to complement the print edition.

Speaking of gems that have emerged from the mire of the pandemic, gold – always the go-to precious metal in times of crisis – has certainly proved its mettle during the pandemic, flirting with the $2 000/oz mark.

In this edition we get up close and personal with gold, chatting to gold miner Resolute's CEO John Welborn about his strategy going forward. Welborn's confidence and bullishness around gold sees the miner eyeing opportunities to expand its portfolio by a further two more mines (pg 10).

For insight into gold developments in Africa, read our regular columnist Peter Major's piece. This is a man who caught the gold fever in his varsity days and continues to be passionate about the metal (pg 38).

Also tuck into *Industry Snapshot*, which flags some interesting information by the World Gold Council (WGC) relating to the continent's increasing gold production rates which aim to meet the globe's ever-voracious appetite for the precious metal.

According to the WGC, Africa's gold production has been on an upward trajectory and has since 2010 increased by 135%. (see link to *Industry Snapshot:* www.samining.co.za)

Not to be outdone, battery metals are also fast gaining traction given their alignment to the clean green drive.

In this edition, market research house Afriforesight gives insight into the adoption of new energy vehicles, which is boosting demand for metals used in their manufacture (pg 13).

Lithium miner Prospect Resources provides us with a progress report on its flagship Arcadia Lithium Project which recently signed an off-take agreement with Sibelco for up to 700 000 tonnes of ultra-low iron petalite product (pg 16).

Meanwhile, with the graphite market forecast to reach $21.6-billion by 2027, Walkabout Resources is champing at the bit to get its Lindi Jumbo Graphite Project off the ground and into production, aiming to be a producer by 2021 (pg 18).

In this edition we also shine the spotlight on original equipment manufacturers and ask questions related to the impact of COVID-19 on equipment manufacturers and whether the shake-up has encouraged the sector to increase the pace of innovation. In this regard, *SA Mining* caught up with Navin Singh, former co-director at the Mandela Mining Precinct, and Ossie Carstens of MEMSA, to find out about the latest equipment developments (pg 28). ■

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MALI

AIM-listed Altus Strategies recently announced high-grade drilling results from its FT Prospect at the Tabakorole gold project located in southern Mali.

These include the intersection of 4.7g/t gold over 14m, within a wider envelope of 38m averaging 2.1g/t gold. Altus CE Steven Poulton said the results extended a high-grade plunge that wasn't previously modelled in the 2007 historical mineral resource estimate. "The potential of the 600m-long north-west extension has also been confirmed, with an intersection of 1.2g/t gold over 12m from the one diamond hole drilled in this area, which is in the vicinity of the recently reported shallow aircore drill intersection of 6.2g/t gold over 6m from 14m depth."

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ZIMBABWE

Multi-commodity mining company Premier African Minerals reports encouraging results following a review of its recently acquired hard-rock lithium tenement in Mozambique.

Highlights of the visit include extensive current and historic artisanal gold mining activity in the immediate area and extending onto Premier's tenement, widespread evidence of eluvial, alluvial and primary gold mineralisation and visible gold in multiple locations.

"Based on the artisanal activity, it would be reasonable to conclude that there is potential for some recoverable free gold," Premier CE George Roach says.

NAMIBIA

TSX-listed Osino Resources has completed an induced polarisation (IP) survey over the Twin Hills Project in Namibia.

The survey, covering a total of 16km^2, has outlined a number of new drill targets below the calcrete cover as well as extended and amplified the scale of known targets previously indicated by gold-in-calcrete, and magnetic anomalies. On the strength of the IP survey results, Osino will go ahead with an expanded exploration drill programme at Twin Hills that will cover the new IP targets as well as magnetic and geochemical targets not tested to date, says the company.

GHANA

Canadian junior miner Pelangio Exploration has completed considerable data recompilation, reinterpretation and target generation for the Manfo project located in Ghana.

The project hosts three deposits that constitute the current maiden resource estimate. In mid-July the company commenced the soil sampling programme.

Ingrid Hibbard, CEO of Pelangio, says: "Should these initial programmes be successful in further discovery at Manfo, resource definition drilling will follow with the aim to add to the current resource base that was established by SRK in 2013."

ANGOLA

LSE-listed Pensana Rare Earths has announced further high-grade intersections from its 8 000m drill programme completed at the Longonjo Project in Angola.

The results confirm the continuity of the weathered zone mineralisation from surface and also outline a wide area of mineralisation in fresh rock immediately below the current pit design that could add an extra dimension to the project beyond the initial mine life. According to COO Dave Hammond, the infill drilling results will allow the company to upgrade the existing resource categories and extend the mine life.

CÔTE D'IVOIRE

Gold exploration company Mako Gold has secured $10-million which will be used to accelerate its flagship Napié project in Côte d'Ivoire.

The funding ensures that Mako is able to execute its strategic plan which includes systematic exploration to extend existing high-grade, shallow mineralisation identified at the Tchaga Prospect and infill drilling to underpin a future maiden JORC resource. Mako will also test multiple high-priority regional prospects including the Gogbala prospect and undertake initial exploration on the two exploration permits under application located within 30km of Barrick's Tongon Gold Mine, the company says.

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SABS CELEBRATES 75TH ANNIVERSARY

On 1 September 2020, the South African Bureau of Standards (SABS), which is also a founding member of the International Organization for Standardization (ISO), celebrated its 75th year of developing national standards, providing quality assessment services and the testing of advanced materials and products in South Africa, the company says.

The SABS, which was established as the national standardisation authority, through the promulgation of the Standards Act (Act 24) on 1 September 1945, is responsible for maintaining South Africa's database of more than 7 000 national standards, as well as developing new standards and revising, amending or withdrawing existing standards in the country.

STANDARD BANK LAUNCHES TOP WOMEN 2020

As part of its woman empowerment initiative geared towards providing tangible support to women in business, Standard Bank has partnered up with TopCo Media to present the 2020 instalment of the annual Standard Bank Top Women conference scheduled for October.

Standard Bank has continued with this sponsorship to highlight and address issues around gender inequality, which will be a key focus for this year's conference, the company says.

"We believe that a significant spotlight needs to be put on woman leaders and trailblazers currently making waves in their various and respective sectors," says Lindy-Lou Alexander, head of marketing for personal and business banking at Standard Bank.

AFRIMAT INCREASES IRON ORE CAPACITY

Open-pit mining company Afrimat recently acquired Coza Mining, which includes its three mines – Jenkins, Driehoekspan and Doornpa – for R300-million.

The acquisition adds substantial potential to Afrimat's iron ore and manganese operations in the Northern Cape. Afrimat CEO Andries van Heerden says: "This high-quality resource, which is located adjacent to our current Demaneng iron ore mine, affords Afrimat additional iron ore sources to extend the life of mine." He says in line with Afrimat's dedication to diversification, iron ore would now also be sold into the inland market, with a supply agreement in place.

MATLA MINE 1 RELOCATION UNDERWAY

South African-based resources group Exxaro Resources is undertaking the relocation of its Matla Mine 1 to further its continual investment in community empowerment. Matla Mine, established in 1978, consists of three underground operations.

The project includes development of a new mining shaft with an average capacity of four million tonnes per annum, including a box cut with bulk materials handling facility.

The project involves the construction of a new decline shaft to gain access to the remaining economical two-seam reserves. The relocation project also includes plans to supply Mine 1 with five complete suites of underground continuous miner equipment and equipment used to construct supporting infrastructure, interseams between Mine 2 and Mine 3, and a ventilation shaft to supply fresh air to Mine 3's future production areas, the company says.

KAPSTEVEL SOUTH PROJECT APPROVED

Iron ore miner Kumba Iron Ore has given its Kapstevel South project at its Kolomela mine the green light. The total capital cost of the project will be around R7-billion.

The project entails the development of a new pit, Kapstevel South and associated infrastructure at Kolomela.

The pit is a conventional truck and shovel operation producing high-quality direct shipping ore (DSO). While the pit is included in the current life of mine, it contributes significantly to sustaining production of 13mt for the remaining life of mine. Pit establishment and waste stripping will commence this year with first ore expected in 2024.

ENSAFRICA | MAURITIUS CELEBRATES 200 YEARS

On 25 September, law firm ENSafrica celebrates its 200-year presence in Mauritius.
Over the years, ENSafrica | Mauritius has been involved in notably complex and substantial legal cases, has received numerous accolades, and is currently recognised as being an "outstanding international firm with market-leading commercial and dispute resolution practices in Mauritius" by Chambers Global Guide 2020, the firm says.
The head of ENSafrica | Mauritius, Thierry Koenig SA, was recently elected president of the Mauritius Law Society for a two-year term.

VZI INCREASES MINERAL RESOURCES

Diversified resources company Vedanta Zinc International (VZI) recently declared an increase in its total mineral reserves and resources from 450mt to 525mt (17%) for the financial year ending 31 March 2020. The mineral reserves and resources include those of the Gamsberg, Swartberg, Deeps, and Skorpion projects, the company says.

VZI is a grouping of zinc assets located in South Africa and Namibia.

"We are very pleased with the outcome of the 216km of exploration drilling that we have undertaken in the last three years which has enabled the overall positive growth of our mineral reserves and resources," said Sunil Duggal, group CEO of Vedanta.

BRM TO START KOORNFONTEIN OPERATIONS

Black Royalty Minerals has secured both the Competition Commission and ministerial approvals for its acquisition of Koornfontein Coal Mine. "With all regulatory approvals in place, and a few outstanding conditions, including Eskom, we are ready to turn the soil," says Black Royalty Mineral's Ndavhe Mareda. Pending regulatory approvals, Black Royalty Minerals has already commenced with the planning phase of mining with the intention to operationalise the mine as soon as practically possible. "These approvals … come at a perfect time when there is a critical need for coal for energy generation. Black Royalty Minerals is ready, willing, and able to provide this much-needed resource to Eskom," says Mareda.

PRIESKA PROJECT FULLY PERMITTED

ASX-listed Orion Minerals has been granted a mining right for the Vardocube extensions of its flagship Prieska Copper-Zinc Project in the Northern Cape.

"We are extremely pleased that the final regulatory hurdle for the development of the Prieska Copper-Zinc Mine has now been fulfilled. Prieska is now positioned to play a major role in the post-COVID economic recovery of the Northern Cape region of South Africa with the development of a world-class base metals mining operation," says Orion Minerals CEO Errol Smart. The Vardocube mining right supplements the Prieska Copper-Zinc Mine mining right granted last year, which covers 73% of the bankable mine plan.

BUSHVELD MINERALS PARTNERS WITH INVINITY

AIM-listed Bushveld Minerals has formed a special purpose company in partnership with Invinity Energy Systems, named Vanadium Electrolyte Rental (VERL). VERL's purpose is to provide a vanadium electrolyte rental option to Invinity's customers.

The formation of this company reinforces Bushveld Minerals' strategy of partnering with Vanadium Redox Flow Battery (VRFB) companies for the supply of vanadium material, vanadium electrolyte and vanadium electrolyte rental products, the company says.

VERL recently signed a contract for electrolyte rental with Pivot Power, part of EDF Renewables. Under this contract, VERL will rent to Pivot the electrolyte in Pivot Power's five megawatt-hour flow battery, supplied by Invinity.

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RESOLUTE
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Following the sale of its last remaining Australian asset in March this year, gold miner Resolute Mining is now a fully focused West African gold miner looking to grow its resource base to include a further two more gold mines, MD John Welborn tells *SA Mining*.

"Africa is fundamental to our portfolio – geologically, geographically and economically, the continent offers huge opportunities for growth. Furthermore it is a suitable match for our skills sets. As such, we are actively seeking new opportunities to grow our African footprint and have a number of joint venture initiatives and equity stakes in gold explorations companies," says Welborn.

The West African gold miner currently operates two producing gold mines – the Syama Gold Mine in Mali, West Africa, which comprises the Syama underground mine and the Tabakoroni open-pit operation and the Mako Gold Mine, in Senegal, West Africa.

For the 2020 financial year, the operations will together deliver roughly 430 000 gold ounces per annum; with 260 000oz from Syama and 160 000oz from Mako.

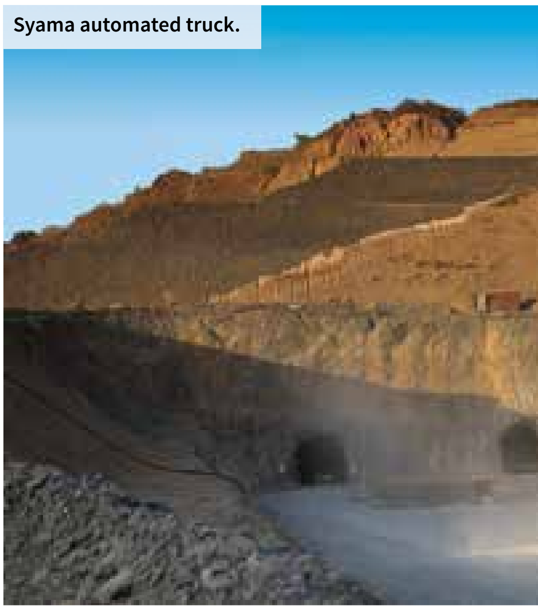
"However, going forward we are looking to produce around 400 000oz of gold per annum with about 260 000oz from Syama and around 140 000oz from Mako. While we are not focused on a specific production goal, what we would like to have is a portfolio with four operating mines," says Welborn.

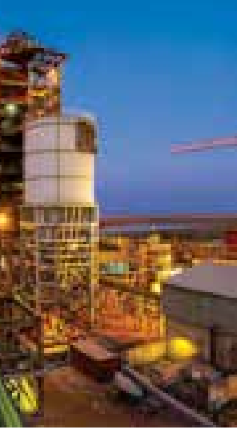
Aside from the ASX- and LSE-listed gold miner's Bibiani Gold Mine in Ghana which is currently on care and maintenance while the company "runs a strategic review on that asset", Resolute has a healthy portfolio of strategic investments from which it plans to unlock growth opportunities.

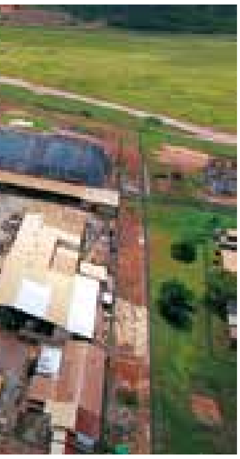
The miner has a 16% stake in Orca Gold, an emerging 200 000+ gold producer in Sudan, a 10.7% stake in Oklo Resources, a gold exploration company progressing its flagship project Dandoko, in West Mali, a 15% stake in Mako Gold, which is focused on the discovery of large high-grade gold deposits in West Africa, a 26% stake in Manas Resources, an ASX-listed gold company with three key assets in Côte d'Ivoire and a 27% stake in Loncor Resources, a Canadian gold exploration company focused on projects on the Ngayu Belt in the Democratic Republic of the Congo.

"For **2020**, Syama will deliver **260 000oz** and Mako **160 000oz.**"
– Welborn


Syama underground surface automation control room.


Syama automated truck.





An aerial view of the Mako project.

RESOLUTE MINING

Resolute has been delivering 30 years of continuous production from mines in Africa and Australia totalling over 8moz of gold and counting.

Exploration worker at Syama.

"We would **like** to have a **portfolio** with four **operating mines.**" – Welborn

Aside from these joint venture opportunities, Resolute is also busy with expansion opportunities on its existing operations, which includes a new feasibility study on the Tabakoroni open-pit operation located 30km south of the Syama Gold Mine.

The company also recently updated the life of mine (LOM) for the Mako gold project. The updated LOM generated a 39% increase in total gold production and a mine life extension of two further years of production. The original mine plan at Mako consisted of a seven-year mine life expected to produce 890 000 ounces of gold. The new LOM has a total mine life of nine years, producing a total of 1.24 million ounces of gold, the company said.

Resolute's annual exploration spend is $20m, however Welborn says this excludes exploration spend by joint venture and equity partners to progress strategic joint venture projects.

"Our strategy for Africa, aside from the expansion of our portfolio aimed at building more new gold mines, is also to leverage off our existing production base to provide economic returns to shareholders, the government and the communities in which we operate."

IMPACT OF COVID-19

With the onset of the pandemic, it is certainly not business as usual for any company, and coupled with geopolitical factors, including the impending United States election and the recent explosions in Beirut, Lebanon, these activities have been wreaking havoc on world markets.

For gold producers though, this has been a boon, with gold on the receiving end of a highly favourable price, flirting close to the $2 000/oz mark.

"While I don't feel that the pandemic has severely impacted on production, I do think it's exciting times for the gold miner given the rising value of the metal."

According to Welborn the pandemic has not affected its operations but has forced the company to take stringent measures aimed at protecting its workforce.

"We have implemented new protocols, linked to hygiene and isolation, and have put our knowledge related to Ebola and to general health to good use in preparing for the pandemic. I am proud of the way we have handled the situation – we don't have any active cases and continue to implement measures to ensure that we keep our people safe."

According to Welborn, a key change that businesses will see going forward, aside from improved levels of hygiene, is the focus on localisation of the workforce, with a reduced reliance on expats. "This is a motivation for us to further empower and train our local workforce."

Furthermore, African jurisdictions will become more technology-focused as they look towards technology for solutions to their problems. ■

TERANGA GOLD FILES REPORT FOR SABODALA-MASSAWA

TSX-listed Teranga Gold recently filed a technical report in respect of the preliminary feasibility study for its Sabodala-Massawa Gold Complex in Senegal, West Africa. The Sabodala-Massawa technical report supports the combined mineral reserve estimates and mine plan of Sabodala Gold Operations and the Massawa Project, the company said.

"The technical report confirms that the Sabodala-Massawa Complex is a top-tier asset capable of producing 384 000 ounces of gold a year for the first five years starting 2021, and we see significant room for further growth that will strengthen Teranga's position as a leading mid-tier gold producer in West Africa," said CEO Richard Young.

"We anticipate releasing a definitive feasibility study in 2021 that we expect to include in an updated and expanded mineral resources and reserves estimate based on results from the aggressive exploration programme currently under way at the Massawa Project."

BARRICK SELLS STAKE IN MORILA

Gold miner Barrick Gold and AngloGold Ashanti have agreed to sell their 80% interest in the Morila Gold Mine in Mali to ASX-listed Mali Lithium for a cash consideration estimated at between $22-million and $27m, depending on closing adjustments.

Barrick said the decision by the current shareholders to sell their stakes in Morila, which it operates, offered the potential for the mine to continue under a new ownership structure which would bring access to additional resources and a different approach to how the infrastructure is used to extend the life of operations. This would allow Barrick to focus on its strategy of discovering, developing, owning and operating tier one assets. The parties are targeting the closing of the deal before the end of October 2020.

The discovery and development of Morila, which poured its first gold in October 2000, laid the foundation for Barrick legacy company Randgold Resources' growth into one of the world's leading gold miners.

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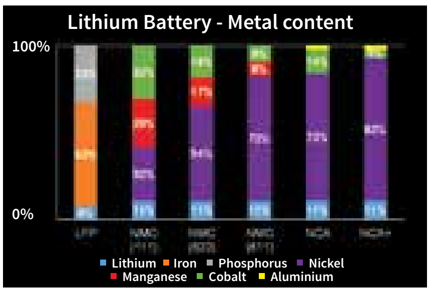
DRDGOLD POSTS 9% INCREASE IN GOLD PRODUCTION

South African gold producer DRDGOLD recently reported a 9% year-on-year increase in gold production to 5 424kg (174 385 ounces) for the financial year ended 30 June 2020. The company attributes the increase largely to a larger contribution from DRDGOLD's Far West Gold Recoveries operation. Although the company had earlier provided production guidance of between 175 000 and 190 000 ounces, the national lockdown in response to the COVID-19 pandemic caused production to come in marginally below the estimated range, the company said. Cash operating costs per kilogram are expected to be in line with the guidance provided of R490 000/kg. DRDGOLD's cash and cash equivalents as at 30 June 2020 were R1 715.1-million after paying a cash dividend of R213.8m in June, and the company remains free of bank debt as at 30 June 2020.

BATTERY METALS OUTLOOK

By Afriforesight's Head of Battery Metals Pearson Mururi

The rapid adoption of new energy vehicles (NEVs – electric and hybrids) powered by batteries has boosted demand for metals used in their manufacture. Lithium-ion batteries have a variety of chemistries, with lithium iron-phosphate (LFP), lithium nickel-manganese-cobalt (NMC) and lithium nickel-cobalt-aluminium (NCA) batteries used most. These chemistries have different compositions (see graph below) providing a trade-off between cost and energy density, with energy density being the major influencing factor in driving range. LFP batteries are the cheapest battery type, but least energy-dense, and therefore give a lower driving range. On the other hand the more expensive NCA battery types have higher energy density and give a longer driving range. The future demand for metals used in batteries will depend on both the growth in NEV sales as well as shifts in competing battery chemistry.

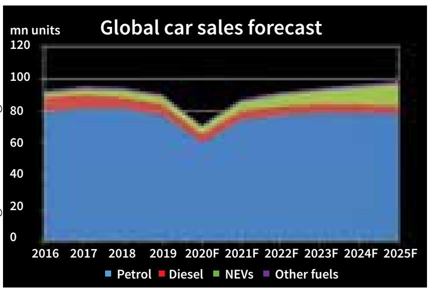


Source: Bloomberg New Energy Finance, Afriforesight

Although NEVs are still a small part of the auto-market (5% share in 2019), sales have grown rapidly (30% in 2017 and 2018, and about 11% in 2019). Government subsidies, environmental concerns and advances in battery technology have underpinned this growth – led by China, which accounts for about 30% of global NEV sales.

NEV SALES OUTLOOK UNPACKED

Many governments have long-term targets to phase out combustion engines and have introduced incentives to support the transition. Automakers are embracing the trend. Market leader Tesla is targeting 790 000 EVs per annum from the United States (US) and China by end-2020, with new plants also set to come online in Germany and the US from 2021. Toyota, the world's largest automaker, aims for EVs to account for 50% of sales by 2025. Volkswagen, the second largest automaker, plans to invest $24-billion in zero-emissions vehicles, targeting three million EV sales per year by 2025.



Source: LMC Automotive, Bloomberg and Afriforesight

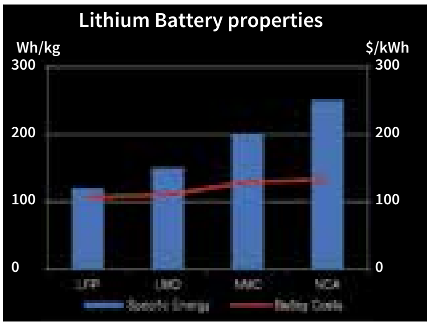
Afriforesight forecasts the NEV market share to continue rising to about 14% in 2025 – led by China and Europe. However in 2020 NEV sales should be tempered by low consumer spending due to COVID-19 and the global economic fallout. Sales should then lift from 2021 driven by higher subsidies, tighter emission regulations and new production capacity. But driving range limitations, lack of charging infrastructure and high costs should temper growth until 2023, but thereafter sales should accelerate as these concerns ease.

DRIVING RANGE

Current fully electric vehicles by top automakers have diverse driving ranges – from 322km offered by Audi's e-tron, to 647km offered by Tesla's Model S LR+. We expect manufacturers to continue pushing research and development to provide 800-1 000km-range NEVs to better compete against conventional vehicles.

CHARGING INFRASTRUCTURE

Charging infrastructure should continue to expand with new installations led by Chargepoint and EV Box who plan to install about 3.5 million charging points in Europe and North America by 2025. Some major oil producers also plan to install charging points; for example, Shell anticipates 20% >



Source: Bloomberg New Energy Finance

> "Tesla is targeting **790 000 EVs** per annum from the **US** and **China** by **end-2020**." – Mururi

of its fuel station sales by 2025 to come from NEV recharging and low-carbon fuels.

COSTS

Lithium-ion batteries are about 50% of battery-electric vehicle costs and manufacturers aim to lower this to about $100/kWh (from around $150/kWh in 2019) to be cost-competitive with conventional vehicles in the long term, supported by a combination of technological advancement and improving economies of scale as producers ramp up capacity (see chart).

CHINA

NEV sales in China have largely been driven by government subsidies. However a 50% subsidy cut in July 2019 led to 31% year-on-year decline in sales in the second half of 2019. This led the government to extend subsidies beyond the initial end-2020 target to end-2022. This should support NEV sales in China until 2023. Thereafter growth should continue accelerating as the government pushes auto manufacturers to meet its goal of NEVs accounting for 20% of vehicle sales by 2025.

EUROPEAN UNION

NEV sales comprised 16.2% of European Union (EU) passenger vehicle sales in the first quarter of 2020 and should continue to gain market share, supported by the introduction of fleet-wide CO_2 emission standards. Compared to 2007 fleet levels, 2021 fleet emissions need to show a 40% reduction (and a further 37.5% reduction by 2030). Subsidies by governments – led by Germany and France – who increased subsidies by 15-50% earlier this year should further support sales.

BATTERY METAL DEMAND UNPACKED

Underpinning the NEV revolution are technological advances in the manufacture of lightweight and energy-dense lithium-ion batteries, where lithium, cobalt, nickel, manganese and aluminium are major ingredients in cathodes and graphite is used for the anode. These metals should benefit from the NEV revolution, but in the medium term demand growth for nickel should be most firm – displacing some cobalt as its use is limited by human rights concerns.

LITHIUM

All electric vehicle batteries as well as solid state batteries in development contain lithium, where lithium salts are used as the electrolyte to transfer electricity between electrodes. Battery demand constitutes about 54% of total lithium demand.

Australia accounts for about 55% of lithium supply, where new mines began coming online from 2016, with additional projects under development. The recent collapse in lithium prices has led to curtailments as well as the postponement of some projects. The projects still proceeding, as well as expected restarts from some idled producers, should meet demand until at least 2023.

COBALT

Battery demand accounts for over 50% of cobalt use and should continue rising despite efforts to eliminate its use due to concerns over child labour and human rights abuses in the Democratic Republic of the Congo (DRC), which accounts for about 70% of global supply. Cobalt remains key in batteries as it provides stability and limits the risk of spontaneous explosions. Artisanal mining in the DRC accounts for about 10% to 30% of the country's output and activity responds quickly to price movements. Cobalt is currently oversupplied and should remain so until 2024. Various projects are under development in the DRC, but the key supply swing factor is the timing of Glencore's Mutanda operation restart (18% of global supply in 2019, idled in November 2019).

NICKEL

Although batteries are only about 5% of nickel use, a shift to higher driving range vehicles needs more nickel as it improves energy density. Nickel is mined from near-surface laterite ores (dominated by Indonesia) and sulphide ores. The latter is more suited for production of nickel sulphate – used in batteries. Nickel sulphide deposits are mostly underground and require prices above $14 000/t to attract meaningful

"Toyota is **aiming** for **EVs** to account for **50%** of sales by **2025.**"
– Mururi

Chargepoint and EV Box are planning to install about 3.5 million charging points in Europe and North America by 2025.

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investment. Lack of investment in recent years should support our expectations of supply deficits from 2022. Sulphide ores' price premium should widen to incentivise greater use of laterite ore in stainless steel manufacturing. This will be necessary to free up sulphide ores for batteries – helping avoid the costly upgrading of laterites.

GRAPHITE

Graphite demand should grow firmly as it is the major battery material used in anodes. However some battery manufacturers have successfully used cheaper silicon to replace 15% of the graphite content. In the long term we expect the share of silicon in some NEV batteries to gradually increase.

The fine flake graphite used in batteries is in oversupply after Syrah Resources started production in 2017 at the 350 000-tonne-per-year Balama mine in Mozambique. Syrah suspended production in March pending an operational review. The timing of the restart should impact the supply and demand balance. We expect the market to be oversupplied until end-2021 on weak demand and Chinese capacity expansion – as government sees graphite as a strategic mineral.

MANGANESE AND ALUMINIUM

Manganese and aluminium should benefit from increasing NEV sales. However, impact on overall demand should remain minor – with batteries expected to account for only a small share of demand even by 2025. ■

LAUDING LITHIUM

Arcadia Lithium looks to support demand

© ISTOCK – Petmal

Battery minerals developer Prospect Resources is progressing its flagship project, Arcadia Lithium, located on the outskirts of Harare in Zimbabwe. *SA Mining* recently caught up with Nicholas Rathjen, GM for corporate affairs, to chat about the latest developments on Prospect Resources' 87%-owned Arcadia Lithium project.

HOW IS COVID-19 INFLUENCING THE DEMAND FOR BATTERY METALS?
Post-pandemic, the battery metals demand has gained momentum. This has been led by Europe's recently announced green recovery plan. Introducing a €20-billion two-year purchasing facility for electric vehicles, as well as doubling purchasing incentives announced by Germany, France and other European countries, is shaping Europe as the fastest growing electric vehicle market for the next two years.

WHAT IMPACT HAS THE PANDEMIC HAD ON THE ARCADIA PROJECT?
The business has only been impacted by our international travel to site as well as to see current and potential customers, so there has only been a small impact. This would be in line with miners globally as commodity prices have maintained and in some cases strengthened since the pandemic. We have actually made progress since the pandemic by signing a memorandum of understanding with leading industrial mineral company Sibelco and more recently have appointed Renaissance Capital as our mergers and acquisitions adviser to assist with Uranium One discussions.

WHAT IS PROSPECT RESOURCES' STRATEGY REGARDING PROJECT DEVELOPMENT?
Prospect has focused on project development for the past 18 months. Within this time frame Prospect has partnered with strong financial partners across debt, equity and off-take, most of which are tier one counterparties. We see the partnering plan as the most attractive for shareholders and significantly derisks the project. This is why we are in dealings with Uranium One, Sibelco and one of Africa's largest development banks, Afreximbank, of which Russia is a member state.

THE COMPANY RECENTLY INCREASED ITS RESERVE BASE ON ITS ARCADIA PROJECT – WHAT DOES THIS MEAN AS A MILESTONE FOR PROSPECT RESOURCES?
The increase in the ore reserve is a milestone for the company on a number of fronts. The first is that it extended our life of mine out to 15.5 years from 12, extending the viability of the project as a long-term and prosperous operation. The ore reserve is a function of Prospect's work on developing its products market, with Arcadia's ultra-low iron petalite product placed as a premium product among glass and ceramics customers.

PROSPECT RESOURCES HAS SIGNED AN OFF-TAKE AGREEMENT WITH SIBELCO – WHAT IS THE IMPORTANCE OF THIS AGREEMENT?
In April 2020, Prospect signed a memorandum of understanding with Sibelco, agreeing to exclusively negotiate an agreement for Arcadia's ultra-low iron

€20-billion
Europe's two-year purchasing facility for electric vehicles

Loose ore.

Arcadia Lithium project.

"Prospect signs **off-take** agreement with **Sibelco** for **700 000t ultra-low** iron petalite product."

petalite product. Sibelco is the largest distributor of petalite into Europe, if not the world. Their expressed interest in our petalite product validates Arcadia's global relevance as a strategy producer for the glass and ceramic market.

On 17th August, Prospect announced that it had signed an agreement with Sibelco for seven years and up to 700 000 tonnes of ultra-low iron petalite product. The pricing formula for the agreement is linked to the end customer sales contracts with minimum pricing provisions. 100% of the company's 2019 DFS petalite production for the first seven years is now covered by off-take agreements.

This is the largest known off-take agreement for petalite ever signed and further progresses prospect to complete funding and commence commercial production.

PROSPECT RECENTLY ANNOUNCED THAT IT HAD COMPLETED SOME TESTWORK THAT SAW SUFFICIENT LIFTS IN RECOVERY OF PETALITE. WHAT DOES THIS MEAN FOR ARCADIA?

Following the release of the Arcadia Definitive Feasibility Study (DFS) in November 2019, Prospect has focused on improving petalite recovery to meet demand from premium glass ceramic consumers. The December 2019 DFS estimated a project net present value 10 of $710-million, using petalite recovery of 31%. The locked cycle flotation testwork indicates significant potential to increase petalite recovery from 31% to >60%, across all Arcadia Project ore bodies contained within the reserve.

The petalite flotation testwork delivered a product specification that is superior to that achieved from dense media separation. Individual flotation tests were able to achieve a higher lithia content of 4.5% Li_2O while also containing a lower iron oxide or Fe_2O_3 level of 0.02%, which opens Arcadia's petalite up to new markets such as the clear glass market.

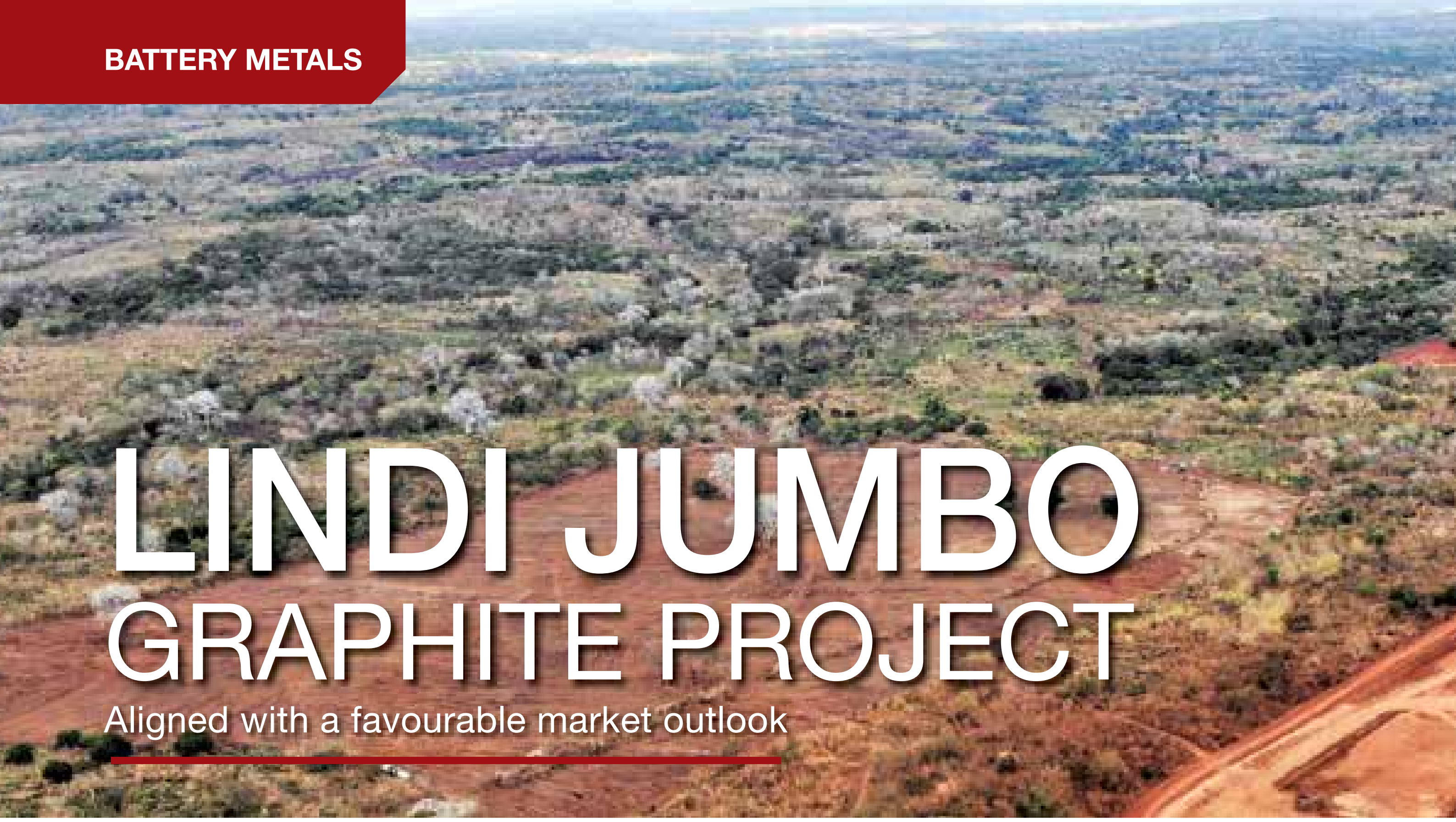
WHAT ARE SOME OF THE KEY ATTRACTIONS OF THE ARCADIA LITHIUM PROJECT?

Long term, the key differentiating factors of the Arcadia Lithium Project are low operating cost, premium quality products and experienced management team, formulating a recipe for a successful project and mining operation. In the near term, Prospect is the most advanced lithium project in Africa and is finalising numerous discussions that would progress project finance and off-take.

CAN YOU SHARE A VIEW OF THE LITHIUM MARKET IN TERMS OF DEMAND/ SUPPLY?

In terms of the lithium market for electric vehicles, over the past two years there have been significant changes in terms of market size with additional supply coming online to keep up with high demand. The market has found "balance" based on current supply and demand but overlooks

the rapidly rising demand for the next five years. Considering that the average lithium mine takes 24 months from securing finance to reaching commercial production and with demand expected to only increase over the next two years, it is likely that the current market "balance" will move into a shortage within the coming 12 to 24 months. While the battery sector demand for lithium is currently in balance, the demand for technical grade lithium concentrates, such as Arcadia's petalite, is in short supply, positioning Prospect to take advantage of this market in the immediate term. ■



LINDI JUMBO GRAPHITE PROJECT

Aligned with a favourable market outlook

The graphite market is showing strong signs of growth driven largely by an increased demand for lithium-ion batteries. A recent report by market research firm Allied Market Research states that the graphite market, which generated $14.3-billion in 2019, is set to reach $21.6bn by 2027 at a compound annual growth rate of 5.3%.

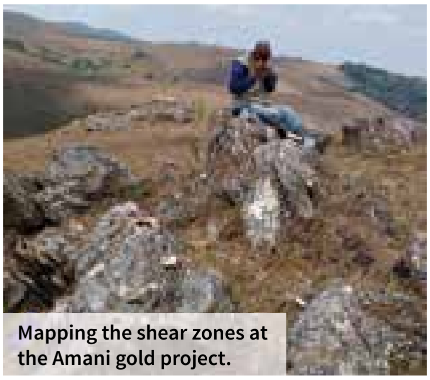
This is great news for emerging graphite developer ASX-listed Walkabout Resources, which is poised to begin construction on its high-grade Lindi Jumbo Graphite Project located in south-east Tanzania.

The company expects to be in production before the end of 2021, MD Allan Mulligan tells *SA Mining* in an exclusive interview.

Walkabout Resources holds a 100% stake in the mining licence which hosts the Lindi Jumbo Graphite Deposit, located within the highly prospective Mozambique Belt. The area is considered to host some of the world's highest-grade coarse flake graphite deposits.

$21.6bn

Value of the graphite market by 2027



Mapping the shear zones at the Amani gold project.

"A definitive feasibility study (DFS) updated in August 2017 in response to changing Tanzanian government legislation, and again in March 2019, confirms that the project is technically sound with excellent economic returns even at potential softening price regimes for premium graphite flake material. Payback period for the project is less than two years. The DFS is based on an annual production of 40 000 tonnes of graphite concentrate with a high-grade feed to the plant at an average of 230 000 tonnes per annum of the life of mine (LOM) of 24 years," says Mulligan.

PROJECT HIGHLIGHTS FROM THE DFS INCLUDE:

- Lowest operating costs in Tanzania of $347/t in concentrate Free on Board (FOB) at the Port of Mtwara.
- Lowest upfront capex in Tanzania of $27.8-million.
- Highest ore reserve grade in Tanzania at 17.9% (total graphite content) TGC.
- Ore reserve based only on 37% of the measured and indicated portion of the mineral resource.
- Short development time frame of seven months from financing.

SHOVEL-READY

The Lindi Jumbo Graphite Project is shovel-ready, with earthworks and clearing well under way and long-lead items, including two mills, a scrubber and the flotation cells already complete and ready for shipment to site.

"Before the onset of the COVID-19 pandemic, our Engineering, Procurement and Construction (EPC) partner in China manufactured the long-lead items, which are awaiting dispatch to Tanzania," says Mulligan.

Walkabout Resources EPC partner in China is Jinpeng Mining Machinery, a privately owned processing and plant manufacturing company, which has been awarded the EPC contract for the development of the manufacturing plant.

The emerging miner has also finalised most of the contracts which are awaiting signoff. During the project construction phase it will employ around 200 people and about 100 people when in production.

Walkabout Resources is looking to replicate Aquarius Platinum's strategy of an outsourced model adopted at its Kroondal operation located on the Western Limb of the Bushveld Complex. "This model has a number of advantages, such as reduced upfront capital, reduced operational risk and the immediate integration of an elevated local content programme."

PROJECT FINANCE

"We have placed a corporate bond for $40m into the market and are in negotiations with a number of institutions, including large international African development banks

> "Lindi Jumbo Graphite Project expects to be in production by 2021." – Mulligan

LINDI JUMBO GRAPHITE PROJECT CONTRACTORS

Project contractors include:

- **EPC construction – Jinpeng Mining Machinery (Yantai, China)**

Other construction

TNR Mining Contractors – Tanzania – SBS Camp Solutions – Tanzania – Alistair Logistics – Tanzania

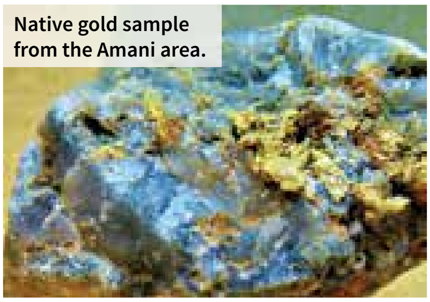
Operations

- **Mining – TNR Mining**
- **Camp and people development – SBS Solutions**
- **Logistics and transport – Alistair Logistics**
- **Process management – Minopex**
- **Management, technical oversight and health and safety – Lindi Jumbo**

Ground magnetics over the high-grade base metal Blackcraig Project.

across the continent and banks in Tanzania, to access a combination of debt and equity for project development. African-based banks seem to have a much better appetite under the COVID-19 period to fund African projects," says Mulligan.

As soon as it has secured the relevant funds, Walkabout Resources will start the seven- to eight-month construction programme.



Native gold sample from the Amani area.

GRAPHITE MARKET

China currently dominates the graphite market; but owing to the industrial slump brought on by the COVID-19 pandemic, China's deepening graphite mines and the adoption of stringent environmental legislation, Mulligan believes the world's second largest economy will struggle to supply its own production facilities, post COVID-19, and look to outside production to supplement its production facilities. This stands the Lindi Jumbo Graphite Project in good stead given that it delivers large flake sizes that are more valuable and appeal to both traditional and niche markets.

Larger flake size graphite concentrate receives a premium and a higher price per tonne. "Similarly a higher grade concentrate also receives a higher price. DFS test work on the Lindi Jumbo Graphite Project validated the production of graphite concentrate with a flake size distribution of up to 74% above 180 microns (μm)."

Graphite is used in traditional industries including refractory and foundry, expandable graphite, carburisation, graphite shapes and lubricants.

The jumbo graphite size, meanwhile, will enable the African-focused energy minerals developer to target niche market opportunities beyond battery metals development to applications related to fire retardants and 3D printing.

"The Lindi graphite project is a standout project given its attractive head-grade which will make money even when the markets are suppressed; and deliver handsome returns during the boom which is great for the shareholders."

OPPORTUNITIES BEYOND GRAPHITE

Walkabout Resources has an extensive exploration programme targeting geographies beyond Africa and commodities other than graphite.

ITS EXPLORATION PORTFOLIO CONSISTS OF:

United Kingdom – Northern Ireland and Scotland Projects

Walkabout is currently managing two main exploration joint ventures in the United Kingdom – one in Northern Ireland and the other in Scotland. The company has expanded exploration operations into this "highly prospective but under-explored region" with the acquisition of prospective high-grade gold and base metal licences. The company has a permanent technical presence there and has been progressing a number of projects within the licence areas throughout the COVID-19 lockdown period and is now in a position to drill-test the very exciting high-grade base metal and gold targets within the last quarter of 2020.

Amani Gold Project – Tanzania

The company was recently granted an extensive exploration area within a highly prospective gold region in south-western Tanzania that has never been exposed to a modern, systematic exploration programme for hard-rock gold. The area is well endowed with numerous alluvial gold workings and recent work done by academic institutions on the gold nuggets in the alluvial diggings have indicated that they are proximal to source and the company has embarked on an exploration programme specifically targeting the hard-rock source of the alluvial gold occurrences.

Eureka Lithium Project

Walkabout holds 100% of prospecting rights for two lithium-bearing pegmatites located close to the Orange River, Namibia. Infrastructure (roads, rail, power and water) around the project area is well developed with the town of Karasburg about 40km to the north-east. ■

CLOSING IN ON MINE CLOSURE …

from compliance to strategy

By Dr Christine Vivier, Head of Ukwazi's Sustainable Mining Practice

In mining, "implement like hell" means chasing production and making sure each operation meets their quarterly production targets. Consequently, output and outcomes tend to matter more than process, strategy or stakeholders. The global mining industry is currently being challenged by the need to implement sustainability requirements, while simultaneously being competitive and innovative and reducing environmental impacts. The social licence to operate has become increasingly central to governance models, operations and strategic direction. How can the sector balance all these elements and still responsibly drive growth?

According to a pre-COVID-19 mining company survey conducted by Ernest & Young (September 2019) that sampled more than 250 mining companies globally, 44% of respondents stated that the social licence to operate was the number one risk they were most worried about. Interestingly the 2020 Responsible Mining Index (July 2020) which looked at more than 900 mining sites globally among 37 major mining companies also cites the trust deficit with affected communities as the main concern for industry players. This speaks to the fact that equating shareholders with stakeholders, and managing the tensions inherent in this dynamic, are both conceptually and operationally difficult. This tension also manifests itself most visibly when it comes to mine closure.

> "In real life, strategy is actually very straightforward. You pick a general direction and implement like hell."
> – Jack Welch

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RETHINKING AND RE-EVALUATING

Recently increased regulatory requirements, particularly in South Africa via GNR 1147, that outline the financial provisioning required for closure and public pressure have encouraged mining companies to pay closer attention to mine closure issues.

New frameworks have also prompted these businesses to integrate closure planning into the project feasibility stage, reaffirming their ongoing commitment to rehabilitation and adherence to approval processes. Ultimately mine closure planning should be an intrinsic element of the entire project life cycle from conceptualisation to implementation, closure and post closure.

In response to the Samarco tailings dam disaster in Brazil in November 2015, the International Council on Metals and Mining (ICMM) published its own guidelines on integrated mine closure. Stipulations suggest that planning should be more iterative in nature and more inclusive of relevant stakeholders. This of course requires a clearer and more nuanced definition of rehabilitation and progressive closure as well as post-closure land use. On 5 August 2020, new standards for tailings facilities management was published in London by the ICMM. Companies will also have to subscribe to these standards in order to join the organisation and must conduct a "human due diligence" and consultation process with interested and affected communities or individual stakeholders who could be affected by the risks of tailings dam failures.

Miners face increased regulatory requirements related to mine closure.

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RECONFIGURE AND RECONNECT

In practice, however, closure planning and consistent compliance with legislation is often overlooked within operational management decision-making processes. In all fairness and in South Africa, the implementation date for closure regulations has been postponed several times and is now set to take effect 19 June 2021.

Additionally, it is common for closure planning to be left behind when other disciplines are in action. This is mainly due to the engineering complexities of incorporating rehabilitation within core mine planning, and the lack of integration between environmental considerations and these strategies. During the design stage of mining projects, complexities are usually managed by solving each component separately using subject matter experts, and then assembling the project from the bottom up. Hence the various processes are poorly interconnected, with extensive focus being placed on cost and technical drivers.

"Improved closure outcomes can be achieved by linking people, processes and technology in a systematic way." – Vivier

HOW DO WE CREATE A BETTER CLOSURE FOR A BETTER TOMORROW?

Improved closure outcomes can be achieved by linking people, processes and technology in a systematic way that captures mine closure planning, and by making it an intrinsic part of management operating systems. Given the advances in software, mine planners now can look at the whole operation within one model to determine the true costs of operations, resulting in a practical and compliant closure solution. It also enables the ability to analyse plans in more detail and to make better decisions to fulfil the final agreed post-mining landform use.

Approaches have shifted from a static closure concept to a life-of-mine process. The key components? Progressive and concurrent rehabilitation, in collaboration with stakeholders, and an emphasis on post-closure land use that facilitates economic activity and community development. Not only do we need to change the lexicon and narrative from the concept of mine closure to one of mine transformation, but more importantly, we need to move from compliance to strategy: this provides new opportunities to ease the transition for affected communities, and contribute to securing resilient future livelihoods.

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REFLECT, REVIVE AND RESHAPE

Mine closure should not be viewed as a problem but rather as a natural conclusion to mining and as a catalyst for creative solutions for post-mined landscapes. This could range from transforming land into a tourist destination for skiing like Teck Resources did in a town called Kimberley in Canada or donating revegetated forest land in Indonesia by Newmont or we can draw inspiration for *101 Things to do with a Hole in the Ground* by Georgina Pearman (2009) who examines a range of innovative case studies.

In order to navigate a drastically different operating environment, mining companies can pick a strategy, including a closure plan, and implement the hell out of it – but it needs to be relevant to the context and to stakeholders. What is more, they need to find a sustainability partner that can execute on both strategy and compliance, underpinned by value engineering, clear objectives, measurable outcomes and solutionist thinking. ■

WAYNE

Africa's leading gumboot specialists for 80 years

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Wayne Safety started manufacturing gumboots 80 years ago, with Wayne Rubber producing rubber gumboots in KwaZulu-Natal. This began a long tradition of manufacturing superior-quality gumboots and serving workers right at the heart of industry. Today Wayne is the largest and leading PVC and PU gumboot manufacturer in Africa, the company says.

"Since 1940, we have focused on what we do best – gumboots, and gumboots alone – allowing us to emerge as specialists in our field and pioneers in both innovation and quality."

Rubber gumboots.

Wayne has become a firm favourite in some of the toughest industries. Miners have worn the iconic Egoli gumboot for almost 40 years, fondly referring to them as "mdala-scathu" (mdala iscathulo), which loosely translates to "the old-timer shoes", because they have stood the test of time.

"We were the first gumboot manufacturer in Africa to install our own PVC compounding plant which allowed for greater quality control and a quicker manufacturing process. In 2014, Wayne became the first (and proudly remains the only) PU gumboot manufacturer in Africa.

"Over the years, we have worked on reducing our carbon footprint in line with our objective of sustainability, and today we produce 35% of all our gumboots from recycled materials. Our Duralight 1 is well-recognised in agricultural sectors and incorporates a mix of virgin and recycled PVC that results in a superior, yet cost-effective, recycled gumboot upon which our customers can trust and rely on.

"In 2015, we were the first to introduce a fully integrated metatarsal PVC gumboot to market that was EN20345-accredited. Our gumboots are compliant with all safety standards and regulations, and are manufactured in an ISO 9001-accredited factory to ensure unrivalled quality. This has allowed us to compete with international brands and broaden our global footprint to over 40 countries worldwide.

"After 80 years of specialised gumboot manufacturing, innovation and technical achievement, Wayne remains a proudly South African company that supports and services the local economy, establishing ourselves as part of the history of our great country and continent.

"Today, Wayne is the number one choice in Africa for PVC and PU gumboots; from mining and agriculture to food processing and hygiene." ■

"Since **1940**, we have **focused** on what we do **best** – gumboots."
– Wayne


Press cutting of filtration material used in Nikki reusable dust masks.

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AIR ENVIROTECH, a specialist in air pollution, dust control and pneumatic product handling, is providing a comprehensive range of air environmental and pneumatic conveying services and state-of-the-art systems and technologies. AIR ENVIROTECH was established by industry specialists TAKRAF South Africa air environmental and pneumatics team. Following an agreement with TAKRAF South Africa, it will now provide its services as an independent entity, says the company.

AIR ENVIROTECH services range from system design to manufacture, turnkey installations and after-sales service, with expertise provided over a full range of dust and air pollution control technologies. These include electrostatic precipitators, baghouses and bag filters, cyclones, dry/wet scrubbers, dust suppression systems and dry and semi-dry flue-gas desulphurisation systems.

"With the increasing legislative stringency and public pressure to reduce the environmental and health and safety impact of industrial operations, we believe that AIR ENVIROTECH is well positioned to support industry 'work for cleaner air'," says AIR ENVIROTECH's Jimmy Tomlin.

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COVID-19 TESTING HITS 100 MARK AT EXXARO'S PRIVATE LABS

South Africa's national COVID-19 testing capacity in both the public and private sector has come under severe strain as the pandemic progresses across the country. In response, Exxaro has invested in opportunities to increase the private testing capacity by setting up two COVID-19 PCR testing laboratories, one at Grootegeluk Mine's Marapong occupational health facility in Lephalale, Limpopo; and the other at Matla Coal Mine's occupational health centre in Kriel, Mpumalanga. The laboratories will be used for testing employees. In the event of an active case, isolation and quarantine facilities in both Limpopo and Mpumalanga have been made available.

Exxaro CEO Mxolisi Mgojo says, "We are pleased with the commissioning of the two COVID-19 testing laboratories. The Exxaro COVID-19 laboratory at Matla will serve our operations in Mpumalanga, and the Seriti Coal Operations (New Denmark Colliery, New Vaal Colliery and New Largo Coal). Eskom has indicated an interest in testing their employees from the Matimba and Medupi Power stations in Lephalale, and at the Matla and Kriel Power stations in Mpumalanga. We envisage that these facilities will also support the local public health departments in our host communities."

CUMMINS SUPPLIES CRITICAL FILTRATION MATERIAL FOR PPE

Multinational corporation Cummins has provided more than 14 tonnes of its filtration media to mask manufacturers across the globe, which has been used to produce more than eight million masks, says Amy Davis, vice president of Cummins Filtration. In early April, Cummins announced plans to use its filter technology to supply critical materials for N95 respirator masks, an essential piece of personal protective equipment for front-line healthcare workers.

Cummins Filtration's core expertise is designing, manufacturing and selling air, fuel, hydraulic and lube filtration, as well as chemical technology products for diesel and gas-powered equipment around the world.

"The need for masks, especially N95 respirator masks, skyrocketed in March and April in response to the COVID-19 pandemic. We learned that many of the world's leading mask manufacturers needed the critical materials to assemble masks and were struggling to meet demand," says Davis.

"We realised that the NanoNet and NanoForce media technology typically found in filtration products for diesel engines could also be used in surgical masks and N95 respirator masks worn by healthcare professionals to help stop the spread of COVID-19. Once we made that connection, we began exploring partnerships to apply the filter material to masks. We have added manufacturing capacity and capability to our plants and plan on continuing to supply media for masks as long as there is demand and a need to protect our communities from COVID-19."

Cummins supplies filtration media to mask manufacturers.

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Wayne has been delivering consistently excellent and innovatively designed gumboots to the mining industry for 80 years.

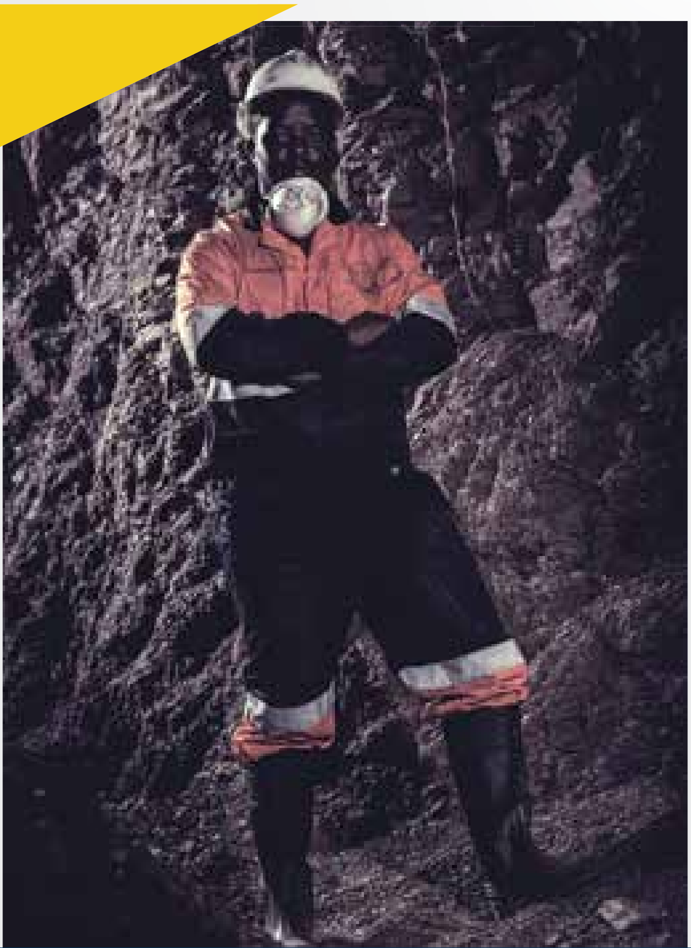
Since 1940, we have focused on what we do best – gumboots, and gumboots alone – allowing us to emerge as specialists in our field and pioneers in both innovation and quality.

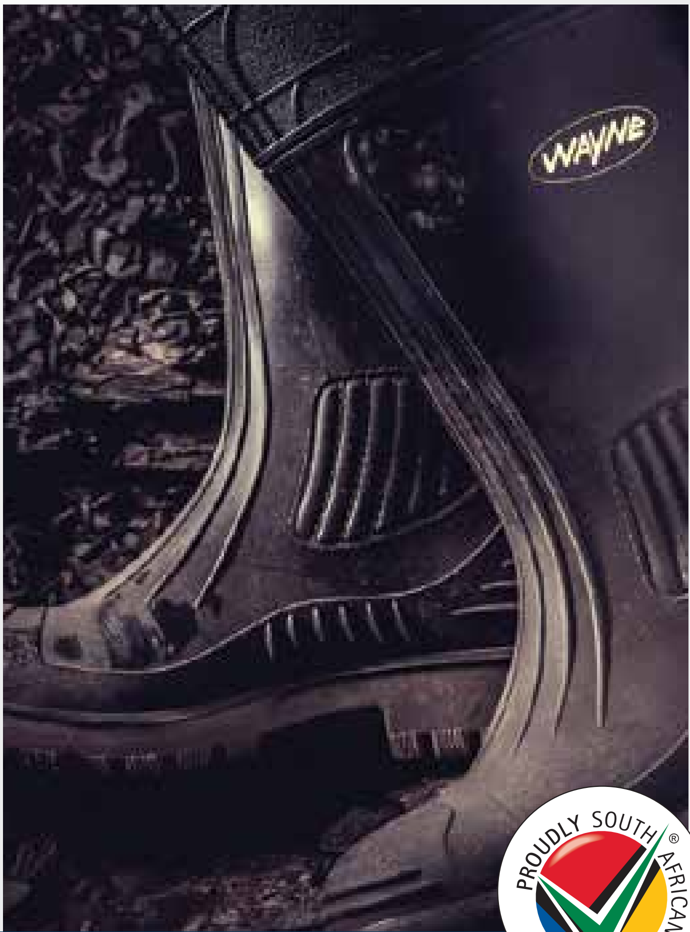
Wayne is the number one choice in gumboots for mining, providing tough, waterproof safety that's built to last.

EGOLI 2

EGOLI METAGUARD

PUREMAX





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TACKLING SOCIAL COMMUNITY ISSUES IN MOGALAKWENA

Impact Catalyst is a new initiative consisting of partnerships between Anglo American, Exxaro, the Council for Scientific and Industrial Research (CSIR), World Vision and Zutari, who share a vision of creating enhanced social impact in the mining communities in Limpopo and will expand to other provinces. The aim is to establish inclusive, collaborative, cross-sectoral platforms, initiatives and partnerships to achieve systemic socio-economic impact through public private partnerships, the company says.

One of the first Impact Catalyst initiatives concerns community-oriented primary care (COPC) – a joint initiative with the University of Pretoria's Department of Family Medicine. It has been rolled out in three communities, Mapela, Phafola and Mosesetjane, around the Mogalakwena Mine in Limpopo since October 2018. The aim of the co-developed programme among provincial health officials, local leaders and communities is to empower community healthcare workers (CHWs) to deliver medical care and education directly to communities and households as the need for primary health has soared in the past few years. The COPC project aims to improve the health status of the people through better management of chronic diseases and addresses other social concerns. Through the COPC programme, Mary Shikoane from the Phafola Clinic was treating a community member when she noticed that her patient did not have an ID and was not receiving any South African Social Security Agency (SASSA) grant. Through the COPC clinical associate's involvement he was referred to the relevant departments and is waiting for his pay-out. "Thanks to the CHW who treated me, I managed to get my ID and I will be receiving my SASSA pay-out soon. This would not have been possible if COPC did not intervene", said Moselana, the treated community member.

> "The Impact Catalyst initiative is a perfect example of how the private sector can accelerate impact in communities."
> – Dr Suzi Malan

Arising from the success achieved in Mogalakwena's mine communities, Anglo American centred its COVID-19 response around the COPC model across all Anglo American mine sites. The WeCare programme includes a specific home-based response to its employees and contract workers through clinical associates who visit homes for screening, swabbing, contact tracing and follow-up during self-isolation. The second component focuses on supporting health facilities through a variety of COVID-related training sessions to anyone from the community requesting such training. Other services include setting up and manning screening stations and supporting the clinics.

According to Sister Silvia Diase, Mogalakwena area manager for the Department of Health who is responsible for 11 clinics surrounding the Mogalakwena Platinum Mine, the project has leveraged the strengths that already existed within communities in order to respond to specific community needs.

Impact Catalyst says there are numerous studies that have shown that community-based services delivered by professionally supported community health workers can deliver significant improvements in healthcare at a far lower cost and can improve health literacy at the household and community level. CHWs create linkages between healthcare facilities and patients. The group of 39 trained community workers adopted the premise that if the most vulnerable members of the population cannot get to a healthcare facility, they will take the healthcare facility to them.

"The Impact Catalyst initiative is a perfect example of how the private sector can accelerate impact in communities when resources are combined with government sector efforts. Healthcare in the rural areas constantly suffers from a lack of resources due to many factors, and the concerted effort by these Impact partners to support the Department of Health with resources such as training, IT, internet connectivity and establishing value chains, among others, go a long way towards creating the type of positive spin-offs such as improved relationships, connecting partners and better health literacy for individual community members," says Dr Suzi Malan, COPC Research Unit, Department of Family Medicine, UP.

Apart from the COPC project, the Impact Catalyst partnership is conducting several feasibility studies and pilot programmes to stimulate economic development in the region and will make use of the data collected from these studies to inform future decisions. ■

IS COVID-19 FAST-TRACKING DEVELOPMENT OF INTELLIGENT MINING EQUIPMENT?

Product innovation continues to be important, now more so with the onset of the COVID-19 pandemic, which is disrupting the traditional means of work.

SA Mining recently caught up with Navin Singh, former co-director at the Mandela Mining Precinct, hosted and managed by the CSIR, and Ossie Carstens, CEO of Mining Equipment Manufacturers of South Africa (MEMSA), to chat about the impact of COVID-19 on mining equipment developments.

HOW IMPORTANT ARE RESEARCH AND DEVELOPMENT TO THE MINING SECTOR, AND WHAT ARE THE KEY FACTORS DRIVING THE DEMAND FOR INNOVATIVE PRODUCTS?

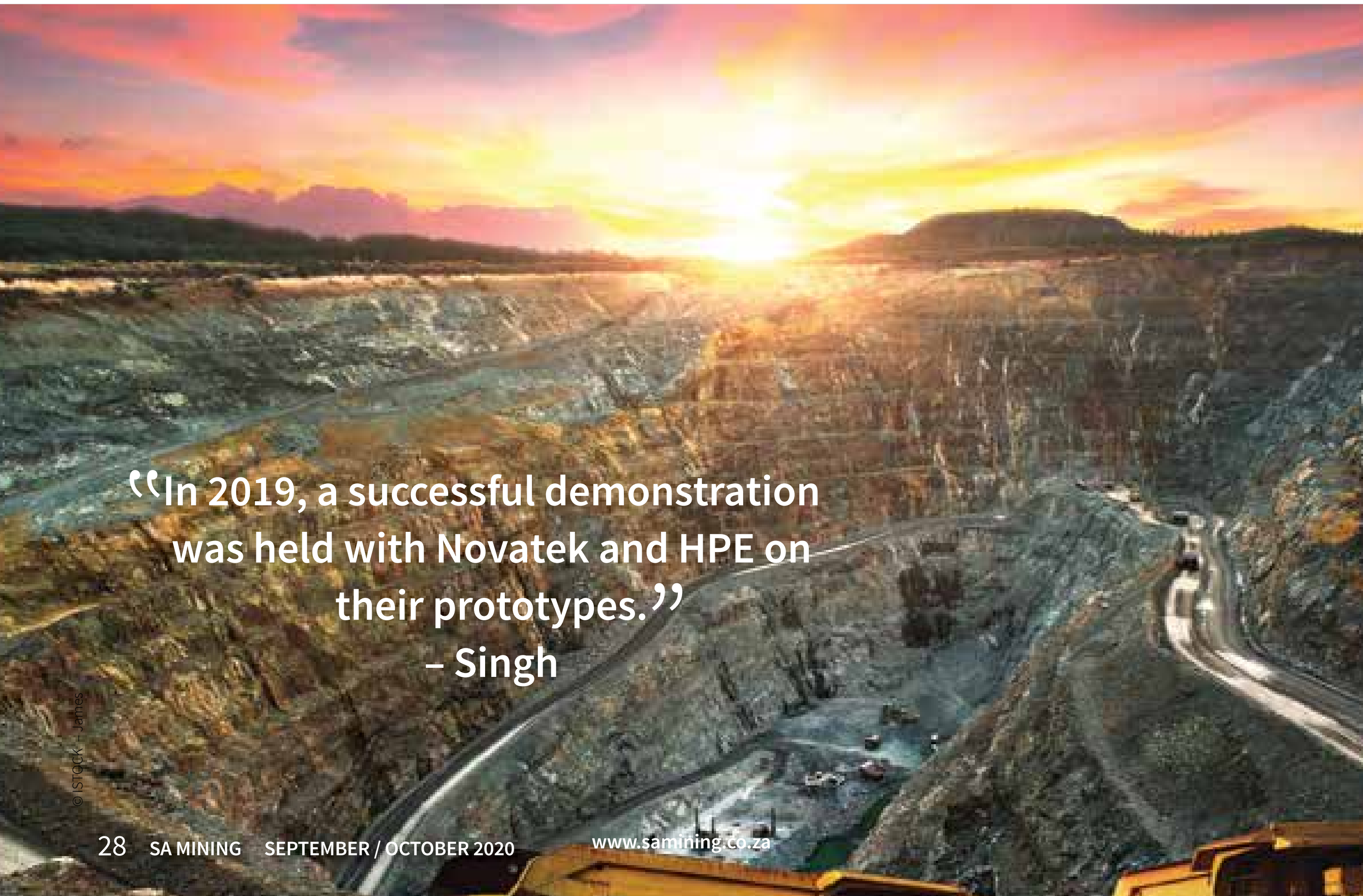
The need for research and development (R&D) in mining is critical as mining companies are always striving to meet best practice and lead in technology development and implementation to ensure that mining stays ahead of the cost curve, and to remain financially viable and ensure long-term gains for the company. While targeting zero harm, the measures also help companies promote sustainability. The key issues remain the need to improve occupational health and safety performance, reduce costs and improve efficiencies. These three are the ubiquitous challenges that will never go away irrespective of where we are in the commodity price rodeo (irrespective of whether it's high or low).

The COVID-19 pandemic has had a direct impact on mining as well as other industries and sectors. There is a focus on social distancing to ensure that the basic protocols are met. That said, R&D in mining is more medium to long term and thus the trajectory we have started on needs to be maintained to ensure that the end goal of a modern mining environment is achieved.

Innovative hydro-powered narrow tunnel drill rig by MEMSA member HPE.

WHAT ARE SOME NEW DEVELOPMENTS UNDER WAY AND HOW WILL THESE CHANGE THE WAY THE MINING INDUSTRY OPERATES?

With the impact of COVID-19, there is a need to move to more digital and virtual engagements and to provide more real-time information management systems so as to be proactive in managing mining operations. Through the Real-Time Information Management Systems Programme (RTIMS) we are creating a framework that will guide mining companies and suppliers of technology to achieve proactive management of mines by



The Mandela Mining Precinct engages all stakeholders.

Navin Singh.

Ossie Carstens.

ensuring that the right information is sent to the right person at the right time. While developing these frameworks and principles, we are also looking at various highly technical capabilities related to using geophysics to see ahead of the rock face and translate this information into a useable format. This will allow companies to better manage the rock mass and associated geological hazards and through the development of optimised mine designs and better equipment use, companies will be able to access improved efficiencies in a mine. This, coupled with the development of models on shift cycle optimisation, energy consumption and optimisation and equipment designs which can feed into the RTIMS framework, will help drive the move towards the goal of achieving a modern mining environment. The focus in RTIMS is to provide the basic platforms that will ensure that the miner is enabled through access to information of current operations, access to standards and codes of practice etc. to help ensure safe production. The focus is also on developing intelligent mining equipment that can provide details on issues such as performance, imminent mechanical issues, environmental monitoring, etc. These two areas build on integrated and holistic smart system design using smart systems technology including AI, automation, remote control, autonomous systems and data and information management and technology.

HOW IS COVID-19 INFLUENCING THE DEVELOPMENT OF MINING EQUIPMENT?

The downturn in mining production initially had the resultant domino effect on manufacturing. As mines have come back to production, mining equipment manufacturers have also been returning to work. While many think that this is an ideal time to introduce mechanisation into mining, it is not that simple to change mining plans. It is exceptionally difficult for deep-level mines in particular given that they face steep gradients and highly geologically disturbed narrow reef stoping environments.

The Mandela Mining Precinct continues to pursue its research into mining mechanisation in a more consolidated manner this year. By combining the non-explosive and mechanised drill and blast programmes into one (called mechanised mining systems), we endeavour to create solutions that target mining all over the reef all the time with no dilution as well as creating ideal platforms to develop South African mechanised mining equipment for underground narrow seam mining.

Further to this, the pandemic has probably accelerated the thinking around combining data that is collected currently as a matter of course, into a dashboard-type approach for on-time reporting and faster decision making >

AARD Mining Equipment's Low Profile Drill Rig provides operator safety and powerful performance in a low profile environment.

– the Fourth Industrial Revolution direction of things to come. The need is to reduce people in confined spaces, ultimately removing them from the dangers inherent in deep-level mining into such a space where the ore can still be mined effectively and efficiently. As an example – the topic of autonomous loading of ore had been bandied around for a while, but technology is now so advanced and readily available that this pandemic will probably be seen as the tipping point in taking this idea forward. It will unlock further opportunities for enhancements probably not previously considered.

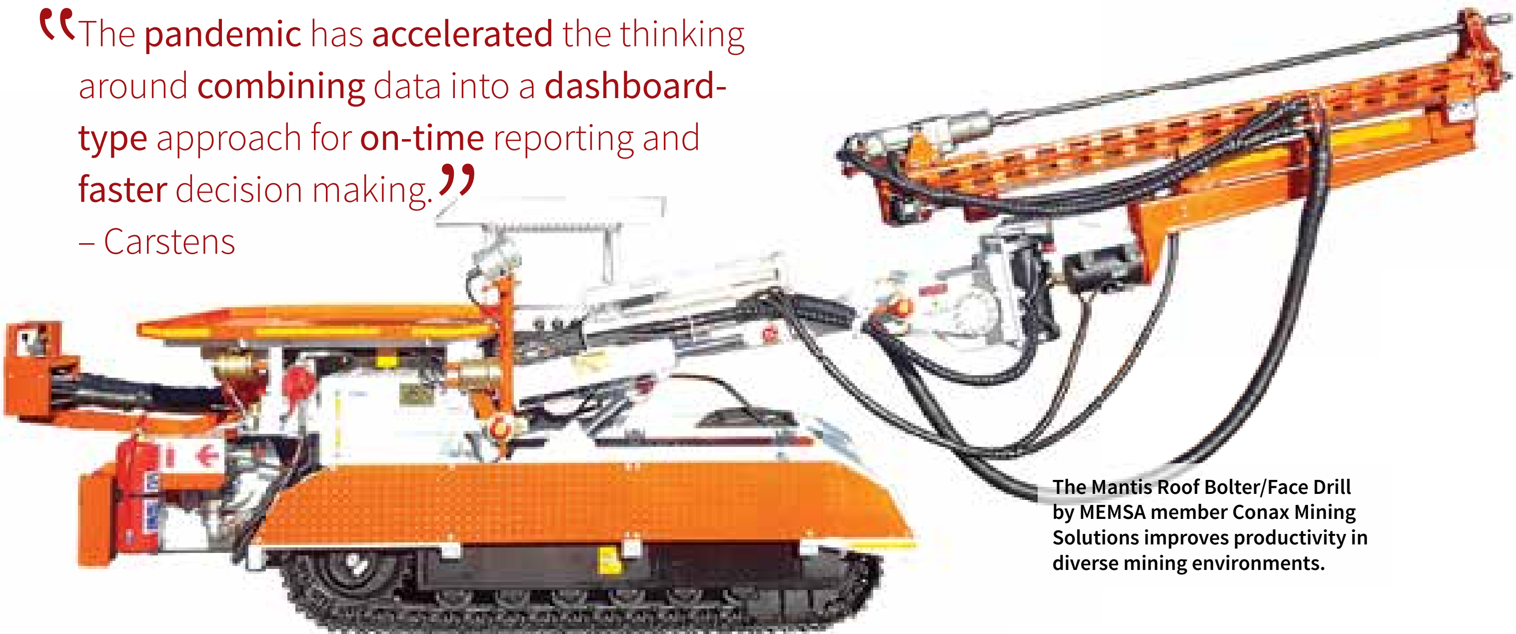
ARE THERE ANY NEW DEVELOPMENTS REGARDING DEEP-LEVEL MINING?

The challenge of zero harm remains. It is becoming increasingly critical to ensure we manage the hazards posed by the rock mass from the hanging wall as at the mining face. Through the Advanced Orebody Knowledge programme and in close collaboration with the Longevity of Current Mining programme there are a few initiatives we are working on to address this issue. These initiatives are being undertaken in partnership with the Mine Health and Safety Council to ensure that there is no duplication of work and that the efforts are synergistic.

WHAT HAS TRANSPIRED SINCE THE CHALLENGE AND WHAT IS THE STRATEGY GOING FORWARD?

COVID-19 has had a significant impact here. In 2019, a successful demonstration was held with Novatek and HPE on their prototypes. The next step was to get the units to a real underground operating mine to demonstrate its full capability. Currently there is a call for a proposal from the research partners to manage this initiative and to undertake independent evaluation of the prototypes. Issues such as drilling time per hole and for the full panel, set-up time, assembly and

> "The **pandemic** has **accelerated** the thinking around **combining** data into a **dashboard-type** approach for **on-time** reporting and **faster** decision making." – Carstens



The Mantis Roof Bolter/Face Drill by MEMSA member Conax Mining Solutions improves productivity in diverse mining environments.

disassembly, noise etc. will be measured and assessed. These results will be shared with mining companies and used to determine a ranking. Further to this, there will be engagements with government institutions via the Department of Trade and Industry on how funding can be sourced to assist in the commercialisation of the prototypes. More information will flow as the project unfolds.

WHAT IS THE IMPORTANCE OF R&D?

R&D by nature is very often faced with the challenge of being seen as academic rather than industry focused. At the outset, SAMERDI was set up to be industry-driven such that the R&D was focused and directed towards the challenges facing the industry.

The work of the SAMERDI programme builds on the outcomes of prior years. The focus going forward is on integration towards implementable solutions and is fully aligned to the Department of Science and Innovation's strategic programme of "R&D-led industry development" and supported by the Mineral Council's Innovation Task Team.

The focused R&D programmes strive to achieve one or more of the following objectives of new products and/or new markets and/or industry growth and/or increased R&D.

It is important to note that the delivery of the SAMERDI programme has not changed. The focus this year is to deliver technological solutions or technology demonstrators that can add value in achieving our initial goals of improving occupational health and safety performance, reducing costs and improving efficiencies.

The approval for the development of a test mine for the South African mining industry is a watershed moment in the journey towards modernisation. Previously R&D initiatives that required testing were at the mercy of a mining company being able to accommodate this within its already constrained production cycle. Valuable technological advances thus never had a fair chance of succeeding as they never received the appropriate prioritisation. ■

The Isidingo Drill Open Innovation Challenge resulted in the development of two new rock drills with greatly improved health, safety and productivity features by HPE and Novatek.

ATLANTIS MINING CHOOSES VOLVO R60D RIGID HAULERS

Opencast coal mining subcontracting company Atlantis Mining has once again turned to Babcock as it continues to grow its fleet of Volvo Construction Equipment.

Quintin O'Reilly, equipment sales representative for Babcock, says Atlantis Mining's recently purchased eight new Volvo R60D rigid haulers are the first to be sold in South Africa and will be put to the test in rugged opencast coal mining conditions.

The first four Volvo R60Ds were handed over to Atlantis Mining on 14 July and are already in operation at a colliery where they are being used primarily for the removal of blasted rock and hard overburden, with the remaining four haulers to be delivered in October this year.

"The R60Ds will complement our existing fleet of Terex and Volvo Construction Equipment, among them Terex TR60s and a number of Volvo A40F and A40G articulated dump trucks," said MD of Atlantis Mining, Mark Johnstone.

Atlantis Mining's long-standing relationship with Babcock dates back to 2000 when the company was appointed as the sole distributor for Volvo Construction Equipment in Southern Africa.

MASTER DRILLING SETS NEW WORLD RECORD WITH 1 382M HOLE

JSE-listed Master Drilling has added another record to its name following the successful completion of the pilot hole for raise-boring at Northam Platinum's Zondereinde mine.

Drilling of the pilot hole at number 3 shaft, a new vertical shaft at the Western extension section of Zondereinde, commenced on 25 September 2019 and the receiving chamber underground was reached on 18 July 2020, completing the 1 382m hole, and setting a new world record. The previous record was that of a shaft measuring 1 070m, that was drilled in 2012 at Lonmin's K4 mine, the company said.

Number 3 shaft currently under development by Master Drilling through raise-boring is considered to be safer, quicker and more cost-effective than traditional blind-sinking.

Danie Pretorius, CEO of Master Drilling, said: "What is impressive about this record is that it was achieved using a tool that has never before been utilised for such an application, coupled with one of our high-technology machines. It clearly highlights the superiority that adaptation and technology bring to drilling solutions, which is something that Master Drilling has been working relentlessly at over the years."

ZIMBABWE EXPORT ORDER FOR OSBORN

Mining and quarrying equipment specialist Osborn, a subsidiary of Astec Industries, has completed a significant export order for a new aggregate crushing plant in Harare, Zimbabwe. New customer Beta Holdings, Zimbabwe's largest brick and concrete roof tile supplier, has installed and commissioned six Osborn machines in the brand new plant.

"This order was secured through our Zimbabwean dealer, Jacob Bethel Corporation," explains Osborn regional sales manager Kevin Mgiba. Beta Holdings is an established Zimbabwean business with its origins going back to 1953, when it was established as Alpha Bricks.

The Osborn equipment supplied for Beta Holdings' new 250tph aggregate crushing plant includes an Osborn 30 x 42 Jaw Crusher, an Osborn 44SBS Cone Crusher, a Modular VSI2500 KPI-JCI Crusher, an Osborn 6 x 16 Double Deck Vibrating Screen, an Osborn 6 x 20 Triple Deck Vibrating Screen, and a 42 x 16 Osborn Vibrating Grizzly Feeder.

The scope of Osborn's contract for Beta Holdings included the manufacturing and supply of the equipment.

FUCHS LUBRICANTS SOUTH AFRICA INVESTS R250M IN EXPANSION

FUCHS Lubricants South Africa, a subsidiary of FUCHS PETROLUB SE in Germany, recently invested around R250-million for the purchase of land and the development of the site for a warehouse, office complex and lubricants plant. The project duration is 17 months and is scheduled for completion by October 2021. Paul Deppe, MD of FUCHS Lubricants South Africa, said the project had been in planning for the past two years. "FUCHS's business in South Africa and export into Africa is growing and we needed to plan for future expansion." The new warehouse system will provide much-needed storage space and will be accompanied by modernised systems to enhance efficiencies. DRA Global was selected by FUCHS to provide engineering, procurement and construction management services for the project. Industrial Logistic Systems has been appointed as warehouse consultant and ICM Architectural Studio as the architect.

DANOHER

INCREASES PRODUCTION BY 30%

with CDE cyclone technology

Johannesburg-headquartered materials processor Danoher, which operates the Bloemspruit Quarry, has reported a 30% increase in production following the support of the latest CDE wet processing technology.

Bloemspruit Quarry is Danoher's flagship commercial operation supplying Bloemfontein and the surrounding areas with high-quality construction aggregates. The company, which offers among other services crushing and screening solutions, was operating traditional bucket wheel technology at its Bloemspruit site.

Once widely adopted in the materials processing industry at a time when sand resources were abundant and construction materials commanded a high price tag, bucket wheel technology is now being replaced by more advanced and efficient technological solutions.

"This technology is increasingly under the spotlight for many materials processors who are seeking to address inefficiencies in their operations," says Willem du Plooy, business development manager at CDE.

The solution, Du Plooy says, is cyclone-based technology.

"High and variable moisture content, the loss of quality fines into settling ponds and inaccurate material classification are some of the many shortcomings stemming from bucket wheels that are addressed by CDE cyclone technology."

Cyclone technology, Du Plooy explains, involves the use of centrifugal force to classify materials as opposed to bucket wheels which rely on gravity as the means of separation.

Commenting on the then existing plant set-up at Danoher's Bloemspruit Quarry, Du Plooy says the outdated technology had further limitations that were affecting the business and restricting its growth potential.

> "CDE recently commissioned a 60tph EvoWash 102 at the Bloemspruit Quarry." – Du Plooy

"This is a very competitive market. The demand for high-quality washed sand and aggregates is high. In order to fulfil that increasing demand and grow your business, materials processors need to ensure they're extracting every valuable grain of sand from their feed material. To achieve that, an efficient plant is a must.

"Not only was Danoher losing valuable fines to its settling ponds but the gearbox in the unreliable bucket wheel was prone to failure leading to significant downtime and putting the business at a competitive disadvantage."

To overcome these challenges, CDE recently commissioned a 60tph EvoWash 102 at the Bloemspruit Quarry.

Danoher business manager Johann van Niekerk says that as an industry leader, the company makes use of the most advanced equipment technology and was exploring various solutions to replace the dated bucket wheel.

"We evaluated the CDE wet processing technology at one of our customer's sites where the company's EvoWash sand washing plant was in operation. It was a major asset to them, and we saw an opportunity to integrate similar technology at Bloemspruit."

Van Niekerk says they also sought to differentiate Danoher from other materials processors in the market.

"We needed something that was more suited to our requirements, a solution that offered us greater product flexibility. We wanted to stand out. To grow the business, we needed to differentiate ourselves from the competition while simultaneously

> "To **grow** the business, we need to **differentiate** ourselves from the **competition** and **produce** a **superior** product for our **customers**."
> – Van Niekerk

producing a superior product for our customers."

Compared to its previous bucket wheel, CDE's EvoWash, says Van Niekerk, offers Danoher greater versatility.

"Demand in our local market is driven by washed sands. With our new EvoWash we're producing more sand than ever before."

Van Niekerk continues, "More control over our cut point means we're also better equipped to be more responsive to the needs of our customers as we can produce sand fractions in line with their own requirements or downstream processes."

Danoher EvoWash and sand pile.

Danoher EvoWash cyclones.

With the support of CDE cyclone technology, Danoher is now producing two grades of sand – fine (0-1.5mm) and coarse (0-5mm) – compared to only the one grade of sand its bucket wheel was capable of producing.

"Our production is up by 30% and water usage down by 15%," says Van Niekerk. "This has opened up a new revenue stream for us and the superior products are attracting new customers, too."

He says the quality of the sand produced by the EvoWash is equal to that of natural sand.

"We recently secured an order for 600 tonnes a month of washed super sand from one customer whose sand was previously dredged from riverbeds," says Van Niekerk. "This is testament to the quality of the sand being produced by the EvoWash." ■

Danoher sand pile.

DISTRIBUTION PARTNERSHIP

to fuel Astec's African expansion strategy

> "This partnership is an opportunity to strengthen Astec Industrie's presence in significant territories." – Surajlall

Manufacturer of specialised equipment, Astec Industries, through its Africa and Middle East (AME) business unit, has inked a distribution partnership with French mining and underground solutions specialist Aramine. The strategic alliance will enhance the supply, distribution and service of Astec mining, quarrying and materials handling equipment in numerous African countries, the company says.

Aramine has been appointed as a dealer for Astec Material Solutions products in Mauritania, Mali, Senegal, Guinea, Ivory Coast, Burkina Faso, Benin, Togo and Niger in West Africa, as well as in Algeria, Tunisia and Morocco in the Maghreb region.

"The expansion of the Astec portfolio that will be distributed by Aramine is an important evolution in our commercial relations, as we collaborate in very active and demanding markets in West Africa and the Maghreb," says Vinesh Surajlall, director – material solutions at Astec Africa Middle East. "With this partnership, we are developing a new customer proximity offer, combining expertise, services and quality products," he says.

Jaime Martel, key regional and product manager and head of distribution partnerships at Aramine, says that the new venture represents Astec's confidence in Aramine. The two organisations have enjoyed a long-standing distribution partnership which previously encompassed only the BTI range of rock breaker and boom systems. "The extension of our alliance, to cover the material solutions offering, will equip us further in meeting the needs of our customers in the regions," Martel says.

In addition to its recognised expertise and technical service, Aramine will leverage the proficiency and networks of its subsidiaries and partners in the regions.

The recent group restructuring and the establishment of Astec Industries Africa and Middle East (AME) will deliver further benefits for Astec customers in the region.

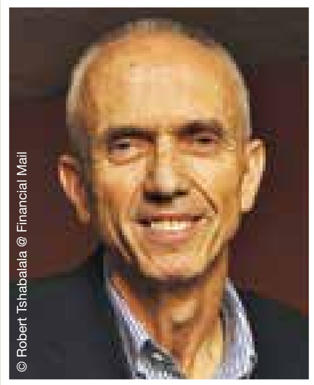
The move forms part of Astec Industries' international expansion strategy, with regional sales organisations established to improve customer interaction and support for the complete range of Astec products.

Astec Industries AME is one of these regional sales organisations and will be responsible for business relationships in Africa, the Middle East and Central Asia. The AME offices are based in Elandsfontein, Johannesburg, with regional sales managers positioned strategically within the region to support the business's dealer network and customers.

"We look forward to contributing to the continued growth of our customers' businesses through this enhanced structure, optimised product range and support structures throughout the Astec Industries organisations. This expanded partnership with Aramine represents an important opportunity to strengthen the presence of Astec Industries in these significant territories," Surajlall says. ■

GOLD AND AFRICA

GOOD TWIN, BAD TWIN



Peter Major
Mergence Corporate Solutions Director: Mining

To say that gold is synonymous with Africa is not incorrect. But like the movie *Twins* starring Danny DeVito and Arnold Schwarzenegger, they could hardly be more different.

Gold has been part of humankind's culture and being since time immemorial. Gold ingots and trinkets have been found with human remains and burial sites dating back many thousands of years.

And although modern humans are widely believed to have evolved from somewhere in the region of Iraq, the majority of the world's gold production has always been sourced from Africa. In biblical times before and after Christ and even today with the world's greatest producer ever, by far, South Africa, which is just hanging on by a thread in its twilight years, Africa as a continent remains the world's most prolific producer.

In 2018, Africa produced 833 tonnes of gold officially (probably much more unofficially), which is about 25% of the world's official production of 3 300 tonnes that year. It's unlikely that Africa's production came down in 2019 with gold averaging $1 325/oz (opposed to 2018's $1 250/oz).

Africa has been the world's number one gold producer since the 1890s, with South Africa obviously taking the country lead with its well-organised industry from 1890 onwards.

In fact, South African gold production grew steadily from 1890 until 1970 when it peaked at 1 000tpa.

Politics more than anything else led to its steady decline, especially with the culmination of and aftermath from the great mineworker's Strike of 1987.

From then on there was little capital and appetite for investing in enormous, expensive, risky and deep infrastructure necessary to extract the majority of South Africa's gold.

So while the rest of the continent and world were feverishly spending increasing amounts on discovering and extracting more gold – triggered by the massive price rise in the 1970s – South African gold mines began spending less and less each year from 1988 on.

But not so for the continent.

From 1970 and definitely from the new millennium onward, Africa's gold discoveries and production blossomed, virtually compensating for South Africa's demise.

Money and effort spent have a definite proportional relationship to gold found and produced.

It is that simple.

Despite the growing chaotic state of the continent's politics and economics, its gold production continues to rise.

This is driven by numerous factors including Africa's parlous and diminishing economic well-being, coupled with its rapidly growing population, fuelled by rising world demand for gold, combined with a rising gold price in African currencies and more recently rising in hard currency terms as well.

But once again, like the movie *Twins*, gold prices and demand could not be more different from African gold production.

Of the estimated 830tpa of official gold African production over the past few years, the majority (and increasingly so) is artisanal production, which not only excludes the state from receiving any benefit at all, but actually leads to greater chaos, instability, corruption and degradation of the continent.

Wild West-type environments prevail with illegal mining extending to corruption, threats, bullying, violence and growing environmental destruction across the continent.

African governments, while making the economic and political environment increasingly more difficult for legitimate and organised large-scale gold producers to operate in, have often unwittingly and sometimes intentionally made the environment for artisanal and illegal gold producers highly attractive. This irreversible tsunami, which has established a two-decade negative trend, shows no sign of abating, let alone ever reversing.

Legitimate gold producers are increasingly being supplanted by illegal gold producers.

So, will lawlessness, unaccountability and environmental destruction continue to be the new norm in Africa's gold mining destiny?

Gold prices of close to $2 000/oz are beginning to look like the new normal.

Unlike in 1979 and 1980 when gold rose 250% in one year only to lose 50% of its value the following year, and 1933 when gold rose 70% in a single day where it then remained for close to 40 years, this time gold prices seem to have stabilised in line with world economics.

Gold rose 50% over the past 12 months, after stabilising at around $1 250/oz over the previous five years.

But the world's almost synchronised move towards 0% interest rates and the creation of over $9-trillion in new money over the past six months means the world's view of gold and demand thereof have significantly altered.

People are viewing it as a safe-haven metal, a necessary currency and means of saving.

If this belief persists, the price of gold will surely remain strong going forward. And for African economies with their failing industries, high unemployment rates, decreasing foreign reserves and treasuries, this can only lead to more gold production – legal and illegal.

The movie *Twins* was a massive success and ended happily for both the "perfect" twin (Arnold) and the "imperfect" twin (DeVito). Each realised that they only had each other in this chaotic but wonderful world, and so both should strive to make the most of it. Africa needs to realise the same regarding its relationship with its endowment of people and gold. Legislating and attacking the established and large producers out of existence helps no one and hurts everyone. ■

The views expressed are the author's own and do not necessarily reflect SA Mining's editorial policy.

THE SUPERVISOR
KEY TO IMPROVED PRODUCTIVITY

The opportunity cost loss of not having an effective supervisor within your organisation cannot be understated. The supervisor is the one person on the ground who decides if the daily target set according to your business plan is achieved or not.

An enormous amount of money has traditionally been spent on capital expenditure programmes and digitisation, but ensuring the effectiveness of the supervisor is usually neglected. It is not that they are not seen as crucial, but the focus is more on sending them for training than ensuring they are effectively coached with the right tools. Since OIM Consulting started working closely within the supervisor space we have noticed the following underlying causes for poor performance: recurring safety issues, missed daily targets, upward delegation, lack of confidence, non-standard work approach, lack of engagement and lack of clear accountability.

Arjen de Bruin
MD of OIM Consulting

The effective execution of any business plan relies heavily on supervisory effectiveness, yet very little effort is placed on changing how the supervisor leads and manages.

Within the mining industry, OIM Consulting found an average of only 12% of supervisors have the right competencies for their role. This average covers the core areas of mining, engineering and plant. Of the outstanding 88%, 6% are not competent for the role and 82% are partially competent. This has immense consequences for the organisation. The competencies that fared the worst as measured by our psychologists are planning and organising, leading others and analysis and problem solving. An overwhelming number of supervisors are only able to execute their daily routine tasks effectively on average 53% of the time.

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The more than 1 000 supervisors we have worked with are extremely hard working and want to be effective; however we have found that many of them “don’t know what they don’t know”. They have struggled to apply or integrate formal classroom training into how they work. In nearly all cases it is not a lack of willingness to be more effective but a lack of understanding of how to be more effective.

In our work with supervisors across sub-Saharan Africa, once they are provided with the right toolsets and learn the appropriate skills, a major mind shift occurs. They become more confident, and execute more appropriately, meaning they start achieving daily targets, and they become more engaged with their teams, motivating them on.

All supervisors thrive with on-the-job coaching. We have seen major changes occur in competencies and shift execution once this occurs. The 12% competencies shifted to 44% competent and daily routine task execution went up from 53% to 90%.

The impact of this movement on productivity and profitability is profound. In one of the deepest underground gold mines in South Africa, all in sustaining costs fell by 31%. Tonnes per employee went up from an average of 21.7 to 33.4, gold mined increased by 30%. The average mean time between failure dropped by 42%. On an iron ore mine in the Northern Cape an extra 11.5 million ROM tonnes were extracted.

Where companies have embraced the establishment of a coaching culture, they have continued to report an increase in supervisory performance and overall organisational results.

The benefits are clear: a competent supervisor will create an engaged team which will drive efficiencies. Especially within this COVID-19 environment, the supervisor is key to ramping up production to achieve the revised targets for the next quarter. Now imagine what a competent supervisor can do within a highly digitised environment which has lean processes and a high-performance culture. ■

The views expressed are the author’s own and do not necessarily reflect SA Mining’s editorial policy.

CHEMICAL PUMP SETS THE STANDARD WORLDWIDE

Since its introduction more than two decades ago, KSB's MegaCPK pump has changed the way chemical companies throughout the world pump dangerous and volatile materials.

The proven standardised chemical pump to DIN EN ISO 2858/ISO 5199 and Directive 94/9/EC (ATEX) is used especially for handling aggressive liquids in the chemical and petrochemical industries where it provides a safe and reliable means of fluids transfer. The pump's energy efficiency is also noteworthy and the series punches well above its weight in terms of output efficiency, which means that identical operating data and conditions are achieved with smaller pump sizes, the company says.

According to KSB's Dylan Mitchell, this is as a result of impeller trimming for energy savings which results in an up to 10% improvement in efficiency. With a wide range of sizes and variants, users are likely to find a pump that meets their requirements exactly.

He says the range has a modular design system with a variety of pump sizes, materials and components, including gland packing with single and double standardised mechanical seal or cartridge seal.

"We even have a choice of 'medium duty' bearing bracket designs with a cylindrical roller bearing as a radial bearing and a double angular contact ball bearing as a fixed bearing or users can specify our 'economy' bearings which are arranged as floating ball bearings. Hydraulic systems are available for standardised flow rates or high-performance variants depending on the customer's specification," Mitchell says.

He adds that KSB's MegaCPK has been designed for maximum operating reliability and ease of maintenance with back pull-out design for quick and easy access.

Mega CPK.

LABORATORIES COSTING CONCRETE SUPPLIERS DEARLY

An urgent meeting of the technical committee of surface mining industry association ASPASA was convened recently to address inaccurate and procedurally incorrect laboratory tests that are costing the sand and aggregate industry hundreds of millions of rand every year.

ASPASA – the Aggregate and Sand Producers Association of Southern Africa – is receiving ever-increasing complaints from its members with readymix concrete subsidiaries about stock returns and even litigations as a result of erroneous laboratory results conducted on concrete. In many cases tests used in evidence against members have been compiled by unaccredited laboratories or without a proper paper trail, the association says.

ASPASA director Nico Pienaar says the problem is being compounded by the closure of the Southern Africa Readymix Association (Sarma), which previously championed the fight against incorrect testing procedures, as well as tests from non-accredited laboratories. Whether the proliferation is as a result of laboratories taking chances due to the demise of Sarma, or simply a growing trend, isn't clear.

"In light of this, ASPASA will step in to address the problem, and we plan to take quick action. Laboratories need to be aware of the excessive costs incurred by suppliers when incorrect results are submitted. ASPASA is on a mission to improve the quality of the products that its members produce and is prepared to crack down heavily on laboratories who provide inaccurate results on the products as supplied – especially those who we find to be repeat offenders.

"We will also be addressing non-compliance issues with SANAS and report accredited laboratories who consistently produce suspect results on the SANSA complaints webpage for action to be taken."

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1 x Caterpillar D6T Dozer with Ripper - 2010 Model
1 x Caterpillar D8R Dozer with Ripper - 2011 Model

5 x Caterpillar 140G Motor Graders with Rippers
1 x Caterpillar 120G Motor Grader

2 x New / Unused Case 770EX Magnum 4x4 TLB's-86HP - 2020 Models

1 x Cat PF-300C PTR - 2006
1 x Ingersoll Rand - 27 Ton PTR

1 x Komatsu GD650 Grader
1 x Cheng Gong Grader

2 x Bell 2306D Tow Tractors

5 X Etnyre K Chip Spreader's Refurbished

1 x Caterpillar 302,5C M - 2010
1 x Doosan DX62R-3 - 2016

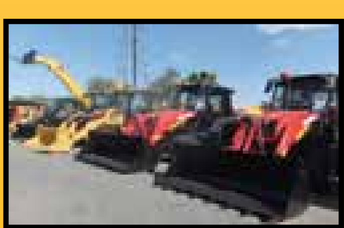
2 x 2014 Caterpillar 320D Excavators
1 x Cat 323D Excavator - 2007

6 x Komatsu HM400-3R A.D.T's 2013
4 x Bell B40D 6x6 A.D.T's
1 x Terex TA30 6x6 Dumper - 2004

2 x Hamm 3520 20 Ton SDR's 2012/2011
2 x Bomag BW212D-40 SD Roller
1 x Dynapac R 3 Point Steel Rolle-13 Ton
1 x Caterpillar CS533E SDR

2 x Caterpillar 950H FEL 2013 models
1 x Caterpillar 980 FEL - 2014 with New Tyres
2 x Sem 668C Front end loaders 2014

3 x Benford TV1200 DDV Rollers
1 x Bomag BW120AD-4 Roller



2 x New / Unused Terex 844S 4x4 TLBS
2 x Cat 428F 4x4 TLB
1 x Bell 315 SJ 4x4 TLB

2 x Ford Mobilift
1 x Callion 10 Ton Crane

1 x Komatsu PC200-8 Excavators - 2013 new undercarriage
1 x Komatsu PC200-8 Excavators - 2012
1 x Komatsu PC220-8 Excavator - 2011

1 x Cat 938K Loaders 2014
2 x Cat 950H F.E.L - 2013 Models

2 x Kamaz 65222 – 9M³ – 6x6 Tippers 2018 Demo Models 3000 and 18000K

2 x AWE Double Axlelingting plant - 2009/2008 Models

1 x Man 25 – 280Bl Low Bed - 2009
1 x Merc 2629K Diesel Tanker 8000LT

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