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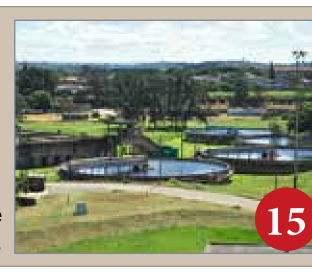
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2023-Quo Vadis?

This Latin phrase askes the question – 'where are we marching' or where are we going, and wouldn't we all like to know.


Chris Hattingh.

FOR our January edition the Editor posed this question to Senior Policy Analyst Chris Hattingh at the Centre For Risk Analysis, for his insights.

"Many commentators and economists agree that the South African economy is in recession and suffering in part from the global shocks of inflation felt everywhere. These are as a consequence of the aftermath of the COVID pandemic, coupled with the Russian invasion of Ukraine which has caused skyrocketing increases in oil and gas prices due to the embargo placed on Russian petroleum products, agricultural fertilizers, and the blockade of Ukrainian agricultural produce amongst other commodities. We also sit with the negative consequences of years of wrong policy choices which have placed a hard cap on the county's growth potential.

"A country in recession is where negative growth in the economy's GDP for two successive quarters – 'a significant, pervasive and persistent decline in economic activity', prevails. South Africa has been teetering on this condition for several years with very low growth rates, rescued only by increased mining output – most recently coal exports – and favourable agricultural output. There are many factors for this unfavourable condition including our collapsing transport infrastructure but a major one is the country's failing power supply, which has touched everyone and every business for the past 14 years.

"Increasing the cost of borrowing – raising interest rates by the Reserve Bank as a mitigating measure to fight inflation - has already happened and I believe will happen again in January and very likely through 2023 (in smaller increments), causing further belt tightening amongst businesses and consumers. This trend is set to continue throughout 2023 and could easily be with us until 2025 according to some predictions.

"On the political front especially, South Africa could prove to be a land of coalition governments. The 2024 general election will prove pivotal in this regard.

Own goals

"It is not just the international situation that has caused this pessimistic outlook – the country has scored a number of 'own goals' through policies that discourage overseas investment and local growth. A reformation of the country's labour laws and the abandonment of BEEE would be a good place to start. These have exacerbated our massive unemployment problem which stands at around 50% (on the expanded definition), with an unsustainable 74% of youth unemployed.

These numbers are untenable and the country risks the real likelihood of renewed unrest as happened when former President Zuma was imprisoned for contempt of court in 2021.

"Levels of corruption and the ineffective police services have led to the country being threatened with being grey listed by the international community which would affect our ability to raise much needed funding on capital markets. However changes to the FICA Act to outlaw money laundering came into force in November last year (2022) and this move coupled with successes made by the NPA in prosecuting some serial offenders gives hope that such a moniker will not be attached to South Africa.

The energy crisis

"The appointment of a new board at Eskom gives some hope of a turnaround in this troubled SOE. But as with all SOEs, its turnaround (if such should come about) will be hamstrung by the ruling party's guiding ideology and demands. Drastic action in the restructuring of Eskom will undoubtedly bring casualties which will upset the unions, but if the fundamentals cannot be addressed then the future of this parastatal is bleak. Saddled with servicing a debt of more R400bn, municipalities not paying for power, an aging fleet of unreliable coal fired power stations, continual breakdowns and loadshedding plus the need for new generating capacity, all while minimising damaging environmental emissions – phew! A major undertaking awaits.

"Faced with continued uncertainty, municipalities and business owners have already started becoming self-reliant in providing essential electricity for their enterprises. This trend will continue and will see more purveyors of renewable energy emerge and establish a vibrant sector. This in itself puts another nail in Eskom's coffin as the utility won't be receiving revenue from self-supporting businesses and less from major metros such as Cape Town.

"There is a glimmer of hope however in the discoveries of huge quantities of onshore natural gas in Mpumalanga and the Free State, and offshore off the West Coast and Mossel Bay. A commitment by Government to gas to power generation would spur the commercialisation of these resources, and provide a reliable and stable electricity supply within two or three years, which coupled with wind and solar renewables could finally address the energy crisis.

Export diversification

"From a global perspective South Africa has long relied on China and Europe as major destinations for its exports of mining minerals and agricultural products. But these markets are changing and could pose a threat to our future exports. The days

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W Cape provincial laboratory get R23-m renovation


Front (from left to right). Dr Ivan Meyer (Min. Agriculture), Mr. Hassan Asmal (ACG Architects, Contract Manager), Mr. Fiesel Dramat (Construction supervisor).

Once the renovations are completed, the Western Cape Provincial Veterinary Laboratory will provide an enhanced service to our clients," said Western Cape Minister of Agriculture Ivan Meyer during the recent handover of the building site to the contractor.

Meyer said: "The Western Cape Provincial Veterinary Laboratory provides a veterinary diagnostic and veterinary public health testing service. Our clients are located in all provinces. Nearly 60% of the samples received for testing originate from outside the Western Cape Province. Testing activities focus on disease diagnosis, surveillance and monitoring."

Meyer continues: "Our main scope is testing for controlled and notifiable animal diseases as listed in the Animal Diseases Act. The national requirement for all laboratories testing for controlled and notifiable animal diseases is that the laboratory is ISO 17025 accredited."

According to Francois Dreyer, Technical Manager for Veterinary Diagnostic Services, Bovine brucellosis testing makes up 85% of the testing performed by the Laboratory.

Dreyer said: "During the renovation period, an accredited veterinary laboratory will perform free testing of samples for clients within the Western

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of China's amazing growth have dwindled due to its draconian COVID restrictions which are now causing unheard of civil unrest, as well as contractions of its economy. Europe is dealing with its own share of problems caused by Putin's war in Ukraine and dissention amongst members of the EU.

"So South Africa needs to diversify its markets and find new outlets for its fine wines, delicious citrus and its exports of iron ore and manganese amongst other strategic minerals.

"All in all a dynamic environment for the foreseeable future but with adversity comes opportunity and taking on these challenges is part of South Africa's DNA, especially if businesses, communities, and civil society organisations can work together".

W Cape provincial laboratory get R23-m renovation

Continued from P1

Cape. The Western Cape Provincial Veterinary Laboratory will cover the costs. The value of the testing performed during the renovation is estimated at R2.2 million.

Completion is due by November 2023.

The project will be done in three phases:

- Phase 1 focuses primarily on the on-site establishment and many outer buildings.
- Phase 2 will focus mainly on the laboratory areas, and
- Phase 3 will include the administrative- and other office areas.

"It is envisioned that the PVL will be fully functional again as an ISO 17025 accredited laboratory by the end of November 2023", concluded Meyer.

Miners must reuse and recycle

SURFACE mining industry association Aspasa continues to encourage its members to handle waste responsibly and to turn excess mining waste into a positive contribution to the environment.

According to the latest available statistics, South Africans generate roughly 122 million tons of waste per year. Of this waste, a maximum of only 10% is recycled or recovered for other uses, while at least 90% is landfilled or dumped illegally. Similar figures apply to the mining industry where more can be done to reuse and recycle.

Demonstrating such an example is Labucon which has found a novel way of reusing tyres that are no longer serviceable to build retaining walls. After seeing how successful the projects were, the mine went on to build a demarcation barrier along the internal roadways. "Labucon was established in 1993 and has a large fleet of trucks. With tyres piling up we decided to find a new use for the old tyres to try and make a difference," says Martie Joubert from Labucon Resources.

As reported by the 'Tire Industry Project for the World Business Council for Sustainable Development', one billion end of life tyres are generated every year and there are currently four billion such tyres in landfills and stockpiles worldwide.

Innovative recycling and reusing ideas contribute to the reduction of waste to the landfills, guiding the positive impact of reusing disposable waste. "Not only did they reduce the cost of disposal, they also contributed to a cleaner and more sustainable environment," adds Anthony Bowen, environmental auditor of Aspasa.

Anthony goes on to explain that Aspasa is calling upon all member companies to publicise their examples of good practices "no matter how big or small, utilising waste material better has an impact on the environment and leads the way to innovative methods for the mining industry."

Because tyre chips are almost three times lighter than gravel with the reduction of frost penetration in cold climates it's possible to use tyre chips to minimize vibration and noise. Examples of such applications can be seen underneath railway and roads.

Other outstanding reuse and recycling projects of ASPASA members include Lafarge Ninians Quarry in Empangeni where manager, Patrick Ndlwana, was personally involved in donating their waste office paper to a special needs home. This brilliant project enabled the home to equip a bakery where they are baking their own bread and selling the excess.

Both these projects started small and ended in making a significant contribution towards sustainability.

For more information about ASPASA, Tel: (011) 791 3327, Email: office@aspasa.co.za, Web: www.aspasa.co.za

The GrandWest gets grander

Sun International expands popular GrandWest hotel

SUN International is investing an initial R122-million to increase the size of GrandWest Grand Hotel, currently the busiest in the Group. Sun International's investment is the first phase of a master plan that envisages developing a separate 250-room, 4-star conference hotel at GrandWest.

The Cape Town casino and leisure complex is the largest in South Africa so customer demand to stay at its existing hotel is high. However, for over 21 years the 4-star boutique hotel has operated at a 99% occupancy with its 39 rooms booked long in advance.

The first phase of the new development will add an additional 68 additional rooms to the Grand Hotel, bringing the total to 103.

A sod-turning ceremony to mark the occasion was officiated by the Mayor of Cape Town, Geordin Hill-Lewis and Ndavi Nokeri, Miss South Africa 2022.

The current Grand Hotel is a recreation of an older hotel that used to grace the corner of Adderley and Strand Street, originally built in 1894 and demolished in 1951. When the existing hotel was constructed, architects used a scaled down version of the first Grand Hotel's 100-year old plans.

GrandWest General Manager Mervyn Naidoo said one of the challenge for architects now has been to keep the extension consistent with the original architectural plan and style. "Uniquely, all of GrandWest's facades are scaled down recreations of old Cape Town buildings - the much-mourned Tivoli Music Hall (demolished in the 1930s) and the even more sorely missed Alhambra Theatre (demolished in 1970); the Old Railway Station (1905 - 1968); and Cartwright's Corner, that now-vanished Adderley Street landmark."

Sun International's Development and Infrastructure Manager, Anton Steenkamp said, "To respect the existing architectural style the design is based on developing two identical three-story wings positioned symmetrically on either side of the existing entrance and porte cochere, which will remain largely unchanged. A new access road will give visitors direct access to the hotel."

Two new wings

The two new wings will connect the existing hotel on the north and south corners and the new offering will include presidential suites, ordinary suites, double and twin rooms and inter-leading family rooms. A gym, spa and pool are proposed for the ground floor of the southern wing.

According to Steenkamp another enormous challenge for the development team has been adding a new lift and constructing within an active environment as the Salon Privè and existing hotel operations are ongoing. Impact on customers such as dust, noise and vibration has had to be carefully managed.

Artist's rendering of the soon to be expanded GrandWest hotel.

Development Team:

- Project Sponsor
- Sun International
- Project Managers
- Profica
- Architects & Interior Design
- DHK Architects
- PQS
- MLC
- Structural & Civil Engineers
- Nadeson
- Mechanical & Electrical Engineering, Wet Services, Fire Protection Consultants
- CKR Consulting Engineers
- OHS Consultants

The condition of SA's infrastructure

In this extract from the latest Infrastructure Report Card (IRC) by the South African Institution of Civil Engineering (SAICE), the overall condition of South Africa's infrastructure has been rated D, the lowest rating since the first IRC launched in 2006. The scorecard is based on a five-point scale – A (world-class), B (fit for the future), C (satisfactory for now), D (at risk of failure), and E (unfit-for-purpose) – and features a snapshot of the current condition and performance of 32 sub-sectors of infrastructure.

SIXTEEN years ago, the first IRC gave South Africa's infrastructure an overall grade of D+. The next IRC (2011) noted that the heavy investments in new infrastructure for the 2010 Soccer World Cup had elevated the overall grade to C-. We cautioned that this apparent improvement was not cause for complacency. In the following years, it became evident that the poor attitude to maintenance had continued, and this was reflected in the downturn in the subsequent grade to D+ in 2017.

In 2022, the overall grade for South Africa's public infrastructure declines further to D, the lowest grade ever recorded by SAICE, which is of great concern.

From the advent of democracy in 1994, South Africa made great strides in improving the quality and distribution of both economic and social infrastructure. However, these gains have not been effectively sustained. Since our first report in 2006, the condition of infrastructure has been in steady decline. For the current period, only three subsectors show improvement while 12 have deteriorated. Of the 13 subsector grades that remain unchanged, 10 were already at risk of failure or worse. When examined in the aggregate, much of our infrastructure is edging closer to failure. Of course, there are pockets of excellent and well-managed infrastructure of every type. But these are no longer the norm. The grades awarded to South Africa's infrastructure, and the downward trend in its condition, reveal a failure to manage and maintain existing assets.

It must be noted that no single sector of infrastructure operates in isolation – all of them are interconnected. Energy generation requires water for cooling and ports require roads and rail connectivity to serve the economy. So, while we grade sectors separately, there is a tightly woven interdependency between all these facilities. When rail services are inadequate, commerce shifts to the roads, even at a cost premium. When taps run dry, entrepreneurs will supply water in tankers. And some will resist a return to the previous modes of operation, even though the replacement modes are inefficient or inappropriate. Consequently, when public infrastructure is inadequate or unreliable, the resulting disruptions occur at a net cost to the fiscus and weaken the developmental role of the State.

Broadly speaking, it is evident that, with the exception of energy generation, economic infrastructure remains in a satisfactory condition – even those assets that have deteriorated, such as heavy freight rail and airports, maintain grades of B or C. However, the further degradation of social infrastructure paints a dismal picture of the plight that ordinary people face to access basic services of water, sanitation, health, education, public transport and electricity.

Altogether, the situation cries out for urgent and sustained attention.

South Africa now has more potholes than households. Photo credit: https://mybroadband.co.za/

Unhydrated cement the key to effective concrete recycling

WITH the concrete industry globally determined to become more sustainable, increased consideration is being given to the recycling of concrete, says John Roxburgh, senior lecturer at Cement & Concrete SA's School of Concrete Technology.

"In terms of sustainability, it is a sound idea to recycle concrete and indeed legislation around the world is enforcing this to an ever-increasing degree. There are many pros and cons to recycling concrete but, if done correctly, it is undoubtedly a winner for the planet. Concrete's unhydrated cement content can, for a start, be most effectively used when recycling concrete," Roxburgh explains.

He says it is not generally well-known that in most concretes a significant portion of the Portland cement clinker is never hydrated. "In Portland cement mixes, self-desiccation can occur at water to cement ratios of 0.56 and lower. This is due to insufficient capillary water availability: if no water is fed to the concrete during curing, the capillary water is used up – so no further hydration can occur. In modern curing regimes for larger concrete elements sometimes only surface concrete gets sufficient water during wet curing. If the cement is extended with, say, fly ash or slag, the water to cement ratio at which self-desiccation occurs is lowered."

Roxburgh says a striking example of this occurrence is a concrete mix design developed jointly by American Engineering Testing Inc. and Cemstone in the USA - a mix that won the coveted American Society of Civil Engineers' (ASCE) Charles Pankow Award for innovative use of concrete. "Using the unhydrated clinker in the recycled concrete, the design produced a concrete with only 2% Portland cement - that is 46kg of cement in a mix with a plastic density of 2 300kg/m³. With a water to cement ratio of 0.45, this mix achieved an impressive 30MPa compressive strength, post-28 days."

He adds: "Unique to this mix design was the use of the full grading envelope of the crushed recycled concrete instead of the conventional method of just using the course fraction of the recycled concrete as a substitute for stone. The fine material from the crushed recycled concrete provided unhydrated Portland cement with the cracked-open faces of the fine material, and the fine hydrated cement particles produced a fine filler effect. Increasing the nucleation points for cement gel growth resulted in faster strength gain and the improvement of strength and impermeability of the paste-aggregate interface."

For further information visit: www.cemcon-sa.org.za

National Treasury warns of entrenched state capture graft in government

ISMAIL Mamoniat, the new deputy director general of the National Treasury, has said that state capture corruption runs so deep in government that budgets are plundered before they're able to be used for service delivery, Eyewitness News reports. Mamoniat called for intervention to curb the graft, saying:

"There are people waiting to loot those amounts. Some of it has become deeply entrenched, we're going to need mechanisms on the ground to deal with that type of corruption." He added that legal action against state capture needs to be accelerated, citing a case at the Tembisa hospital which is being probed over potential financial mismanagement. "I think the important thing is that we also respond too slowly. So even if there is consequence management our investigative processes take too long. In this instance, you saw all the payments in Tembisa Hospital, I believe the system can act much faster," he said.

Celebrating 100 years of electrical excellence

Carl Kleynhans.

PHOENIX Contact, headquartered in Blomberg, Ostwestfalen-Lippe, Germany - manufacturers of industrial automation, interconnection and interface solutions - celebrates 100 years as an international company in 2023. It has also been in South Africa since 1969 - 54 years!

In celebrate this important milestone, CBN Editor, Robin Hayes, asked General Manager of Phoenix Contact South Africa, Carl Kleynhans to outline the company's history and successes in South Africa's local market.

***RH.** Please describe the initial establishment in SA and the industries served then.*

CK. Phoenix Contact entered South Africa in 1969 and became a wholly owned sales subsidiary in 2001, with our Headquarters located in Randburg Johannesburg. We initially imported terminal blocks which were used in the power generation and mining sectors.

RH. I note that the flagship product, Combicon also celebrates 50 years of production - how has the product changed over the years?

CK. Yes it does, another fantastic milestone for Phoenix Contact. For half a century, COMBICON PCB terminal blocks and PCB connectors have been ahead of their time, state of the art today, and tomorrow. Our passion is to always make the best technology even better. Each year, we create new innovations that make the PCB connection more compact, more powerful, or easier to operate, so get ready for the next generation of PCB terminal block and connector technology.

RH. Is Phoenix Contact involved in any local manufacture?

CK. No, we do not manufacture components locally in South Africa, although we do offer our partners a value-added service whereby we populate and mark their DIN rails according to their specifications, saving them time, money and labour. They design their rails on our project complete software which they download free of charge, then we produce a single order number for the entire rail, we then populate it and add their marking and all they have to do is put it into their cabinets and wire it.

RH. What are its main markets in SA?

CK. Our biggest market in SA would be mining, followed by energy, food and beverage and telecommunications although we do deal with all segments including E-mobility.

RH. Does it have a branch network, or distributors in SA - please elaborate.

CK. Yes we do. We have branches and warehouses in the Western Cape and KwaZulu Natal as well as sales branches in the Eastern Cape, and the North East Region. We also have distributors and system integrators nationally as well as in Sub Saharan Africa which you will be able to find on our website.

RH. How many people does the company employ in SA?

CK. In South Africa we have well over 50 employees.

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Exhibitions and Trade shows 2023

	Date	Description	Venue	Organisers
February	12 - 25	Evrt Africa	Johannesburg, Port Elizabeth, Cape Town	Vuka Group
	22 - 24	Africa's Green Economy Summit	Century City Convention Centre, Cape Town	Vuka Group
	25	ELECTRIC	Green Point Stadium, Cape Town	Vuka Group
March	7 - 9	Africa Energy Indaba	CTICC, Cape Town	Siyenza Management
	10	2022 SAIEE Annual Awards	Indaba Hotel, Fourways, JHB	SAIEE
	28-30	1.5 Degrees	Century City Conference Centre & Precinct	One point Five Degrees
April	18 - 19	Ecommerce Africa	CTICC, Cape Town	Vuka Group
May	16 - 18	Enlit Africa	CTICC, Cape Town	Vuka Group
	18 - 20	Hotel & Hospitality Show	Sandton Convention Centre	DMG Events
June	6 - 8	Securex South Africa	Gallagher Convention Centre, Midrand	Specialised Exhibitions
	6 - 8	A-OSH EXPO	Gallagher Convention Centre, Midrand	Specialised Exhibitions
	6 - 8	Firexpo South Africa	Gallagher Convention Centre, Midrand	Specialised Exhibitions
	6 - 8	Facilities Management Expo	Gallagher Convention Centre, Midrand	Specialised Exhibitions
	18 - 20	SAITEX	Gallagher Convention Centre, Midrand	DMG Events
	19 - 20	Africa's Big Seven (AB7)	Gallagher Convention Centre, Midrand	DMG Events
	27 - 29	The Big 5 Construct Southern Africa		DMG Events
	TBA	WCPDF 2023 Annual Conference		WCPDF
July	05 - 07	IFAT Africa	Gallagher Convention Centre, Midrand	IFAT Africa
	18 - 20	KZN Industrial Technology Exhibition	Durban Exhibition Centre, Durban	Specialised Exhibitions
	TBA	Coal Expo	Graceland Hotel, Casino and Country Club,	Specialised Exhibitions
August	1 - 2	Manufacturing Indaba	The Boardwalk, Gqeberha	Siyenza Management
	22 - 23	CEM (Customer Experience Management Summit	Century City Conference Centre, Cape Town	Vuka Group
September	6 - 7	The Big 5 Western Cape	Sun Exhibits, GrandWest Cassino, Cape Town	DMG Events
	20 - 21	The Big 5 Construct KZN	Hybrid Expo | Inkosi Albert Luthuli ICC	DMG Events
	21 - 21	Transport Evolution Africa Forum & Expo	Hybrid Expo | Inkosi Albert Luthuli ICC	DMG Events
October	3 - 5	Smarter Mobility Africa	CSIR, Tshwane	Vuka Group
	24 - 26	Manufacturing Indaba	Sandton Convention Centre, Johannesburg	Siyenza Management
	24 - 26	Propak Cape	Cape Town International Convention Centre	Specialised Exhibitions
	25 - 27	IMESA Annual Conference "Resiliance is the Future".	Boardwalk Hotel, Gqeberha (Port Elizabeth)	IMESA

Financing energy project development in Africa

RAISING capital for energy projects and building sustainable pipelines is complex in a market that is challenged by demand for fossil fuels, while simultaneously trying to satisfy carbon-neutral policies and commitments. Data shows that despite Africa's sizeable population, it only attracts <5% of global energy investment.

Undoubtedly, Africa is abundant in opportunities and resources, but many of the continent's countries have yet to unlock barriers to trade and prove themselves to be reliable global partners. The countries that stand to benefit from energy project development and attract meaningful investments are those with governments that seek to lower risks through pricing reforms, transparent tendering systems, strong anti-corruption law enforcement, and the development of skilled labour.

Green energy development attracts the biggest backing

Experts agree that sustainable economic growth throughout Africa depends on the infrastructural development and distribution of clean energy. This means:

- A move from fossil fuel sources to renewables
- Decentralisation of energy generation, transmission and distribution
- The integration of digital technology to support and speed up transition

To make this shift possible and enable meaningful socio-economic reform, the continent will need more than double the current energy investment by 2030. In real terms, this requires a minimum investment of roughly $1 billion per year.

Between 2016 and 2020, the private sector contributed to 60% of all energy investment in Africa. Public sector enterprises also play an important role, although, in recent years, many public utility companies have been plagued by a high level of debt, requiring capital injections from public finance institutions. It is likely that public entities will become more valuable as co-investors by helping to lower the perceived risks of financing novel projects. This, in turn, will serve to attract more significant private sector support.

Africa's clean energy success hinges on the implementation of a well-integrated financial framework aimed at accelerating green energy projects. Each country has its own unique requirements contextualised by its existing energy supply environment. This makes a one-size-fits-all approach unproductive when it comes to financing solutions. Naturally, investors will also require cooperation from policymakers as well as the governance structures necessary to support the implementation and roll-out of purpose-built financial solutions.

Where to look for energy project investment?

Depending on the project, its size and purpose, there is an abundance of funding options available. Below, we list a few of the notable organisations that are helping to power Africa's renewable energy development projects.

African Renewable Energy Fund (AREF)

Investing in small hydro, wind, geothermal, solar, stranded gas and biomass projects throughout Sub-Saharan Africa, the AREF aims to invest in up to 12 renewable energy projects. It is a closed-end private equity fund keen to support medium-sized projects at all development stages that aim to produce an energy output between 5 and 50MW.

Energy and Environment Partnership Trust Fund (EEP Africa)

Hosted and managed by the Nordic Development Fund (NDF), the EEP is aligned with the targets set by the Paris Agreement on climate change and sustainable development.

Present in 15 countries throughout southern and east Africa, the EEP provides not only early-stage grant and catalytic financing but also technical support and knowledge enrichment.

Sustainable Energy Fund for Africa (SEFA)

Established in 2011, SEFA is a multi-donor facility backed by leading global economies such as the United Kingdom, Denmark and the United States. The fund helps to unlock private investments for small to medium-scale sustainable energy projects in cooperation with the Africa Hub.

Africa finds itself in a unique position where energy supply is concerned. Keen to industrialise and plug into the global digital supply chain, its leaders recognise that sustainable renewable energy development will play a pivotal role in how the continent meets its ambitious goals and supports the demands of a relatively young demographic. While large-scale infrastructural projects are necessary to facilitate this development, investors also have the unique opportunity to contribute towards small and medium-sized projects that will play an essential role in bringing connectivity and upliftment to the continent's widely scattered communities.

Celebrating 100 years of electrical excellence

Continued from P4

RH. What were the important milestones in the SA company's operations.

CK. Firstly, becoming a wholly owned subsidiary was one of the most important milestones in our operation.

In 2016 we did a full renovation of our entire head office building in Randburg, adding a 62 seater auditorium with state of the art audio visual equipment, following that we renovated our offices in the Western Cape, KwaZulu Natal and the Eastern Cape.

The creation of our VAC (Value added centre) in 2021, as mentioned earlier whereby we offer our partners the service of populating their rails for them.

Also in 2021 we successfully won and completed a part of the total Huguenot Tunnel Project in partnership with BEKA Schreder which is the perfect example of how our business has grown from only providing components to now being able to offer an array of systems and solutions.

Obviously throughout the years we have achieved numerous revenue milestones, growth in company size and staff count.

RH. What does the future hold, plans etc. here in SA?

CK. Phoenix Contact is serious about creating a sustainable world, from this came the vision of the All Electric Society and this is our focus going forward. The All Electric Society vision of the future describes a world in which energy from renewable resources is available in sufficient quantities and at affordable prices. In addition to the consistent generation and use of renewable energy, reducing the demand for primary energy through efficiency measures and creating intelligent and networked systems are the keys to a sustainable future.

The way to get there is through the comprehensive electrification, networking and automation of all relevant areas of life and work.

RH. What celebrations are planned both here and overseas in 2023?

CK. We have quite a few exciting things in the pipeline to celebrate this fantastic milestone, however these will only be revealed later on during the course of the year.

Wesgro appoints new CFO

Sandiso Gcwabe.

WESGRO has announced the appointment of Sandiso Gcwabe as chief financial officer. Gcwabe will take up his position from 1 January 2023.

As a chartered accountant, Gcwabe has served on several forums whose objectives are to improve financial management and reporting in the public sector, including the Public Sector Accounting Forum (PSAF) and as the Deputy Chairperson of the South African Institute of Chartered Accountants (SAICA) Southern Region Public Sector Committee.

Gcwabe has held various finance leadership roles within the public sector, as well as the Auditor-General of South Africa (AGSA), which has given him in-depth insights into financial management and governance.

SEIFSA and MEMSA sector Awards for Excellence

THE Steel and Engineering Industries Federation of South Africa (SEIFSA) partnered with the Mining Equipment Manufacturers of South Africa (MEMSA) to celebrate the excellence of the local mining equipment manufacturing sector.

Kobus de Beer was awarded the Lifetime Contribution to the Industry Award. He is the current Chairman of International Steel Fabricators of South Africa and the Structural Steel Export Cluster and a Commissioner on the International Trade Administration Commission of South Africa. SEIFSA CEO Lucio Trentini mentioned his "incredible career and invaluable contribution to the metals and engineering industry" when announcing the award.

Michelle Austin, the group financial director at Keegor South Africa, was named Business Woman of the Year.

Austin said she felt very privileged to receive the award. "What we have focused on over the past few years is employee engagement and we have realised that this has helped us achieve what we have."

Vesconite Bearings won the Business Resilience of the Year in Responding to Covid-19 Award with Vesconite CEO Dr Jean-Patrick Leger commenting, "Pandemics are actually normal, what is not normal is that there was about 100 years since the last one. It will happen again, so let's be prepared for the next one."

Keegor also received the Workplace Health and Safety Award, which was sponsored by Rand Mutual Assurance (RMA). The company has displayed a commitment to health and safety, with not one Occupational Health and Safety Act (OHSA) contravention since COO Marno Jacobs was appointed in 2019.

Jacobs said: "When I started at Keegor I noticed that the leadership team was very engaged with health and safety, and this helped a lot. We know that our biggest asset is our employees, so we invest a lot in training and ensuring they are kept safe, as one injury is too many."

The MEMSA Member Manufacturer of the Year Award to recognise excellence in local mining equipment manufacturer was awarded to Bell Equipment. Director Bruce Ndela accepted the award and thanked MEMSA for "recognising the achievements of Bell over the years".

The pandemic left so much loss in its wake, and the industry lost many people to Covid-19. For the first time in the history of the SEIFSA Awards for Excellence an in-memoriam section was included to remember those who passed away. Other awards that were presented at the ceremony included:

- Best Customer Service Award: Macsteel
- Most Transformed Company of the Year: Pamodzi Engineering.
- Environment Stewardship Award: MSC Technical.
- Corporate Social Responsibility: Electrolux South Africa
- Young Entrepreneur of the year Award: Caleisle Ngwenya, the director at CeeWay Engineering.
- Industry Apprenticeship Award: ArcelorMittal.
-
- Awards presented by MEMSA include:
- Customised Customer Service: ProProcess Engineering
- Localised Supply Chain: Buraaq Mining Services and Rham Equipment
- Manufacturing Solutions: NTGR Engineering Projects

SEIFSA Sponsored Graduate Class of 2021, as well as Bursar of the Year, recognised Karina Sewsunker, who is completing a Bachelor of Science Degree in Mechanical Engineering at the University of KwaZulu-Natal.

THE BEE IN MY BONNET COLUMN

"This is a fine mess we've gotten into"

Dear Readers, it's my sincere hope that by the time you read this missive – created at the end of 2022 – that the commentary put forward here will be inconsequential, as someone with brains will have dealt with the latest Eskom crisis.

The paraphrased headline refers to a famous quote oft said by Oliver Hardy to his comedian companion, Stan Laurel – Lauren & Hardy – during their hilarious encounters back in the 1930's and 40's.

Why it is so relevant today is that the situation at Eskom goes from bad to worse, and those that predict a complete electrical blackout are starting to become believable.

Despite the gloom of 14 years of predicted and actual loadshedding, there have been some highlights in Eskom's generation portfolio. One is Koeberg nuclear power station which has been operating, safely and virtually trouble free since 1985, supplying 1 900MW 24/7. As readers will know, Koeberg is undergoing refurbishment work which will increase life expectancy and its capacity.

Another highlight has been the construction of the Eskom open cycle gas turbine (OCGT) power stations - Ankerlig in Atlantis and Gourikwa in Mossel Bay – which came into operation, in record time, between 2007 – 2009. These OCGT stations were originally designed as peak lopping and emergency generators which combined could provide around 2 000MW to the grid. Both stations are dual fuel units – they can run on diesel or natural gas. Government dithering has delayed the adoption of a cheaper natural gas option and the stations used to consume vast amounts of diesel fuel as instead of peak lopping they have had to run continuously in emergency mode 24/7 due to the collapse of the coal fired fleet of aging and lately poorly designed power stations.

That was until at the end of November, when it was announced that Eskom had effectively run out of diesel and there was no money to top up the tanks until new budgets came on line on April Fool's Day 2023, effectively depriving the economy – you and me – of the desperately needed 2 000MW and adding two stages of loadshedding to our current 'load'. Perhaps a more potentially catastrophic consequence is that with Ankerlig off line, there is apparently no emergency back-up power for Koeberg, should anything go wrong with the station's reactors…

The exceptional reliability of the OCGT generators has been proven over the best part of 12 years continuous operation, but powering the units with diesel is not sustainable, nor was it ever conceived as being so – natural gas was intended to be the primary fuel supply.

Why no gas?

Recent gas discoveries in Mpumalanga and the Free State, plus the ROMPCO pipeline from Mozambique, will be able to provide all our gas to power needs, and a healthy export business of LNG, making the country self-sufficient in this source of energy, but there are technical issues which favour OCGT, or better still more efficient Combined Cycle Gas Turbines (CCGT) to be constructed at sea level rather than on the Highveld. It's cheaper to transport electrons rather than LNG!

The construction of LNG terminals to allow imported gas – either from our own offshore gas fields or from the Middle East - has been painfully slow with the first at Richards Bay (to feed the proposed 3 000MW CCGT station) only scheduled to come online in 2024 – why so long from inception to production of 5 years? (Rhetorical question). And why not also Saldanha Bay which could feed the ubiquitous Ankerlig station plus the Western Cape hinterland from Shell's discoveries off shore of the West Coast?

By contrast, when Germany found itself in the predicament of no gas due to the Ukrainian conflict, they pulled out the stops and constructed the first floating LNG terminal at the port of Wilhelmshaven, on Germany's North Sea coast in the record time of just 200days! They plan a further five strategically placed LNG terminals which will cost the government more than six billion euros or R102bn in our money.

An eminently fixable mess.

Eish.

Kick-starting South Africa's green hydrogen economy

SALDANHA Bay Industrial Development Zone – SBIDZ trading as Freeport Saldanha, together with ArcelorMittal Saldanha (AMSA), recently hosted an on-site visit as part of the "Re-industrialising Saldanha Day" initiative. The aim was to showcase Saldanha Bay's potential as an ideal green hydrogen investment destination in the Western Cape.

> "Today, we demonstrated why Saldanha Bay is the perfect investment location to develop a world-class, globally competitive, green hydrogen..."

Re-industrialising Saldanha Day provided an overview of pilot projects earmarked for the region, demonstrating how the region will be a critical player and catalyst in supporting South Africa's Just Energy Transition and Investment Plan by creating and developing a green hydrogen economy.

Visiting stakeholders included delegates from Freeport Saldanha, the Presidency and ISA, Western Cape Government, Transnet National Ports Authority (TNPA), Saldanha Bay Municipality, Infrastructure South Africa stakeholders, academia and private energy industry businesses, including Sasol, AMSA, Atlanthia, Mainstream and Keren Energy.

The initiative forms part of the inaugural South Africa Green Hydrogen Summit (SAGHS) 2022 which took place in Cape Town from 28–30 November 2022, with President Cyril Ramaphosa giving the keynote address.

The Summit forms part of the ongoing policymaking in South Africa centred around Just Energy Transition and the Investment Plan (JET-IP), tabled by President Ramaphosa at COP27 in November. JET-IP aims to accelerate the decarbonisation of SA's economy, reducing carbon emissions and aligning with the new energy-orientated economic growth set out in the Nationally Determined Contribution (NDC) of the Paris Agreement.

Ms Kaashifah Beukes, Freeport Saldanha CEO, welcomed visitors at the Freeport Saldanha Bay Access Complex and said, "Today, we demonstrated why Saldanha Bay is the perfect investment location to develop a world-class, globally competitive, green hydrogen and derivatives production hub in the Western Cape province."

Beukes added, "Several reports – including that done by the CSIR – have highlighted the region's advantages for renewable energy supply crucial for the Just Transition. We have demonstrated our innovation and readiness to unlock these new economic opportunities and embark on an industrialisation strategy, utilising the potential infrastructure in creating sustainable growth prospects for the region and the country."

Councillor André Truter, Saldanha Bay Executive Mayor, said, "Saldanha Bay is a people centred municipality and we are busy with a legacy project that could fundamentally change the way our children will be positioned economically and environmentally. As we move through this project, we should not forget the people of South Africa and the people of Saldanha Bay. They are our most important asset in this country."

"Saldanha Bay is perfectly positioned and ready to become not only the South African hub but the African hub of green hydrogen, for understanding energy mix, and understanding the role local Government must play in this unbelievable journey," concluded Truter.

Zero tolerance: City moves to remove Mfuleni illegal connections

The City of Cape Town's Electricity Generation and Distribution Department carried out another successful illegal connection removal operation in Mfuleni and in the vicinity recently. The City carries out regular operations in various areas in the metro and continues to monitor hotspots.

THE City is ramping up its efforts to protect critical electricity infrastructure and to remove illegal connections in various areas. Safety and Security teams continue to be deployed to help guard infrastructure especially during the higher stages of loadshedding.

'Illegal connections place tremendous strain on the electricity grid and result in severe damage to infrastructure in communities. In Mfuleni in particular, illegal connections often cause constant and prolonged electricity outages. Sadly, illegal connections are often reconnected as soon as our teams leave the area and often place the supply to residents at risk. During this successful operation, our teams confiscated a large amount of electricity cable used for illegal connections.

'The City will not give up, our teams are on the ground and we will continue to disconnect illegal connections. We also call on residents to report vandalism and illegal connections to the City and South African Police Service. Together, we can end the scourge and we thank residents for their continuous support.

'The City is also carrying out its vandalism awareness and education drive in communities to inform residents about the impact and cost of vandalism in their area and how money spent on fixing vandalised infrastructure could be spent on delivering more and enhanced services,' said the City's Mayoral Committee Member for Energy, Beverley van Reenen.

Help the City bring an end to infrastructure vandalism and illegal connections:

The City is offering a reward to anyone who provides information that leads to an arrest, confiscation of stolen or illegal goods or the handing in of illegal or stolen goods. This reward is also applicable to information leading to the arrest of people vandalising, damaging or stealing electricity infrastructure or installing illegal connections.

The South African Police Service is the lead authority in crime prevention.

New property maintenance portal

THE Home+ Property portal offers complete automation of the maintenance function, closing the loop between tenant, property manager, landlord and service provider. Business Development and Partnership Head, Adriaan Hugo estimates that it can free up to 40% of a rental agent's time daily.

"Home+ Property is a platform that makes it easier and more efficient to maintain properties by connecting property managers to a network of tradespeople," Hugo explains. "Our platform and network of verified tradesmen (our Heroes) make managing multiple properties with multiple tenants easier, more efficient and it reduces risk while doing so."

The process is simple: When a tenant logs a job, the Home+ Property system requests approval from the managing agent and/or landlord. If approved, the agent assigns a Hero to the job while giving all parties visibility so there is no more back and forth. The Hero accepts the job, visits the property on the scheduled date and provides a quote if the cost is over R1000.

If the agent approves the quote, the tenant is prompted to schedule a time for the Hero to return. The Hero completes the job, taking after photos and invoices. Payment is made on invoicing. (If the cost is under R1000, the Home+ Hero completes it and invoices.) Should there be a dispute, payment is withheld.

Tenants can add pictures before the work starts and the service provider is also prompted to take photos. Service providers are guided to provide detailed quotations and assessment by adding timestamps. All actions are digitally recorded for an end-to-end report, ensuring transparency throughout. This allows agents to easily track all maintenance tasks throughout their portfolio in real time.

Clients already using the portal include House of Realtors, Harcourts, Vermaak Properties and Rawson Properties. Peter Noctor, MD House of Realtors, confirms the convenience of the portal: "Home+ has saved us significant amounts of time in assigning credible tradespeople, and allowing for communications to be automated. At any given point in time, we can see every job that is happening across the platform, with the option to intervene at any point if necessary."

Who are the Home+ Property Heroes?

The carefully selected Heroes on the Home+ Property network provide a wide range of property maintenance and handyman services. All are fully qualified and insured, and the vetting process ensures that:

- They have no criminal history
- References are checked
- They follow good service standards
- They maintain a strong user rating
- Professional qualifications are verified
- Qualifications required for specialist work are verified

The Heroes include:
Plumbers
Locksmiths
Gas installers
Electricians
Glass fitters
Pest controllers
Landscapers
Deep cleaners
Air-conditioner installers
Flooring contractors
Waterproofers
General maintenance (handymen)
Rubble removers

Uberising the property maintenance sector

The first-of-its-kind in South Africa, the Home+ Property web-based platform is taking the hassle and stress out of scheduling property maintenance and finding credible, trustworthy service providers.

It offers real-time tracking and communication between landlord/agent, tenant and vendors and it's cashless., which reduces the risk for all parties.

Home+ also rewards customers with loyalty points which can be spent by Home+ retail partners.

"Home+ Property takes the hassle out of maintenance logistics," says Hugo. "Saving time, money, energy and resources, it frees up rental agents to focus on generating revenue."

Short sea Ro-Ro shipping service introduced

Argonaftis Shipping's RoRo vessels are different to the standard Lift on-lift off ship that use cranes to load cargo.

REDUCING the consistently high cost of logistics in Southern Africa is now a real possibility, thanks to a tried and tested intermodal solution using roll-on/roll-off (Ro-Ro) vessels.

"Considering the challenges of the railway freight network and the high reliance on road transport in the region, moving cargo over short distances by sea offers vast potential in terms of cost savings and higher efficiency," says William Greig, Chief Executive Officer of Argonaftis Shipping and Trading Ltd (MI).

Proven track record

The operation of Ro-Ro shipping services has been proven around the world. In northern and southern Europe, it is extensively used in a variety of industries. "Ro-Ro shipping represents a maritime segment that could easily form part of a local intermodal transport system, as cargo does not need to be lifted in ports; it is 'rolled' to and from the sea. This will address some of the biggest challenges currently facing the logistics sector - including high costs, delays, congested ports and weak road and rail infrastructure," explains Greig.

Cost-effective, safe and environmentally friendly

Short-sea shipping provides great environmental, social, and economic advantages and plays a key role in sustainable shipping.

"Ro-Ro ferries alleviate cost pressures through economies of scale and increased vehicle utilisation. Operational costs are reduced by the fact that trucks have shorter journeys when 80-90% of the journey is via ferry," explains Greig. "This therefore substantially reduces usage and general wear and tear on vehicles, which promotes longevity and/or greater re-sale value at the end of the vehicle purchase contract."

A safer choice

The increasing number of heavy trucks carrying freight over long distances has taken a devastating toll on Southern Africa's deteriorating road network. While criminals attack trucks and their drivers at designated truck stops, they also intercept trucks along isolated sections of the vast and in parts desolate highway network.

"We can provide journeys that don't require stops: therefore, drivers and loads are safer using our services. Logistics companies desire it, as their cargo will be at less risk from all the external forces of road haulage over vast distances," continues Greig.

Another benefit of this mode of shipping is that it offers a more environmentally friendly alternative. Short-sea shipping involves much fewer carbon emissions per ton. The widespread adoption of short-sea shipping will greatly help to lower the carbon dioxide CO2 footprint of the region.

The solution for Southern Africa, says Greig, is therefore, to be found in short-sea Ro-Ro shipping.

"It will allow shippers to receive goods in a reliable, consistent, and timely manner while providing great economic and environmental benefits. Plans to implement the solution are progressing well with negotiations ongoing with Transnet for vessel berthing slots."

The project will be rolled out across various ports including Cape Town, Durban, Port Elizabeth, Maputo (Mozambique) and Walvis Bay (Namibia) over the coming months.

For more information visit: https://argonaftis-shipping.com/south-africa

An update on free trade in Africa

By Virusha Subban, Partner Specialising in Customs and Trade and Head of Tax, Baker McKenzie, Johannesburg

THE AfCFTA Guided Trade Initiative (GTI) is the latest development designed to boost trade in the Africa's continent-wide free trade zone. The GTI was launched in October 2022 with the aim of testing meaningful, continuous trade under AfCFTA and to assist in the development of regional value chains that will allow for more climate-friendly, sustainable trade across the continent.

The GTI will test AfCFTA's policies, legal framework and operational and institutional environments. There are eight countries participating in the GTI that have all met the minimum requirements in terms of AfCTA's tariff book and rules of origin - Cameroon, Egypt, Ghana, Kenya, Mauritius, Rwanda, Tanzania and Tunisia. The GTI will allow the shipment of goods from these countries through customs clearance, including ceramic tiles, sisal fibre, batteries, and beverages and foodstuffs, including tea, coffee, processed meat products, corn starch, sugar, pasta, glucose syrup and dried fruits. African countries receiving these goods will benefit from reduced tariff treatment (and possibly eventually from zero tariffs). The GTI will also focus on increasing opportunities for Small and Medium Enterprises (SMEs), youth and women in trade.

AfCFTA has the ultimate goal of increasing the ease of trade and investment across African borders, as well as eliminating tariffs on intra-African trade, reducing unemployment, increasing infrastructure development and creating a more competitive and sustainable environment for cross-border trade. However, the continent's massive gaps in infrastructure, especially its utilities and transport infrastructure, have hampered the ability of African countries to trade. Transport challenges in African countries, made worse by the issues in global supply chains in the past few years, have caused significant trade blockages, especially with regard to transporting goods to, and out of, the continent's ports. Other issues, such as severe weather events, are also affecting trade supply chains in Africa.

> "Shortening supply chains will make them more sustainable."

For Africa to make the most of free trade, the continent must address these challenges. Projects are already in progress to boost the development of continent-wide infrastructure. For example, Tanzania's construction of the Standard Gauge Railway Project is expected to provide a safe and reliable means for efficiently transporting people and cargo to and from the existing Dar-es-Salaam port. Other large projects underway include the Trans-Maghreb Highway in North Africa, North-South Multimodal Corridor, the Central Corridor project and the Abidjan-Lagos Corridor Highway project.

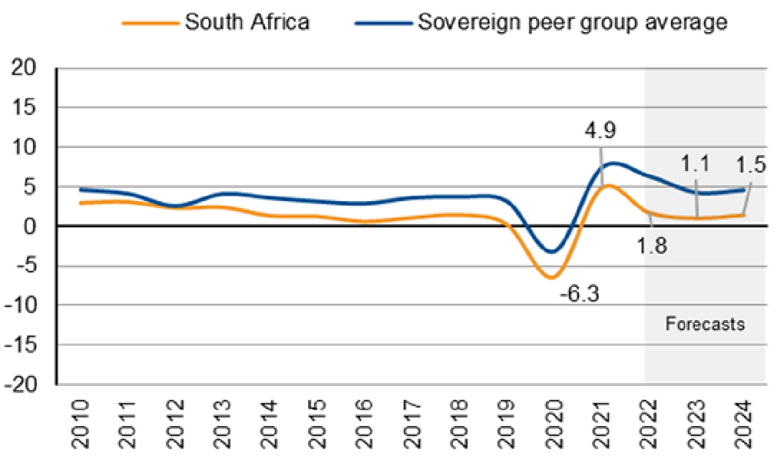
Shortening supply chains will make them more sustainable. According to the World Trade Organization global greenhouse gases (GHGs) released by the production and transport of trade in goods and services account for around 20-30% of global GHG emissions.

To facilitate sustainable trade under AfCFTA, Africa requires a drastic increase in climate financing for its continent-wide major investments in infrastructure, manufacturing capacity, clean energy and climate change adaptation. The African Development Bank (AfDB) has noted that around USD 1.6 trillion in financing is needed by 2030 to assist Africa to adapt to and mitigate the risks of climate change, as well as for African countries to effectively implement their Nationally Determined Contributions (NDCs) under the Paris Agreement. These funding commitments have been a key topic of discussion at the United Nations Climate Change Conference (COP 27) in Egypt.

A boost in local production and regional trade (currently being developed through initiatives such as the GTI), as well as the development of climate resilient infrastructure and manufacturing will make Africa more competitive globally. If the continent's gaps in infrastructure and manufacturing can be developed in a sustainable way, via for example, investments in renewable energy projects, food security initiatives, shortened supply chains and projects that assist SME, women and youth traders, Africa's free trade successes will benefit the whole planet.

Scope publishes its first sovereign credit rating in Africa

Real GDP growth (%)



Source: IMF WEO, Scope Ratings forecasts

South Africa has approximately USD 250bn of debt outstanding and is Africa's most established sovereign borrower. Scope expects South African economic growth to slow to 1.8% this year and 1.1% in 2023. Favourable tax collection and a government commitment to budgetary consolidation support reduction of the fiscal deficit for FY2022/23 to 4.75% of GDP, but longer-run fiscal challenges remain significant.

SCOPE Ratings, the European credit rating agency, has published its first sovereign credit rating of Africa, with a credit assessment of the Republic of South Africa (rated BB+ with Stable Outlook).

"The rating of South Africa marks Scope's first public sovereign rating in one of the world's fastest-growing regions, a continent where domestic financial systems are developing and innovating rapidly," said Giacomo Barisone, Scope's head of sovereign ratings. "We believe our approach to sovereign and sub-sovereign ratings is well adapted to reflect the continent's unique qualities."

First, we have incorporated a long-run perspective into our sovereign credit rating model based on five-year forecasting. This allows us to look past short-term market or cyclical crises, as long as instability does not structurally impair sovereign creditworthiness.

"Furthermore, our methodology sets great store by factors such as the potential demographic dividend and rich ecological and biodiversity resources common to many African countries," said Dennis Shen, director and lead analyst for South Africa. "African countries' long-run environmental and economic sustainability will present opportunities."

Scope offers an alternative view in assessing the longer-run ratings implications of comprehensive debt relief for highly-indebted countries, with an enhanced debt-restructuring model and emphasis on transparency, ensuring there are no 'black boxes' in the rating process.

"Today more than ever, African sovereigns need stable and strengthened market access to finance sustainable recovery," Barisone said. "We believe a rating assignment from a European credit rating agency presents an alternative credit assessment."

South Africa rating reflects a long-term view

"In our first-time rating of South Africa, we emphasised a long-term view of the credit," said Shen. "Our assessment considers the size and diversification of the South African economy, favourable public-debt profile, strong monetary-policy framework and advanced financial system. These are credit strengths anchoring a rating one level below investment grade."

VWSA builds the 2-millionth unit of its popular Polo and Polo Vivo

DAYS before ending production for the year, Volkswagen Group South Africa (VWSA) celebrated another production milestone when it reached the 2-millionth unit built locally of its popular Polo and Polo Vivo models.

The 2-millionth vehicle, a left-hand-drive, Ascot Grey Polo destined for Germany, rolled off the production line on the morning of 6 December.

The Kariega plant has been building the Polo since 1996, through various generations of the vehicle, and the Polo Vivo since 2010. At the time the 2-millionth vehicle was built, the plant had manufactured 1 626 816 Polos (1 065 718 for export and 561 098 for the local market) and 373 184 Polo Vivos to date.

VWSA currently exports the Polo built in Kariega to 38 countries, building this vehicle for all right-hand-drive markets and supplementing production for left-hand-drive markets. The Kariega plant is also the sole manufacturer worldwide of the Polo GTI, and builds the popular Polo Vivo for the local market.

"This is an excellent milestone with which to end off the year," said Ulrich Schwabe, Production Director at VWSA. "My gratitude goes out to every employee, because we would not be able to celebrate this milestone – and many others we've had this year – if not for their consistent hard work and dedication. This achievement belongs to all the members of the VWSA family."

Financing energy project development in Africa

Photo by Sergey Pesterev on Unsplash

RAISING capital for energy projects and building sustainable pipelines is complex in a market that is challenged by demand for fossil fuels, while simultaneously trying to satisfy carbon-neutral policies and commitments. Data shows that despite Africa's sizeable population, it only attracts <5% of global energy investment.

Undoubtedly, Africa is abundant in opportunities and resources, but many of the continent's countries have yet to unlock barriers to trade and prove themselves to be reliable global partners. The countries that stand to benefit from energy project development and attract meaningful investments are those with governments that seek to lower risks through pricing reforms, transparent tendering systems, strong anti-corruption law enforcement, and the development of skilled labour.

Green energy development attracts the biggest backing

Experts agree that sustainable economic growth throughout Africa depends on the infrastructural development and distribution of clean energy. This means:

- A move from fossil fuel sources to renewables
- Decentralisation of energy generation, transmission and distribution
- The integration of digital technology to support and speed up transition

To make this shift possible and enable meaningful socio-economic reform, the continent will need more than double the current energy investment by 2030. In real terms, this requires a minimum investment of roughly $1 billion per year.

Between 2016 and 2020, the private sector contributed to 60% of all energy investment in Africa. Public sector enterprises also play an important role, although, in recent years, many public utility companies have been plagued by a high level of debt, requiring capital injections from public finance institutions. It is likely that public entities will become more valuable as co-investors by helping to lower the perceived risks of financing novel projects. This, in turn, will serve to attract more significant private sector support.

Africa's clean energy success hinges on the implementation of a well-integrated financial framework aimed at accelerating green energy projects. Each country has its own unique requirements contextualised by its existing energy supply environment. This makes a one-size-fits-all approach unproductive when it comes to financing solutions. Naturally, investors will also require cooperation from policymakers as well as the governance structures necessary to support the implementation and roll-out of purpose-built financial solutions.

Where to look for energy project investment?

Depending on the project, its size and purpose, there is an abundance of funding options available. Below, we list a few of the notable organisations that are helping to power Africa's renewable energy development projects.

African Renewable Energy Fund (AREF)

Investing in small hydro, wind, geothermal, solar, stranded gas and biomass projects throughout Sub-Saharan Africa, the AREF aims to invest in up to 12 renewable energy projects. It is a closed-end private equity fund keen to support medium-sized projects at all development stages that aim to produce an energy output between 5 and 50MW.

Energy and Environment Partnership Trust Fund (EEP Africa)

Hosted and managed by the Nordic Development Fund (NDF), the EEP is aligned with the targets set by the Paris Agreement on climate change and sustainable development.

Present in 15 countries throughout southern and east Africa, the EEP provides not only early-stage grant and catalytic financing but also technical support and knowledge enrichment.

Sustainable Energy Fund for Africa (SEFA)

Established in 2011, SEFA is a multi-donor facility backed by leading global economies such as the United Kingdom, Denmark and the United States. The fund helps to unlock private investments for small to medium-scale sustainable energy projects in cooperation with the Africa Hub.

Africa finds itself in a unique position where energy supply is concerned. Keen to industrialise and plug into the global digital supply chain, its leaders recognise that sustainable renewable energy development will play a pivotal role in how the continent meets its ambitious goals and supports the demands of a relatively young demographic. While large-scale infrastructural projects are necessary to facilitate this development, investors also have the unique opportunity to contribute towards small and medium-sized projects that will play an essential role in bringing connectivity and upliftment to the continent's widely scattered communities.

How can private healthcare become more affordable

Kevin Aron, Principal Officer of Medshield Medical Scheme

MEDICAL aid versus health insurance – where can the average South African get real value for money whilst still having the medical cover they need? Many complain that medical aid cover is prohibitively expensive and that only a small percentage of employed South Africans can afford it. Statistics show that a medical scheme covers only 16.1% of South Africans.

However, the pricing is significantly influenced by the fact that medical schemes are required to provide members with prescribed minimum benefits (PMBs) that cover at least 271 conditions and 26 chronic diseases, whilst health insurers have no obligation to cover PMBs. The costs of the cover are high. But the industry has developed solutions over the years to be more inclusive. Consumers now have options and a way to determine the best value for money for the individual or family.

What makes premiums so high?

For even the most basic plan, the principal member of a medical scheme would pay around R1 500 to R2 000 per month. A single parent with a child could expect to pay at least R2 300 a month. It would require a take-home pay of at least R20 000 a month for the medical cover not to exceed 10% of the household budget. There is however some tax benefit available to members, who are allowed to claim medical tax credits on their tax returns. In the current tax year, taxpayers can claim R347 per month for the first two members and R234 for additional members. The member must submit a tax return to receive their tax credit.

The most critical driver of medical scheme contributions is the requirement to cover PMBs at full cost. There is a list of 271 life-threatening conditions and 26 chronic illnesses that a medical plan must fully cover. Medical schemes frequently have little effective control over the fees charged by healthcare practitioners for a PMB condition, with some practitioners charging up to 700% of the medical scheme rate. These would have to be paid in full by the medical scheme.

According to the Council for Medical Schemes' 2020 Industry Report, the cost of providing cover for these PMBs is R866.02 per average beneficiary per month. It means that before the medical scheme can even start covering its members for non-PMB events, the premium must be at least R866 per month. To provide even a basic hospital plan, the scheme would have to cover the PMBs at R866 and then add on the cost to cover additional conditions, hospitalisation, preventative care, and administration costs. To address the cost drivers behind PMBs, the Council for Medical Schemes is reviewing PMBs to develop a comprehensive set of Preventative and Primary Healthcare packages for incorporation into the current hospital-centric and diagnosis-based standard PMB package.

Another driver of medical expenses is hospitalisation, especially when it comes to elective procedures. During the Covid lockdowns, non-emergency surgery was halted, which resulted in most medical schemes reporting an increase in scheme reserves. The increase in reserves allowed many schemes to delay annual increases, and in fact some schemes were even able to reduce premiums. As hospitalisation is a significant expense for all schemes, any increase in hospitalisation utilisation by members will continue to drive up costs.

Is health insurance the way to go?

As medical insurance is not a medical scheme, or a medical aid if you will, it is not required to provide full coverage for PMBs. Several new players have entered the health insurance sector by partnering with life insurance providers or recognised financial service providers. Because it is an insurance product, risk rating, waiting periods, and limited cover are allowed to be applied, making it more affordable. However, the medical tax credit does not apply to health insurance policies. It is thus vital for people to understand the limits of health insurance.

Transnet digitizes freight services

TRANSNET has been working with Huawei to build an upgradable and easy-to-maintain transmission backbone network featuring high bandwidth and reliability. The network enables the real-time and efficient transmission of a massive amount of business data, supporting emerging services and solidifying Transnet's digital strategy.

Huawei's all-optical backbone network solution for railways

Transnet manages more than 30 000km of rails, and its rail infrastructure accounts for 80% of all rail infrastructure in Africa. In addition, Transnet has 114 backbone nodes and numerous optical cable lines across South Africa. This gives the company an advantage when it comes to bandwidth operations.

However, the existing SDH network had many limitations. The SDH 2.5G/10G backbone network had reached the end of its lifecycle, unable to support Transnet's production and operations. On top of that, operating the obsolete SDH network was not efficient and integration with newer technologies was troublesome, slowing down the company digitalization initiatives and business expansion.

In response, Huawei deployed the all-optical backbone network solution for railways, building an independent large-capacity wavelength division multiplexing (WDM) transmission network that meets Transnet's business and production security requirements.

The project used next-generation intelligent and simplified OptiX OSN 9800 series products. These intelligent, large-capacity MS-OTN products integrate optical and packet functions, providing the transmission capacity of 100G and beyond. They feature high reliability, low latency, and deterministic quality, and support end-to-end native hard pipe (NHP) networks from the access layer to the transport layer. The system can now centrally carry Transnet's different businesses at multiple layers and interfaces, ensuring independent and secure operations.

To enhance the stability and scalability of the operation network, Transnet adopted Huawei's dense WDM (DWDM) technology that supports a single wavelength capacity of at least 100 Gbit/s. With it, Transnet has upgraded its 100G network and provides customers nationwide with larger capacity, faster speed, and more redundant bandwidth connections.

100g links meet Transnet's business growth requirements

Huawei's all-optical backbone network solution for railways delivers the much needed network capacity to support Transnet's digital transformation. Transnet uses the upgraded network to ensure reliable and high-bandwidth network connections for its rail production business. At the same time, it offers other customers bandwidth operation services, such as bandwidth leasing. This helps Transnet diversify its revenue sources.

Huawei's all-optical backbone network solution for railways responds to a wide range of common challenges. These include insufficient optical fibre resources, large bandwidth requirements, long transmission distance, complex service types, and high requirements on network capacity and security.

The solution assures efficient production and allows customers to create value-added services. Plus, Transnet has optimized its costs in terms of network upgrade, capacity expansion, deployment, device O&M, and service operations.

Huawei's all-optical backbone network solution for railways features high reliability, high security, and low latency. It has helped Transnet improve its transport capacity, support operations, improve operational efficiency, and ensure production business security. This helps Transnet successfully deploy its digital strategy along with digitizing South Africa's freight transportation services.

Empower your workforce in 2023? Education should be top of your list

By Jackie Carroll

THE workplace is not what it once was. The pandemic accelerated shifts that were already gaining traction and, today, working environments are defined by increasingly hybrid arrangements, greater mobility and non-linear career shifts. Of course, these changes are also being accompanied by accelerated digital transformation and the rise of automation.

According to Microsoft's recent Work Trend Index, which surveyed 30,000 people in 31 countries, 52% of Gen Z and millennials said they are likely to look for a new job within the next year. The world over, employees are reconsidering their work, and making dramatic decisions to create the lives and lifestyles they want. The Great Reshuffle that the pandemic precipitated, Microsoft says, is far from over.

Why workplace education matters

If your business is going to be on the receiving end of the Great Reshuffle – drawing high-quality talent in rather than pushing it away – you need to be prioritising employee empowerment. And empowering your employees begins with improving their knowledge and skills, and putting their career trajectories first.

Implementing education programmes successfully demands a thorough understanding of your workforce. You need to cater for everyone's unique levels of interest and ability, while being conscious of their future goals. Doing so not only helps to engender loyalty among employees, but also improves productivity and performance, increases workplace engagement, and nurtures future leaders.

These programmes need to be structured correctly, however.

One of the most critical shifts that happened during the pandemic was the move towards more flexible ways of working. The effect of this has been so strong that, even as businesses start to encourage employees to come back to the office, few employees want to lose their newfound independence.

By introducing education and training opportunities that are self-paced, you effectively hit two birds with one stone. Not only are you demonstrating a concerted investment in your employees' careers, but you're also acknowledging that they want to be in control of their schedules and time.

Workplace education in practice

Education and training provider Optimi Workplace has developed several courses designed to help employees at various stages of their career, some of which are self-paced. While Foundational Learning Competence (FLC) provides learners with important foundational skills, for example, Effective Workforce and Effective Leader cater for more experienced employees who want to take their careers to the next level.

Jackie Carroll is the Managing Director of Optimi Workplace and the co-founder of Media Works, a provider of adult education and training.

Optimi recently conducted FLC training for the employees and community members in and around Samancor ECM's operation in Limpopo. Learners focused on improving their written and verbal literacy, computer proficiency and basic numeracy skills.

"Working with Media Works was fruitful for both us and our employees," says Desmond Mazibuko, Human Resource Development: Adult Education and Training Coordinator at Samancor ECM. "We are now reaping the benefits of having a literate workforce, which results in higher productivity and reduced workplace incidents."

Learner Kgomotso Matjila achieved a 77% in her foundational mathematics exam and said that the training had opened new doors for her. She has since received a promotion.

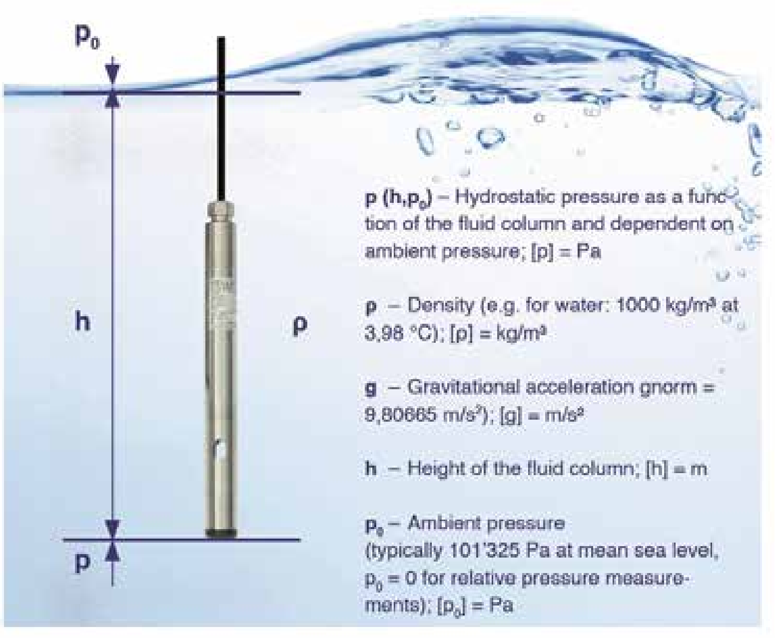
As employees' knowledge improves, so too does their ability to contribute effectively, to think innovatively and creatively, and to help drive your business forward. These skills are nothing short of critical in our increasingly competitive business world. As you strive to remain relevant, turn your attention to the education of your people. Therein lies your success.

Hydrostatic measurements

IT is a fact that most drinking water comes from groundwater. No longer confined to the Global South, general water scarcity is now an ever-present issue in technologically developed countries as well. Climate change, forest fires, glacier melting and the resulting rise in world sea levels are all arguments in favour of the proper, well-thought-through management of groundwater resources.

Furthermore, monitoring the fill level in tanks or sealed containers of oil or similar liquids is very important, especially on cost grounds, and can also double as theft protection. Determining the exact fill level right down to the centimetre can therefore save users a fair amount. Using an additional radio module, a purchase order can be triggered automatically in various applications as soon as the fill level falls below a certain threshold.

The most common form of electronic fill level measurement is hydrostatic pressure measurement.



Hydrostatic pressure

Hydrostatic pressure is the pressure that forms within a liquid or gas at rest due to the influence of the force of gravity. The fluid at rest exerts a dead weight on the layers below as a result of its mass. Neither the type of medium nor whether or not the fluid is in motion plays a role here. Dynamic pressure due to flow is not recorded.

Hydrostatic pressure can be measured in either an open or freely accessible, container or body of water as well as in a sealed tank with positive or negative pressure. In all cases, the actual fill level is determined in consideration of the ambient pressure. The pressure of the gas trapped above the liquid must also be factored in if the container is sealed. This is done by taking another pressure measurement on a second transmitter, which is usually screwed into the side of the tank.

Hydrostatic pressure factoring in ambient pressure

This formula can be used to calculate the hydrostatic pressure while factoring in ambient pressure:
p(h, p0) = p * g * h + p0

And can be applied to open bodies of water and fluids at rest (static) in containers. A differential pressure measurement to factor in p0 (lid pressure) is used for sealed containers. To factor ambient pressure into open scenarios, measurements are taken using relative pressure probes or AA (absolute-absolute) technology.

Remote transmission via the Internet

When monitoring groundwater/fill levels in open bodies of water or outdoors, the measuring points may be relatively far away and difficult to reach. For these applications, KELLER Pressure has solutions involving level loggers via short-range radio interfaces as well as level loggers with a remote data transmission unit via GSM or the Internet. Kolibri Cloud / Desktop is used to process and analyse/prepare the collected data.

Products for hydrostatic measurements

LEVEL PROBES Submersible probes for level and fill measurement.

DATA LOGGERS A variety of data logger designs for recording pressure and temperature profiles. Depending on the system, the data is read out via a plug connection or remote transfer.

MULTI-PARAMETER DATA LOGGERS The DCX-22-CTD measures conductivity and temperature as well as pressure, along with the depth of bodies of water. The integrated Pt1000 achieves an accuracy of ±0,1 °C, and the conductivity can be measured at ± 2,5% of the selected range (0,2 / 2 / 20 / 200 mS/cm). Thanks to their long-life battery, they can keep recording measurement results for years (up to 10 years at a rate of one measurement per hour).

KOLIBRI CLOUD Web app for collecting and displaying measured values that are recorded by KELLER IoT devices and transmitted via mobile radio or LoRaWAN.

KOLIBRI Cloud offers a wide variety of options for device configuration and displays current measured values and logger recordings in graph form.

Contact INSTROTECH for more information on Keller's Hydrostatic Measurement at 010 595 1831, sales@instrotech.co.za or www.instrotech.co.za

Using data to fix SA's water challenges

By Chetan Mistry, Xylem Africa's Strategy and Marketing Manager

THE municipality of eThekwini, which includes the holiday playground Durban, faces many challenges, including sewage leaking into the sea—forcing the closure of beaches—and losing revenue from its water. A recent analysis of reports estimates that Johannesburg loses 39% of its pumped water, Nelson Mandela Bay's losses are 44%, and 46% of Mangaung water goes missing.

However, eThekwini leads the pack with an astounding 56 percent, tallying losses in the region of R5 million daily. Those funds could help fix the sewage problems and promote safe, clean beaches.

Experts refer to such losses as non-revenue water: paid water that never reaches its destination due to leaks and theft, ultimately leaving the bulk buyer—the municipality—without any returns. eThekwini could recoup nearly R2 billion annually if it reduced non-revenue water losses.

Water's data is rising

Digital solutions are empowering water utilities in fantastic new ways. They gain better insight into the condition and performance of their water networks and systems, using data that is already available or quick to generate. The right combination of data experts, technologies and engineering skills can give every water utility actionable information on everything from pipes and valves to pumping stations and sewage systems.

"Using data to manage, optimise and proactively maintain water infrastructure is delivering excellent results," says Chetan Mistry, Xylem Africa's Strategy and Marketing Manager. "We have case studies where customers stopped repeated disruptions and reduced their capital planning time by 75%. The answer is to use data and pinpoint the areas that need priority attention, then develop a longer-term plan for maintenance and replacements. But many utilities don't do this because they think they don't have enough information. That's often not the case. They already sit on a wealth of insights."

The power of prediction

What kind of results can they expect? Assets connected digitally with sensors generate patterns that reveal many interesting insights, including maintenance status, underperformance, excessive energy consumption, flow, pressure, water level, pH levels, conductivity and numerous other metrics. The collected information can support operations and maintenance planning, alarms and service quality supervision.

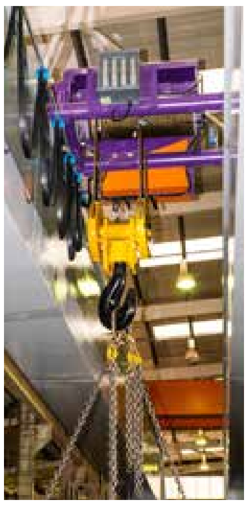
Data flourishes with skills and AI

These amounts of data are big and growing bigger. To create helpful analytics, service providers combine civil engineering, data platforms and tools such as machine learning. They also apply their expertise to cleaning data, ensuring water managers avoid getting bad answers from poor-quality data. Then they bring it together to be understandable and streamlined so clients can make better decisions.

"Most data projects fall apart because they are mostly focused on technologies and not the skills and processes that lead to better understanding of data," says Mistry. "At the very least, you need a data scientist to find value in your data. We enhance our data bench of experts with backgrounds in mathematical modelling, system dynamics and civil engineering. Those make up the essential pieces of getting useful and relevant insights."

If South African cities have the correct information, they can recoup millions in lost water revenue and maintenance savings. They already have the data to start making crucial choices.

Don't drown in data. It's time to swim with your insights and enjoy actual returns for true service delivery.



New yard crane for Mpumalanga refinery

CONDRA has completed a 32-ton, 30-metre span container handling crane for Manganese Metal Company (MMC), the Mbombela-based metal refinery.

The working element of a multi-component turnkey contract between these two companies, the purpose of the crane is to allow MMC to offload and load full containers from and onto either railway wagons or road transport trucks, allowing it to export product without interruption using multiple transport options.

MMC produces selenium-free manganese metal used in the production of aluminium beverage cans, certain types of special steels, chemicals, welding consumables and lithium-based rechargeable batteries. MMC exports its product in various forms: flakes, powders and briquettes, with more than 90% of the refinery's output being exported to 20 different countries across the globe. MMC has plans to grow its participation in the lithium-based battery market, especially for electric vehicle production, hence the need for increased flexibility of export container handling. Reliable logistics and flexible export options are key requirements to ensure MMC's customers receive product timeously.

Condra won the contract for MMC's container crane after competing against rival firms in a formal tender process. A turnkey proposal, short lead time, effective after-sales service and very low projected overall lifetime cost were among the reasons for the win.

Condra's turnkey solution includes the crane itself, downshop conductor system, the design, supply and erection of the crane's 43metre free-standing gantry, and calculations for foundations laid by an independent civils contractor.

The 32-ton double-girder electric overhead travelling crane will be used in the open. It features weather covers on all motors, anti-derailment brackets, and Condra's patented storm brakes to guard against movement caused by high winds.

Besides the removable container handler, there is a full-length platform with lifeline along one girder, a floodlight to illuminate the lifting area, a motion warning light and siren, and a cable reeling drum for future upgrade to full crane automation.

Control is by radio remote with pendant back-up. Speeds are within the normal range for a crane of this very large size: the long travel will move at speeds of either 31 or 10,3 metres per minute, and the cross travel at 14 or 4,6 metres per minute. An Optidrive variable-frequency drive supplied by Condra subsidiary iTek Drives will deliver tightly controlled and variable lifting speeds of up to 3 metres per minute on the hoist. Condra bought iTek Drives in October to secure supply of these components, used in many of its cranes to deliver precisely variable, smoothly changing motor speeds that eliminate 'stepping' while optimising energy usage.

During manufacture, Manganese Metal Company supplied Condra's Germiston factory with unique and visually appealing paint specifications for the finish of its new crane in corporate colours. Girders and end-carriages are resplendent in MMC Grey, the hoist in MMC Amethyst, and the container handler in MMC yellow.

Commenting on the order, Condra managing director Marc Kleiner said that there is growing demand for turnkey lifting solutions.

Visit Condra's website: www.condra.co.za for more information.

Embrace modern technology for rainwater harvesting

By Simon Thomas, Megapipes Solutions Country Director

THE ongoing short rains have given us a reprieve from months of drought, one of the worst in over 40 years, but freedom is not yet here. The time is ripe for putting words into action on mitigating the adverse effects of climate change.

One way we can do this is by beginning to harvest rainwater, especially in our urban areas. The timing could not be better because at present, millions of litres of water will be wasted in the form of surface runoff that will end up in our rivers and in the process city dwellers will miss out on an opportunity to harvest this scarce resource.

It is important to understand that harvested rainwater has uses that differ from treated water meant for drinking, also known as potable water in engineering parlance.

This is because rainwater, especially when it is collected from rooftops, contains contaminants which make it unsuitable for drinking unless it is treated. However, water must be considered as a precious resource and repurposed effectively, for example this harvested rainwater is suitable for other domestic uses including flushing toilets and watering landscapes.

Rainwater is also soft and therefore not subject to problems associated with lime scale, making it particularly suitable for laundry use.

By harvesting rainwater and using it for flushing toilets, doing laundry, and watering landscapes we can relieve pressure from water supplied by water companies and ensure that the latter is used for drinking and other domestic activities. We need to adopt a mindset of saving drinkable water and consider the careful use of water as a resource for its various purposes.

Furthermore, reduced pressure on water supplied by companies would in turn slowdown the proliferation of boreholes in most urban areas. The savings from rainwater harvesting would be immense.

But to effectively harvest rainwater we must now start applying suitable and innovative technology for the collection and storing of this resource.

First, our urban roofs, from industrial, residential, commercial, retail and education, rooftops must be transformed into water catchment areas. This should not be an arduous task because we can borrow a leaf from the energy sector where we have seen many institutions install solar panels on their rooftops.

Once it rains, water from these rooftops must then be stored somewhere, and this is where modern technology such as Weholite HDPE is ideal for secure storage due to its many advantages.

Weholite HDPE tanks can be designed and manufactured to collect massive amounts of water and customised to fit within the confines of a specific site.

For example, at our Megapipes Ruiru plant we have successfully installed a 180,000-litre tank, under our factory road, a 48m of DN2200 SN2 Weholite tank, with filtration and pump system which takes water from our factory roof to use for toilet flushing, irrigation of our gardens and vehicle washing.

This is not a short-term fix but the tanks offer a sustainable lifespan and when buried, they offer a service life of over 100 years giving developers much needed long-term investments. Additionally, the light-weight nature of Weholite makes it easy and quick to install in heavily built-up areas. What makes the tanks an even better solution for developers is that the installation offers minimal disruptions to communities and livelihoods.

The good news is that the Government has already shown commitment towards this rainwater harvesting including the proposed regulations that provide that all buildings used for residential, institutional facilities, offices, manufacturing, or commercial establishments must have roofs that are adequately guttered for catching rainwater or may have a ground catchment for the purposes of harvesting rainwater.

The extremes of climate change means that we will likely see oscillating seasons of flooding and droughts. It is imperative that we act now and embrace modern technology to harvest rainwater.

“Water crisis in South Africa likely to be worse than the energy mess”

Darrin Green.

THE current constraints on power generation in South Africa, which has resulted in extended load shedding by electricity utility Eskom, is overshadowing another potentially more dire crisis: water. “The energy crisis is confronting us first, or maybe it is the most obvious, but for me, the current water shortage in Gauteng is absolutely a worse crisis. While the fundamental issues are the same, it is going to be a much more difficult situation for people to live with on a day-to-day basis,” said Darrin Green, Africa MD at infrastructure consultants AECOM.

Despite the issues being faced in the power sector, Green said that the work coming from it remains cyclical and difficult to secure. This is especially true on the high-voltage transmission and distribution side and even in the renewable energy sector, where despite a renewed focus, there is not a consistent flow of work.

AECOM said its involvement here mainly extends to photovoltaic systems for buildings, for example. “Of course, we have the necessary capability globally, but trying to bring that into the African market with all of the procurement issues we are facing is difficult,” said Green.

Climate change and resilience advisory services are an increasingly important part of this strategy globally. However, the approach in South Africa tends to remain reactive, as demonstrated by the recent flooding in KwaZulu-Natal. The question is how to futureproof infrastructure to mitigate the impact of such unforeseen events.

“Clients do not perceive this as a priority. It must start with an overall understanding of sustainability and its key drivers. The South African market has not reached a sufficient level of maturity in this regard,” said Green, adding it is being equally hampered by a lack of future planning and modelling.

For example, integrated hydrological models of South Africa’s coastlines are not being maintained or updated. Such modelling is critical not only to map out the available water resources, but to determine the potential runoff. “That determines the input into the design for various types of infrastructure,” noted Green.

If it is known how many cubic metres a second a river discharges into an area, and based on historical rainfall data, changing patterns can be determined and future anticipated runoff predicted and planned for. However, what tends to happen is small-scale modelling is applied for individual developments, which often relies heavily on the consultant’s experience.

A lack of holistic or integrated planning means that any upstream developments will be affected by concentrated or uncontrolled runoff from elsewhere. Downstream infrastructure and properties simply cannot cope with these, resulting in a snowball effect.

“It is not so much that there is a lack of development policy or controls, but these are not enforced,” said Green. While integrated planning is critical for stormwater, it applies to all infrastructure.

In terms of electricity, integrated planning is not only essential to understand future supply and demand but also how to maintain the existing supply. Transitioning to renewable energy sources is a means of futureproofing, but it must be bolstered with adequate policy support.

“We have to be at the level where we can design infrastructure with a proper understanding of all of these inputs,” said Green.

“Lifecycle costing optimisation needs to happen as part of this future-proofing. Another issue is that maintenance is not being carried out. Even if you design something the way it should be for resilience and future-proofing, a maintenance regime must be put in place.”

A simple example is ensuring stormwater drains remain clear. If these become blocked, it potentially changes the runoff pattern and can have a major impact on infrastructure elsewhere. “The mantra of ‘maintenance, maintenance, maintenance’ sounds very simple, but it is not being done,” said Green.

Source: https://businesstech.co.za

Wastewater reuse protects natural water resources (while making more water available)

ONLY 2,5% of the world’s water is available as freshwater yet demand for this resource grows steadily. Water reuse isn’t a recent innovation (Namibia has been using it for the last 50 years), but it presents an effective remedy to the scarcity of freshwater. Water reuse solutions make more water available whilst enabling preservation of natural water resources. In addition, water reuse controls costs and significantly reduces pollutant discharges – significant benefits for municipality, industry, mining and agriculture. As Antoine Frérot, Veolia Chairman said: “Wastewater can no longer be regarded as waste. Today, only 2% of the wastewater produced in the world is reused. There is a lot of room for improvement!”

Miles Murray, Director of Business Development, Veolia Services Southern Africa, believes that the limited adoption of wastewater reuse solutions in South Africa is to our detriment. “Investment in this sphere is seen as a grudge purchase, so making money available for this is very difficult, both for the municipal market and industrial markets,” he says.

He points to the success of the Durban Water Recycling Plant (DWR), constructed in 2000 and operated and still being maintained by Veolia. This plant has freed up water for 220 000 households in the City of eThekwini, without the need for additional infrastructure spending. At DWR, 47 Ml/day of mixed effluent from the industry as well as domestic wastewater is treated to a very high standard which is then used by large industrial clients. This leaves more drinking water available for consumption and domestic use. City clients benefit from significant cost savings as they pay lower tariffs for this water (compared to those for regular potable water). The high standard of skills development that is enabled by this private sector-operated and maintained plant is also noteworthy.

Another case study in effective wastewater reuse is that of the Windhoek Goreangab Operating Company (WINGOC) – a consortium of Veolia and VA Tech Wabag. The solution yields 21 000m^3 of safe drinking water daily – a quarter of the total drinking water consumed in Windhoek, in a water scarce country (only 1% of the 250 mm of rain that falls per annum, infiltrates the groundwater supply). Windhoek is dependent on water supply from boreholes and from dams located far from the city. “To cope with shortages, the city sought alternative solutions to secure reliable water supply and found an answer through wastewater recycling,” explains Murray.

Veolia enables sustainable water resource management

Veolia’s water resource management solutions enable continuous production with the goal of protecting the ecosystem whilst reducing hydric stress impacts. These solutions facilitate the control of all water cycle stages that can meet the many challenges of local authorities and industrial customers: resource management, production and delivery of drinking water and industrial water process such as, collection, treatment and recycling from all sources as well as by-products from its treatment (organic matter, salts, metals, complex molecules and energy). In addition, Veolia offers customer relationship management, as well as the design and construction of treatment and network infrastructure. “All of this expertise allows Veolia to support its customers in the implementation of integrated and sustainable water resource management” , says Murray.

Veolia has over 160 years of experience in water treatment and technology, and is a specialist in optimised resource management with over 350 proprietary solutions. These include digital services that enable smarter management and contribute to the continuous improvement of facilities’ operational performance. The company’s purpose is closely aligned with the UN’s Sustainable Development Goals.

SA, Netherlands sign Phase 2 agreement for Blue Deal Programme

THE Department of Water and Sanitation has officially signed off on Phase 2 of the Blue Deal Programme between South Africa and Netherlands, which seeks to enhance access to sufficient, clean and safe water for all by 2030 and beyond.

The Blue Deal Programme is a collaboration and partnership between the Netherlands Ministries of Foreign Affairs, Infrastructure and Water Management and all the Dutch water authorities to support local and national governments worldwide.

In the South African context, water institutions work together with the Dutch Water Authorities with an aim of specifically contributing to clean and sufficient drinking water.

The signing of the partnership commitment between the two parties took place during the Blue Deal Conference, held in Johannesburg recently. The conference aimed to support water management worldwide by exchanging knowledge and experiences in the water sector, while expanding its footprint.

Speaking at the conference, Water and Sanitation Deputy Minister David Mahlobo expressed his appreciation for the Dutch Water Authorities for their collaborative efforts with the department to ensure water security.

“I am informed that the Blue Deal South Africa Partnership wants to take the next step in the development of water management, I am impressed that the learning component will bridge and interconnect with water colleagues and other domains to catalyse the change that is rapidly needed,” he said.

Head of Blue Deal Worldwide, Hein Pieper, emphasised the need to ensure effective and collaborative implementation of the programme.

“We need to continue working collaboratively for the programme to yield positive results. The Blue Deal Programme is a big deal, and we need to treat it as such,” Pieper said.

SAnews.gov.za

KSB assisting municipalities

MUNICIPALITIES struggling with potable water distribution and waste water control issues can get assistance from one of the world's leading suppliers of pumps, valves and related services to Government around the world.

KSB Pumps and Valves in South Africa again made its expertise available to local municipalities and water authorities following a fact-finding visit by KSB's global specialist, Emilio de Paz, who visited and assessed a number of plants and sub-stations across the country. Where possible the team also provided input to overcome some of the problems faced at the sites through easy-to-implement preliminary solutions.

During his visit, the charismatic Argentine who resides permanently in Germany, committed the very best of KSB's technical expertise to assist municipalities and water utilities to deal with current challenges and to future-proof existing operations with custom solutions for each application.

Countrywide tour

"We visited a number of sites across the country over two-month and culminated the trip with a two-day conference including role-players from disaster-hit eThekwini and further afield in KwaZulu Natal. Municipal and consulting engineers, as well as specialists from a number of water and waste water utilities were also in attendance.

"The conference took place from 22-23 November at the Coastlands Hotel in Musgrave. We covered many topics and shared the latest finding from operations across the globe, including complex systems in countries like China, Indonesia and Mexico among others. Topics ranged from general topics to highly technical issues such as water hammer, cavitation and free passage of pumping systems. The design of pump stations and sumps etc for maximum efficiency, and reliability was also covered.

"Right now KSB is one of the only suppliers in the country that can provide the resources and expertise to ensure our potable and waste water infrastructure can be maximised and upgraded wherever serious problems are occurring. In some instances big gains can be made with comparatively small changes and in these instances we can assist with immediate remedial action.

"It was a great interaction and it's clear that our products and services are already well-known in the industry and it is currently a matter of encouraging municipalities and utilities to engage with us to address current and future challenges," says Emilio.

Eager participation

KSB Pumps and Valves' Hugo du Plessis, acting Market Area Manager – Water, Wastewater and Irrigation, says the two-day conference was attended by more than 100 people with 85 onsite and 24 online participants on day one with nearly all returning the following day, which indicates the quality of the information shared.

For more information contact: KSB Pumps and Valves, Annett Kriel, Tel: (011) 876 5600, Fax: (011) 822 1746, Email: Annett.Kriel@ksb.com, Web: www.ksbpumps.co.za

New dosing and metering pump with IOT functionality

VERDER Liquids has released the Verderflex Ds500, designed specifically to challenge traditional technological solutions to chemical dosing in municipal and industrial pumping applications.

The principle behind this technology is to improve the accuracy and save the end user money by looking at Total Cost of Ownership (TCO), which equals upfront costs and lifetime operation. For the end user it is not just buying the pump but the working life and all it entails, ie: service, tool free maintenance and chemical usage.

> "A key advantage of the Ds500 is that it has an easy 'click and go' cartridge change. The main wearing component, the peristaltic cartridge, can be changed in one minute..."

Dosing, accuracy and smoothed flow with easy maintenance of 'click and go'

A key advantage of the Ds500 is that it has an easy 'click and go' cartridge change. The main wearing component, the peristaltic cartridge, can be changed in one minute giving minimal maintenance time and spare part components. In combination with RA (Remote Assistant) IOT Monitoring, it adds real value. The Remote Assistant supports monitoring but does not allow control of the pump. It ensures accuracy in the process and alerts to any problems. Changes are predicted, so maintenance can be scheduled. Performance is recorded and feedback provided. As a result, downtime is managed and minimised.

The Ds500 can deliver up to +/1% accuracy with a smoothed flow (i.e., reduced pulsation due to the design). Furthermore, this pump has an accurate flow performance from 0.1 up to 500 mℓ/min and pressures of up to 7 bar. This means greater accuracy and smoothed flow. It wastes less chemical and saves on the life operation cost, supported with a 5000:1 turndown.

The unit by nature of being a peristaltic pump can handle solids, abrasives, slurries, crystals and is not affected by 'off gassing' (i.e., such as sodium hypochlorite in the potable water industry). The Ds500 will give a reliable working life. It does so, without the need for additional valves or complicated pipework required by other systems, and therefore has lower installation cost.

Features and Benefits of the Verderflex Ds500

- Click and go cartridge - Tool free maintenance
- Smoothed flow for improved dosing
- Less chemical usage (+/- 1% accuracy)
- Touchscreen for easy control
- Connections for remote control
- Small footprint with secure mounting
- IOT enabled: Remote Assistant monitoring

Watch the video for all the benefits of the Verderflex Ds500 in just 1 minute: visit: https://youtu.be/vdU1r5_dNCQ

Pump rental offers numerous benefits

Available from IPR is the Atlas Copco PAC H64 which offers a maximum flow rate of 460m3 at a maximum head of 150m.

WHILE there is sometimes a case for buying dewatering pumps and associated equipment outright, renting offers so many advantages that it should always be given close consideration. This is the view of Lee Vine, managing director of dewatering and dredge pump rental specialist IPR.

He says that IPR is seeing a strong shift towards the rental model. "We started up just seven years ago and, since then, we've had to continuously add pumps to our fleet to meet ever growing demand from a range of industries, most especially mining and construction," he states.

"We now have more than 200 pumps in our rental fleet, able to handle almost any pumping task. Our line-up includes submersible drainage and dewatering pumps, slurry and sludge pumps and diesel-driven pumps. We also offer dredging systems and hydro mining solutions."

Vine believes that one of the prime advantages of renting is that it eliminates the need for upfront capital expenditure, which – depending on the type of equipment that is required – can be considerable. "Many companies – particularly if they are start-ups or are experiencing tough trading conditions – simply cannot afford to make this type of financial commitment," he says. "If this is the case, rental is the ideal solution."

He points out that purchasing does not make business sense if the equipment required is only used on an intermittent basis. "If you're going to buy pumps, for example, then you need to get the maximum utilisation out of them. If you only have an occasional need for pumping, then I would strongly recommend renting. It is madness to buy expensive equipment and then leave it standing for long periods."

Ownership also brings with it the problems of maintenance. "Pumps need to be maintained and this normally means that people with the required competence need to be permanently employed to undertake this task," he says.

"When you rent from IPR, we provide this service. Our skilled and experienced technicians undertake all servicing and maintenance on site on a 24/7 basis. We also, of course, ensure that machines are in tiptop condition before being sent out to customers."

When it comes to pumping, there is no such thing as 'one size fits all' and Vine says this is another compelling reason to rent rather than buy. "IPR can draw from its extremely wide range of pumps and other equipment to provide solutions that are exactly tailored to the customer's needs. By contrast, we often notice that companies that elect to purchase their own equipment end up using pumps that are totally unsuited to the task at hand. They are using them because that is all they have available."

By renting from IPR, customers also get the benefit of the latest technology.

"Obviously, not every unit in our fleet will be the very latest model but, generally, our inventory consists of new or relatively new machines offering – amongst other things – excellent fuel efficiency," says Vine. "Customers can rest assured that we will never supply out-of-date equipment that is no longer fit for purpose."

While rental is the backbone of IPR's business, the company also sells pumps and other equipment. It is the sole agent in southern Africa for the well-established Atlas Copco diesel-driven pump sets as well as the Atlas Copco range of submersible pumps.

As Vine comments, "We're certainly not saying that customers should always rent. Under the right circumstances, direct ownership of assets such as pumps can be the best route to follow. We recognise this, which is why we are geared to either rent or sell."

IPR is based in modern premises in Jet Park, Johannesburg, where it has a well-equipped engineering workshop which allows it to provide fully customised pumping and dredging solutions to ISO 9001 standards.

Nestlé partners with Africa Food Prize to strengthen food security and climate change resilience

NESTLÉ is partnering with the Africa Food Prize to help accelerate the transformation of food systems in Africa, as a way of strengthening the continent's food security and building greater climate change resilience.

The Africa Food Prize awards USD 100,000 to individuals and institutions that are pioneering agricultural and food systems transformation in Africa. The Prize puts a spotlight on uniquely impactful agri-food initiatives and technological innovations that can be replicated across the continent to increase food security, spur economic growth and development, and eliminate hunger and poverty in Africa. The Africa Food Prize is hosted by AGRA, an African-led and African-based institution that puts smallholder farmers at the center of the continent's growing economy by transforming agriculture from a solitary struggle to survive into farming as a business that thrives. AGRA is headquartered in Kenya and works in 15 African countries.

This year, Dr. Eric Yirenkyi Danquah, a plant geneticist from Ghana, was awarded the prestigious prize during September's AGRF Summit in Kigali, Rwanda. Dr. Danquah was celebrated for his outstanding expertise and leadership in establishing the West Africa Centre for Crop Improvement (WACCI) and developing it into a world-class center for the education of plant breeders in Africa.

Nestlé will contribute CHF 100,000 to the Africa Food Prize, which will be awarded in 2023. Part of the contribution will go to the main award and part to a special category focusing on innovations that advance regenerative food systems.

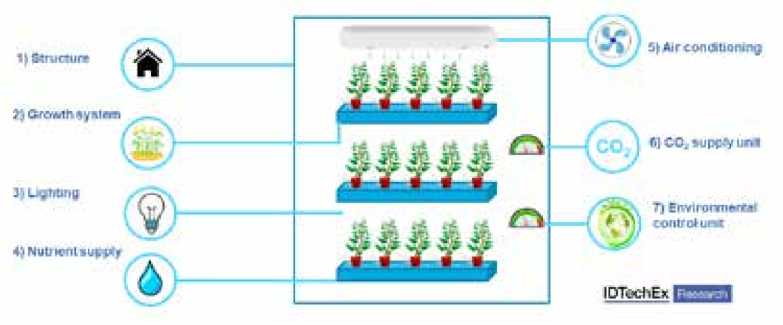
Remy Ejel, Chief Executive Officer of Zone Asia, Oceania and Africa, Nestlé S.A. said, "Transforming agriculture to be more productive and sustainable is key to reducing hunger and improving livelihoods for the long term. We aim to support and amplify efforts that spearhead regenerative agriculture and food systems to enable better productivity, better nutrition and better incomes for people in Africa."

Commenting on the partnership, Dr Agnes Kalibata, President of AGRA said, "We are happy to be partnering with Nestlé to recognize Africa's best in food systems. The Africa Food Prize is a great opportunity to shine a bright spotlight on Africa's outstanding minds, giving the rest of us a chance to learn and replicate their good work that is moving us closer to sustainable, inclusive and resilient food systems and achieving the United Nations Sustainable Development Goals 2 on Zero Hunger."

Nestlé's partnership with the Africa Food Prize builds on its years-long work in Africa to improve the continent's nutrition and agriculture. The company has taken great strides to expand access to affordable nutrition in many communities, for example, by fortifying Maggi bouillon cubes with iron in Central and West Africa. It is also pioneering regenerative dairy farming with the establishment of the first net zero dairy farm in Skimmelkrans, South Africa.

In early 2022, Nestlé launched an innovative income accelerator program, aimed at addressing child labor risks and closing the living income gap for cocoa-farming communities in Côte d›Ivoire and Ghana.

Are rising energy costs the end for vertical farms?



Vertical farms use a combination of sensors, HVACs, and lighting systems to maintain a controlled environment. Source: IDTechEx – "Vertical Farming 2022-2032"

WITH their ability to fully control growing environments through LEDs, sensors, and HVAC systems, vertical farms achieve great control over the quality and consistency of their crop. However, this degree of control comes at a cost, a very literal one. Vertical farms are notoriously power-hungry and require large amounts of energy to operate. These energy costs often form one of, if not the largest part, of their operational expenditure. Even before rising energy prices, many vertical farms have already found it challenging to achieve profitability due to the high costs of operation; with dramatic increases in the cost of energy, this could be the final nail in the coffin for many vertical farms. The IDTechEx report "Vertical Farming 2022-2032" explores the economic and technological factors shaping this rapidly growing industry.

So What Can Be Done?

Over the short term, there is an immediate need for vertical farms to decouple themselves from the price of gas. This could be achieved through increased reliance on renewable energy sources, such as through greater integration of photovoltaics, which may be possible through direct connections to solar farms. Alternatively, local biomass boilers could potentially alleviate energy costs by making use of waste wood generated from manufacturing or maintenance. Increasing the use of renewable energy may require significant capital investment but would provide greater cost efficiencies over the longer term.

Another important task is to reduce energy usage. However, this is difficult; while the efficiency of underlying LED technology has improved significantly since the start of the vertical farming industry, the architecture of current LED semiconductor chips is close to theoretical limits. That is not to say that energy usage cannot be lowered; an alternative approach, as used by Intelligent Growth Systems and Perfand LED, is to periodically modulate energy delivery to lights – as opposed to a constant energy supply. This potentially reduces the average energy consumption without affecting, or possibly even enhancing, crop growth.

Vertical farms may change their strategy to achieve profitability in a challenging economic climate. A common approach today by many vertical farms is to produce low-margin, high-volume crops such as lettuce and microgreens. There are multiple reasons for this, including lowered energy requirements, reduced risks, and faster time to return. However, this strategy also presents challenges. The high costs of vertical farming make achieving price parity with conventional produce difficult. Vertical farms could instead target a completely different market; a major advantage of vertical farming is that it can grow crops that may not be possible through conventional agriculture, especially in cold Western climates. By growing produce inaccessible to traditional agriculture with a focus on flavour, vertical farming could command a further price premium for its products. A particularly noteworthy example would be seen in Oishii: the Omakase strawberries grown by the company are noticeably sweeter than many conventionally farmed counterparts, and these are used as one of the selling points to justify the comparatively higher pricing point. Vertical farms also have opportunities to produce medicinal plants and herbs, along with other similar high-value crops. Such strategies may play well to the strengths of vertical farms and increase the attractiveness of their produce.

To find out more about the IDTechEx report "Vertical Farming 2022-2032", including downloadable sample pages, please visit www.IDTechEx.com/VertFarm.

Resilient agriculture sector faces bumpy road ahead

AFTER three years of sustained growth across virtually all agricultural sectors, headwinds have started to blow which threaten to slow but not derail this vibrant sector.

The Editor asked Kgampi Bapela, Head: Agro processing and Agriculture at the IDC for his assessment of the agri-sector in 2023.

"There is no doubt that agriculture is an SA success story that has proved its resilience against inclement weather – flooding in KZN and elsewhere, but the sector has been able to bounce back and over the last couple of years, we have seen bumper harvests in the grain sector in particular.

"However the conflict in Ukraine has dented enthusiasm with increased commodity prices for imported fertilizer, oil seeds and oil cake has contributed to consumer price rises both here and abroad, bringing into sharp focus how interconnected our economies are with shortages, conflicts and restrictions in one region having consequences in another.

Own goals limit growth

"While our grains industry is booming, we are net importers of wheat and as most of our wheat imports come from Ukraine and Russia, shortages have meant that consumers have had to bear the brunt of higher bread prices.

"Even with increased input costs, we still see our grain exports growing strongly – weather permitting, but issues at home can soon make our exports less competitive on world markets and there is plenty of competition. Output to meet world demand is being throttled across all agri sectors where increased transportation costs, loadshedding, failed infrastructure – particularly rail and ports, energy price rises and the escalating price of diesel all impact negatively on our exports. Due to these problems and insufficient capacity and congestion at our ports, some producers are diverting their bulk exports through Maputo but that involves longer road trips and an extended cold chain for perishable products such as citrus and avocados.

Future expansion in horticulture encouraging

"Despite these setbacks, all agricultural sectors are expected to show substantial growth. Our predictions for the next seven years up to 2030 show increases of Avos – from 16 million cases to 50 million, grapes, from 70 million cases to 82 million, oranges, from 78 million to 108 million, and similar increases in lemons and other soft fruit.

Diversification now vital

"Our geography and climate make our agricultural export potential the envy of many countries but it is imperative that we not only fix our infrastructure and power problems but look at diversifying our markets. South African agricultural exports are seen as a threat to some EU countries – one of our major markets - that view our exports as unfair competition as we can compete over multiple seasons. The recent issue where citrus imports into the EU were restricted due to "Black Spot" provided an opportunity to limit our exports in favour of local producers in the EU. That raises another issue of tightening up on our disease control regulations too.

Kgampi Bapela,

"Preferential trade agreements need to be fostered with other countries such as China and the many Far Eastern nations where our produce is exported but through third parties as preferential trade relations don't exist with countries such as Japan, Indonesia, Philippines etc. which have burgeoning populations. India is another target although preferential trade relations do exist there.

"It is heartening to see increased local investment across the agricultural spectrum – an example is the poultry industry but they rely on a stable supply of animal feed and proteins, some of which has to be imported from the very countries involved in conflict…

"So the agricultural landscape is vast and much needs to be done to secure market access and improve delivery infrastructure. While grains do not present many employment opportunities due to mechanisation, citrus and soft fruit exports do and our predicted expansion and growth in those industries are sure to make a dent in our unacceptable unemployment figures".

Further agriculture profit margin compression as debt cost rises by 75bps

Comment by Paul Makube, Senior Agricultural Economist at FNB Agri-Business

FACING unprecedented levels of global uncertainty with a muted growth outlook, amid elevated inflation, and accelerated policy normalization, the South African Reserve Bank (SARB) continued its tightening cycle this time with 75 basis points on Thursday, 24 November 2022.

This brought the repurchase rate to 7% effective from the 25th of November 2022. Domestic growth headwinds include severe energy constraints and logistics challenges that impede export performance.

The higher interest rates obviously mean increased debt servicing costs for farmers in an environment of elevated input costs in the form fuel, fertilizer, pesticides, and herbicides prices. The overall impact is for margin compression in the agriculture sector with industries such as citrus and livestock severely affected.

Citrus faces a difficult export season with weak international prices and elevated logistics costs particularly higher container freight biting into farmer net realization. Industry players indicate a potential increase in the number of growers that would struggle to reach break-even point. In the livestock sector, prices of grain and plant protein crops used for feed manufacturing have surged to record levels thus raising costs and eroding producer margins.

While grain farmers and oilseed farmers are still operating under relatively high commodity prices, input costs are also elevated. The past two seasons were relatively good for grain farmers with bumper crops and higher commodity prices boosting revenues as evidenced by the strong machinery purchases for the year-to-October 2022, rising by 25% year-on-year to 8,074 units. Higher interest rates may curtail further purchases and the necessary replacements of machinery and equipment in the sector. Nonetheless, the agriculture outlook remains positive with excellent seasonal conditions that will potentially deliver another massive crop for the 2022/23 summer crop season.

Hello Hydrogen campaign launched in the UK

MEMBERS of the UK energy industry to have joined forces to launch a campaign to raise awareness of hydrogen gas for heating our homes and calling on the Government to commit to a hydrogen future.

The 'Hello Hydrogen' Campaign (www.hellohydrogen.com) sees gas distribution networks, boiler manufacturers and energy suppliers come together to raise households' awareness on the low-carbon gas's role in reducing CO2 emissions.

Members of the group hope the information hub will teach people about new hydrogen – ready boilers and cookers that could be used to heat their homes in the future.

The switch from natural gas to hydrogen for home heating could cut CO2 emissions by 20 million tons a year – equivalent to 12 million cars - but the industry want clear guidance from the Government that it remains committed to hydrogen as it steps up efforts to develop the necessary technology.

Producing hydrogen for homes in the UK could also create tens of thousands of jobs and help the country avoid future cost of living crises by ending its reliance on natural gas from overseas, the campaign says.

Hello Hydrogen also want to highlight the ease in which homes will be able to install the new hydrogen-ready boilers like-for-like with old ones at the end of their life in a cost-efficient way – especially in households where they might not have space for alternative future heating options like heat pumps.

Commenting on the launch of the Hello Hydrogen Campaign, Campaign Director, Angela Needle said:

"As people start to turn on their heating again, we think now is the perfect time to begin the conversation about how we will all heat our homes in the future.

Air engineering and cleanroom technology part of expanded industrial HVAC offering

JOHN Thompson, a partner in energy and environmental solutions through value engineering and innovation, has expanded its product and service offering to include industrial heating, ventilation and air conditioning (HVAC) systems.

John Thompson's HVAC systems (formerly ACTOM HVAC systems) provide design, manufacture, installation, commissioning and after-sales services for single component and full-integrated systems. With many years of comprehensive environmental solutions experience, John Thompson is conscious of the need to provide systems with a high value relative to the installation, operations and maintenance costs.

Textile air engineering

"We provide air engineering solutions and air handling systems including air washers, air distributors, rotary air filters and bale press systems to the textile industry," says John Thompson's air quality solutions' general manager Tobie Jansen.

According to Jansen, high-performance textile mills and pharmaceutical companies make tremendous demands on room climate, air displacement, process air, filtration and waste handling. Air engineering plays a vital role in the textile industry by controlling these conditions to create the necessary climate for machines and processes to function effectively. Efficient air engineering is important for economical production across various industries.

Cleanroom technology

John Thompson HVAC systems has extensive technical expertise across a wide variety of typical pharmaceutical research and manufacturing tasks. These are associated with weighing rooms, sampling booths, dispensing, pass boxes, component and media preparation, granulation, compression, formulation, gowning/ change rooms, airlocks and liquids filling suites. "The design of our cleanroom technology solutions is in line with the stringent requirements of the pharmaceutical industry and has the relevant certifications," says Jansen.

Extensive range of services

As a division of ACTOM, John Thompson is a leader in energy and environmental solutions through value engineering and innovation. The company is firmly focussed on serving global and local markets. The following products and services are offered: Design, engineering, manufacture, construction, repairs, maintenance, retrofit, installation and commissioning of industrial water-tube and packaged fire-tube boilers, and industrial air quality solutions including HVAC, bag filters, scrubbers and electrostatic precipitator (ESP) systems. The company's boiler and environmental business unit offers the following solutions for utility plants: maintenance, repairs and retrofit of utility plant boilers, ESP systems, fabric filter plant (FFP) systems, mills, burners, ducting, high pressure (HP) piping and ancillary equipment – geared towards keeping large power plants operating optimally, as well as providing a plant and equipment hire solution for construction work.

John Thompson also provides outsourced steam via its energy management solutions department. The company's service further includes capacity and efficiency improvements to older boilers, supply of original equipment manufacturer (OEM) spares, reliability studies, metallurgical services and computational fluid design (CFD) modelling. John Thompson also operates a boiler development and training centre.

New PLC improves demineralisation offering

DEMINERALISATION removes dissolved solids (total dissolved solids or TDS) and mineral ions from feed water and process streams. Demineralisation (demin) plants typically use ion exchange to offer near-total removal of ionic mineral contaminants. Allmech, a South African manufacturer of boilers and supplier of water treatment components, has been testing a new PLC system with in-house developed software to run its ion exchange demin plant, with encouraging results.

Allmech's demineralisation plant.

"A demin plant typically consists of two vessels; one containing cation and the other containing anion exchange resins..."

"We've been testing the system for several months now, and we believe we've built something that can help our customers with their water demineralisation needs," says Lionel Maasdorp, MD at Allmech. "Water purification options depend on customer needs, but all else being equal, demin plants require a lower capital investment than reverse osmosis plants."

Demin plants are used for various industrial and scientific purposes. These could range from laboratory applications and testing, to computer chip manufacturing, lead-acid batteries, cooling systems, high pressure boiler feed, laser cutting, steam irons and steam raising, pharmaceutical manufacturing, cosmetics, aquariums and fire extinguishers. Maasdorp says that Allmech's customers who use demin plants tend to be in the food and beverage industries.

"A demin plant typically consists of two vessels; one containing cation and the other containing anion exchange resins," he says. "Raw water enters first through the cation resin, where mineral contaminants are replaced by hydrogen ions. Then it flows through an anion resin, where mineral contaminants are replaced by hydroxyl ions, which combine with the hydrogen ions to form pure water. A demin plant then needs to be regenerated with hydrochloric acid and sodium hydroxide when necessary."

The disadvantages of this type of system are that the caustic and acid required to regenerate the resin creates a waste product that must be disposed of, and that the system cannot run indefinitely – it needs downtime for regeneration to take place. "With our current setup, we can run the system for eight hours before it needs to regenerate," says Maasdorp. "Changing the volume of the resin you use to give you longer running times and also higher deliverables of clean water. There's also less reject water than with a reverse osmosis plant."

In fact, there's a fair amount of flexibility in the configuration of a demineralisation system to optimally meet various process conditions and purity goals. In designing a system, Maasdorp says consideration should be given to changeability of the feed water, level of purity needed, system footprint, tolerance for ion leakage (in particular sodium and silica), and chemical feed requirements, among other factors.

With the addition of the new PLC, Allmech's demin plant is more easily customisable through the programming of the various inputs. It also offers alarm functionality to flag when water quality isn't up to scratch, which ensures the water is not needlessly dumped through backwashing and alerts the user to potential issues in the system.

Control valves are demand-initiated controllers that allow demin plant units to be extremely efficient," Maasdorp says. "The control valves have five main functions: service, backwash, brine and slow rinse, brine refill and fast rinse. Allmech is the sole agent for Runxin water treatment system valves in the South Africa. We supply a full range of manual and automatic filter and softener valves. The valves are reliable, easily available, user-friendly and cost effective. We have just received a new shipment, so we're well positioned to support our customers with all their demineralisation plant needs."

Autoflame combustion management solutions

STEAM Generation offers a comprehensive range of industrial boilers and burners that add value, dependability, effectiveness, and safety to a wide range of industrial processes and applications.

It sources its offers from a group of world-renowned and established manufacturers who have been chosen for their quality, dependability, and cost. By doing so, clients are satisfied and that disruptions to their critical processes are kept to a minimum.

"This results in far less pollution than in the past."

Autoflame has a proud history growing from 1968 to become a world leader in boiler monitoring and emissions reduction technology.

With more than 20 000 Autoflame combustion management solutions currently in operation globally, Autoflame combustion management solutions are now specified as standard equipment in the boiler rooms of some of the world's most prestigious organisations.

Autoflame has partnerships with more than 100 technology centres worldwide. It provides local engineering, installation, and support for Autoflame combustion management solutions. These centres have been thoroughly vetted for quality and reliability. They receive regular training to ensure they are up to date with the latest innovations. In addition to developing advanced burner control systems, service and commissioning support is provided. Upgrades on existing plants with retrofit Autoflame combustion management solutions is also undertaken.

Autoflame currently has seven worldwide patents on products designed and manufactured in-house and is the proud holder of The Queen's Award for Enterprise in the categories of Export Achievement (1996), Environment (1997) and Innovation (2007). The company has seen impressive growth and continues to build upon its comprehensive portfolio of Autoflame combustion management solutions.

Autoflame technology producers

The design of Autoflame combustion management solutions was manufactured by expert engineers. As such, there has been a big push for the improvement of technology using innovative ideas. This has led to product enhancements of and a reduction in the overall costs of the purchasing price and maintenance expenses. Furthermore, new incorporated technology moves towards lower emissions. This results in far less pollution than in the past. Steam Generation Africa is an official tech centre and distributor of Autoflame combustion management solutions in 12 African countries excluding South Africa and Namibia, where Autoflame are resellers. Autoflame is the standard offering on the Cochran boiler range in the South African market.

Steam Generation Africa is now in the exclusive position to supply world-class, highly efficient, Low NOx boilers, burners, and combustion control systems. Its also the only company in Africa to claim "Best of Breed" steam generation with a reduced carbon footprint.

Automating processes for business growth

THE use of technology to automate routine, repetitive tasks is transforming just about every industry by helping businesses to perform low-level work faster and more cost effectively.

"Businesses can reap the benefits of automation by improving efficiencies and using automation as a steppingstone to growth," says Ian Dury, Business Support Manager Kyocera Document Solutions South Africa.

Automation processes helps to reduce waste, inconsistencies, complexity, and the number of processes in a business. It can also:

1. Support Business Growth

By investing in automation, business leaders give their employees tools to automate previously manual processes. This allows them to achieve more in the same amount of time or less and supports productivity and ultimately business growth.

2. Increase sophistication and innovation

To keep a step ahead of competitors, organisations need to constantly look for ways to expand and improve their offerings. While this is positive, the reality is that adding something new to an existing business model can result in more complex internal systems and processes. Automation can decrease complexities by taking manual routine processes off employees' desks and giving them more time to focus on more difficult tasks. This can also lead to greater innovation, as employees spend more time focusing on high-value tasks such as strategy and analysis.

3. Automation improves accuracy

Automation greatly reduces the risk of human error — after all, a machine's concentration or energy never wavers. There are many tasks, such as data transference, that can be performed by automated technology at much greater speeds and accuracy than humans.

4. Automation prepares for the future

Automation is also key in preparing the business for the future. At the beginning of the automation process, companies are likely to start by automating some of the simpler and more repetitive tasks. This experience makes any future automation attempts far easier as the necessary infrastructure, workflows, and cultural changes have already been set up.

"We have seen that automation can have significant benefits if the systems are deployed mindfully and strategically. Successful implementation is particularly important if the organisation is unfamiliar with automated processes, as taking on too much at once can be disruptive, says Dury.

He says that it is best to automate one process or system at a time, and then use this experience as a case study for the rest of the business. Identify business processes with high automation potential to determine where it can be applied most profitably.

"To get the full worth of automation efforts, be sure to consider how entire processes could be transformed by automation, rather than isolating individual activities within those processes. Ensure employees are clear on the strategic objectives behind the business' automation efforts, so that they understand the value of the automated process and can ensure the goals are achieved," he concludes.

Automation on its own is not a silver bullet. However, when implemented strategically and thoughtfully, it has the potential to reduce inefficiencies and costs and support growth, encourage innovation and prepare the business for the future.

Methylene chloride an ‘unreasonable’ risk to some workers, EPA says

METHYLENE chloride poses “unreasonable risk” to workers under certain conditions, and the United States Environment Protection Agency will take action “to identify and apply measures that will manage these risks,” according to a final revised risk determination published Nov. 10.

In a Federal Register notice, EPA states that, as a whole chemical substance, methylene chloride – which NIOSH says has contributed to the deaths of multiple workers performing bathtub refinishing – presents unreasonable risk of injury to human health under 52 of the 53 conditions of use studied, including:

- Plastic and rubber manufacturing
- Electrical equipment, appliance and component manufacturing
- Oil and gas drilling, extraction, and support activities
- Adhesive/caulk removal
- Cold pipe insulation
- Aerosol and non-aerosol degreasing and cleaning

Methylene chloride is among the first 10 chemicals under evaluation for potential health and environmental risks under the US’s Frank R. Lautenberg Chemical Safety for the 21st Century Act. The risk determination, which follows a draft revised final risk evaluation published in the July 5 Federal Register, is consistent with EPA’s June 2021 announcement to change certain aspects of the process under the Lautenberg Act with the objective of ensuring “the public is protected from unreasonable risks from chemicals in a way that is supported by science and the law.”

From zero to 90 accounts in just 7 months!

G.FOX’s strategy of continuous improvement and growth, led to the identification of the potential in the Garden Route’s town of George and the subsequent establishment of a G.Fox branch in March 2022. This foresight has paid off as the new branch has gone from zero to securing 90 accounts in just ten months of trading its ranges of work ware, safety equipment, cleaning chemicals, paper products and industrial consumable supplies.

Operating out of high visibility premises on the Knysna Road, G.Fox George Branch is already straining at the seams offering their extensive range of products to a territory stretching from Plettenburg Bay to Swellendam and inland to Oudtshoorn. Complimenting branch manager Natasha Beets on her achievement, regional manager Lee-Ann Scanlen said that the new branch not only caters for account customers but also has a cash and carry counter for the public to sample the quality of the G Fox offering. “We haven’t captured this important Garden Route territory by price cutting but through hard work, identifying our target markets and revealing G.Fox’s outstanding quality and commitment to customer service” she explained.

G.Fox, George premises.

There is something of a construction boom in George and the surroundings and contractors need safety equipment they can rely on such as work ware, safety boots and gloves – an area of specialisation at G.Fox.

Other markets served include agriculture, food processing, automotive and the hospitality trade where the natural beauty of the Garden Rout attracts many tourists.

“We’ve stocked the George branch with an appropriate range of our products and can accommodate special orders via our Cape Town branch at short turnaround times. We have also sourced an excellent local seamstress that can embroider company logos on work ware to order, in a matter of days and whose quality compliments that of our own products” she said.

The George branch is the latest addition to the G.Fox network – a company that was established in 1962 and today comprises 12 branches throughout the Republic. The company manufactures all its work ware at a state-of-the-art facility in Eswatini (Swaziland) where it employs over 2000 seamstresses and produces over 25,000 garments per day.

“To celebrate the George branch’s first year of operation, customers and clients will be treated to special promotions across our wide range of products starting in January!” exclaimed Lee-Ann.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Maersk, IBM pull plug on blockchain joint venture TradeLens

**By Edwin Lopez
Managing Editor,
Supply Chain Dive.**

MAERSK and IBM caused a stir when they revealed TradeLens as a blockchain solution for global trade in 2018, signing up dozens of partners. Not long after its launch, others announced similar initiatives.

At the time, representatives from Maersk and IBM told Supply Chain Dive their goal was to create a tool that could start a "digital revolution" for the supply chain. TradeLens sought to create digital versions of documents, like bills of lading, that can speed transactions and, in doing so, grow global trade.

It was an ambitious mission not just for the technology, but also because, as one IBM executive said in an August 2018 statement, success "rests on a single factor — bringing the entire ecosystem together around a common approach that benefits all participants equally."

A tractor trailer has its shipping container lifted for storage and examination at the docks March 22, 2004 in Jersey City, New Jersey. At its core, TradeLens was designed to facilitate digital supply chain transactions like customs inspections, and speed global trade. Credit: Stephen Chernin via Getty Images.

TradeLens chased success for years, working with international institutions to set data standards, filing for clearance with regulators, and seeking to sign on as many shippers, carriers, data providers and port and customs authorities as possible.

But in the end, it never fulfilled its lofty ambitions.

"TradeLens was founded on the bold vision to make a leap in global supply chain digitization as an open and neutral industry platform," said Hershko. "Unfortunately, while we successfully developed a viable platform, the need for full global industry collaboration has not been achieved."

TradeLens, now, is a casualty borne from lagging adoption in a supply chain ecosystem where private data is plentiful, but often confidential or difficult to parse, integrate and share. While many other platforms — including private visibility solutions, blockchain-enabled tools and public-sector portals — have been proposed over the years, few have reached mass adoption.

Lars Jensen, CEO and partner at Vespucci Maritime, commented on the trend on LinkedIn, noting that while TradeLens was "born out of the blockchain hype" five years ago, its failure is not an indictment of the technology.

Instead, he said, "it is an indication that it is commercial usage which determines the fate of new technological initiatives and not the sophistication of the technology employed."

Making logistics 4.0 a reality

Liam Connors, Director, digital logistics, BT

THREE key drivers have converged to create a perfect storm for logistics companies. The first of these is disruptions to the supply chain. Quick delivery times became the norm despite the ongoing driver shortages, strikes, increased difficulties crossing borders and wildly fluctuating exchange rates.

The second is the constant imperative to reduce costs. It is not just driver shortages that tested logistic companies' business continuity; so too have the soaring fuel shortages, especially since the onset of the war in Ukraine. Furthermore, along with inflation, shipping and freight costs have also risen.

The third key factor is that of the growing power of big data itself.

By 2025, the creation of data globally is projected to grow to more than 180 zettabytes.

While each of these key points can be addressed with analytics capabilities, there are also five critical roadblocks to digital transformation in logistics that need to be addressed as part of realising logistics 4.0. These include:

#1 The need for connectivity in every location
#2 Managing data protection
#3 IoT and supply chain security concerns
#4 Disruption and cost of upgrading legacy systems
#5 Support for progressing beyond the pilot stage

Future-focused solutions

There are new solutions and maturing technologies that enable innovation. 5G, for example, offers a leap forward in bandwidth and reliability that enables the use of large volumes of data, coming from IoT.

Enabling digital transformation and making logistics 4.0 a reality and benefitting from all it has to offer is well within reach, but it is not a simple endeavour.

Reach stackers and empty container handlers

A Kalmar 45t reach stacker from Shumani.

ALREADY well known in the warehousing market Shumani Industrial Equipment is expanding into the supply of port-handling equipment such as reach stackers and empty container handlers. These are available on either a long, short term or outright purchase basis.

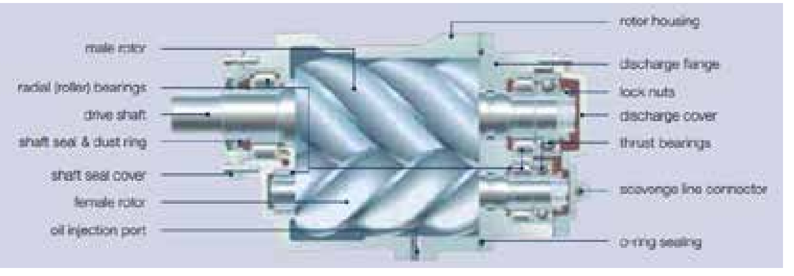
Having supplied this equipment to Transnet Freight Rail and Transnet Port Operations on a short-term rental basis, Shumani took the decision to supply customers directly, especially as it owned the assets itself. "We realised there was a gap in the market and therefore we took the opportunity," comments MD Victor Nemukula.

What differentiates Shumani in this materials handling segment is that it offers full maintenance lease agreements. It includes any maintenance support required, based on a two-hour response time on a 24/7 basis and with a 98% uptime. In addition to maintenance, Shumani also provides equipment tracking.

"We are the only entrepreneurial equipment provider in the market. We are also the only 51% black owned and managed equipment provider in this space," notes Nemukula.

Shumani is an appointed dealer for all Goscor Group companies that import industrial equipment for the South African market. Brands offers include Bendi, Crown, Kalmar, and Doosan in the forklift market. Construction equipment brands include Bobcat, Sany, HPower, Weima, Luthian, Ozen and Sullair and in the cleaning equipment market segment, Shumani offers Tennant, Genie, Sentinel and HighPoint.

What is an air end and who is it for?



Tamrotor air end structure.

VARIOUS names are used for the oil injected screw air ends. As the saying goes, a dear child has many names. Most commonly used names are air end, screw air end, screw block, block, oil lubricated air end, and rotary screw. Air end is not called "the heart of it all" for nothing. Where there are industrial operations, there are usually compressed air needs. Air ends are needed by compressor and compressed air system manufacturers. There are several different kinds of technologies to produce pressured air, for example reciprocating (=piston), membrane, vane, z-screw, liquid-ring, and turbo–compressors.

Air end is the part, where the actual compression takes place. Inside the air end are female and male rotors that rotate in opposite directions. They physically squeeze the air by an external force. Oil injected screw air end's benefit is its very simple construction, where the air is compressed between two meshing rotors and against the frame with a thin oil film in between. The oil works as a coolant, sealant, and lubricant.

Screw air ends are designed to produce continuous, steady airflow. By this ultimate design criterion, screw air ends are great for applications where consistent airflow is a must, for example in industrial plants and operations. In addition to the continuous operation of the screw air ends, they are reliable and durable even in harsh conditions. For example, mining and construction rigs, as well as firefighting equipment manufacturers, choose screw air ends due to their reliability and durability. With oil injected screw, you can economically compress some 15 bar(g) max. and in two stage 45 bar(g) max. If higher pressures are required, multi-stage recips (pistons) are needed. For breathing air for divers and fire fighter tanks, 200 – 350 bar(g) can only be compressed by using multi-stage piston compressors, for example.

Information supplied by Ingersol Rand / Tamrotor. https://www.ingersollrand.com/en-za/

New Mattei RVR series compressors

MATTEI Group, the Italy-based rotary vane compressor company, is proud to announce the launch of its new RVR Series compressor range, which provides significant improvements in operation and performance over other compressor technologies installed on rolling stock vehicles today.

The product has been designed specifically to address the complete on-board requirements of rail and road by developing a range of compressors which is based on Mattei's well-proven and established industrial rotary vane range.

The RVR Series is made up of 5 frame models (RVR01 through to RVR05), each model having a range of flow displacements designed to meet the growing need for small Street-car vehicles right up to the Heavy Class 1 type locomotives, satisfying every permutation of rail/road vehicle in operation today. Should the demand for compressed air be even greater, Mattei has the capability to scale up the design to meet any flow requirements.

The new design utilises the existing frame profile and incorporates rugged and robust componentry suited for use in the most arduous of operating environments: brass and plastic components have been replaced with steel and stainless steel parts. As the RVR Series is a true global solution for on-board applications, it has been designed to meet the temperature ranges and requirements of both the Northern & Southern hemispheres, while not forgetting exotic temperatures closer the equator. (Standard -15/+45deg.C, Winter Pack -40/+45deg.C and Extreme Pack -55/+60deg.C)

This will provide the user with a "One Stop Shop" for any size of compressor, matched to meet specific on-board compressed air requirements, while offering the ability to meet the further needs of BS ISO 4975:2022 Air Quality Standards. Mattei can offer the RVR Series compressor with any configuration of air treatment, whether free standing or built into an Air Generation & Treatment Unit (AGTU) cassette/raft, matching the precise on-board space envelope requirements of the vehicle. Together with our IRIS certification for our dedicated Rail activity, the strength of our products allow Mattei Group to compete on a level playing field with our peers in both rail and transit projects/applications.

For more information, contact Rotorvane, website: www.rotorvane.co.za, Tel: 011 472 7279

Doosan launches new two ton mini-excavator

DOOSAN has extended the company's new generation mini-excavator family with the launch of the two tonne class DX20Z-7 model. Providing a unique combination of high performance and compactness, the new DX20Z-7 is an ideal solution for confined space and indoor job sites, offering a zero tail swing design and a detachable canopy for low height entrance. The DX20Z-7 ensures increased productivity, excellent operator comfort in an easily accessed operator station and maximum durability and serviceability.

Increased Productivity

The optimised hydraulic system in the DX20Z-7 mini-excavator makes the best possible use of the engine power available from the Yanmar 3TNV70 3-cylinder Stage V diesel engine providing an output of 10.3 kW (13.8 HP) at 2 200 r/min. This results in fast cycle times combined with smooth control of breakout forces, which include a digging force over the bucket (ISO) of 1.55 tons.

In its standard configuration, the DX20Z-7 has an operating weight of 1995kg. With the optional 1.1m long arm, the maximum digging depth of the DX20Z-7 is 2 345mm, the maximum dump height is 2 750mm and the maximum reach at ground level is 3 975mm. This working range provides maximum performance and versatility in operating a wide range of attachments.

The high lifting capacity and superior dumping height offered by the DX20Z-7 ensure that loading trucks is an easy process, while the reach at ground level reduces the need to keep repositioning when digging.

When at its fully retracted width of 950mm, the retractable undercarriage on the DX20Z-7 allows the machine to go through narrow spaces. When fully expanded to a width of 1 360mm, it provides optimum stability for the excavator, especially when working over the side. Expansion and retraction are simple and easy via a switch on the control panel.

High Comfort Working Experience

The DX20Z-7 is built around the operator and provides optimal ergonomics. There is ample space for the feet with a flat floor for easy cleaning, ergonomic pedals and easy access to all controls. Visibility to the front is optimized by the high luminescent LED lamp on the boom.

The use of highly durable materials ensures that the Doosan DX20Z-7 model offers hard-wearing and robust performance. All components and design features are tested under extreme conditions and the heavy steel gauge tailgate ensures extra durability and peace of mind while working. The cylinder guards and battery cover provide extra protection.

The tailgate can be quickly opened to provide immediate access to conveniently located components such as easily cleaned coolers and other daily maintenance and service points, reducing downtime to a minimum.

For more on Doosan construction equipment, please visit the website:www.doosan.co.za

Rand-Air's Welkom team achieve zero accidents over a 9-year service period!

FLTR: Team Welkom in the Free State Neil Bezuidenhout, Theunis Badenhorst, Barnard Swarts, Moluoane Kheta & Mathibelle Ramatisa proudly display their certificates awarded to them by Craig Swart (far left).

NEIL Bezuidenhout and his accomplished team, Barnard (Bennie) Swartz, Mathibelle Ramatisa, Moluoane Kheta and Theunis Badenhorst, have recorded nine years of accident-free service at a gold mine in the Free State.

Rand-Air entered into a long-term rental contract with the gold mine in 2012. Millwrights Bennie and Theunis and operators Mathibelle and Moluoane and who have all been based at Rand-Air's Welkom Depot for over ten years, were joined by Neil eight years ago when he was appointed as Service Supervisor. The team is responsible for the service, maintenance and repair of twenty-two GA 75 and GA 160 rental electric air compressors at the mine.

"All machines require servicing to ensure reliable performance and prolonged uptime but even the best machines break down from time to time..."

The GA 75s and GA 160s remain permanently underground and are used to power pneumatic rock drills. The longest operating rental compressor has not seen the surface in ten years and the latest machine was installed by Rand-Air in 2019. Neil explains that these machines are an integral part of the mine process and are used mainly for projects such as life-of-mine extensions.

The GA 315 compressors are stationed above ground where Neil and his team work hand-in-hand with other contractors, assisting them with external projects, supplying air for building crushers, drilling holes for belt construction, etc.

This safety milestone is certainly no small feat and can be attributed to a dedicated, committed and highly-trained team who is always ready to service and repair hire air compressors, working under extreme pressure in rigorous underground conditions, while paying close attention to safety. It takes a considerable length of time to reach the air compressors which are stationed between 1 700 and 2 000m underground. So, in addition to carrying a 1.5kg rescue pack and a 15kg tool bag, each team member also takes enough food, water and energy drinks to last for an entire shift.

Team Welkom is also responsible for servicing rental air compressors on three other Free State gold mines, a long-term rental diesel machine used for the mining of gas as well as machines used in agricultural processing applications in Kroonstad. "All machines require servicing to ensure reliable performance and prolonged uptime but even the best machines break down from time to time," says Neil. "This is when service plays a key role and it is my firm belief that we retain the business because of the team's consistently excellent service delivery which contributes to the mine's sustainability."

On 27 September 2022 Rand-Air awarded Neil, Theunis, Bennie, Moluoane and Mathibelle a certificate in appreciation and acknowledgement of this deserving team's outstanding safety record.

SmartLink 2.0 and SmartLink App places real-time information at air users' fingertips

ATLAS Copco has upgraded of its SmartLink remote monitoring system with the release of SmartLink 2.0 as well as the development of the new SmartLink mobile App, allowing customers to optimise their compressed air installation's operational performance by having complete, easily actionable IoT-driven insights at their fingertips. The proven SmartLink all-in connectivity platform is a web portal that tracks all the vital signs of Atlas Copco air compressors, self-diagnoses the machines and uploads the data automatically to servers in the cloud. Add to this the new SmartLink App and users now have everything they need to keep a close eye on their compressed air equipment with all the relevant information available to them on smart mobile devices anywhere and at any time.

Max Larue, Business Line Manager at Compressor Technique Service Division, explains the difference between the SmartLink portal and the SmartLink App. "The web portal essentially provides access to all features and benefits, whereas the App is focused on getting key information right into end-users' hands."

"SmartLink 2.0 provides customised reports that uncover potential energy savings as well as potential problems and makes recommendations. The program prompts timeous action, reducing the risk of catastrophic failures, improving the overall health of the compressed air system and ultimately, increasing machine and plant uptime," adds Larue recommendations on how to improve compressor efficiency can assist air users in realising potential savings of up to 30%.

Larue confirms that any Atlas Copco machine can be added by serial number through the SmartLink App. He also explains that machines don't have to be connected to access all available information. He does recommend however that in order to get the most out of SmartLink, the air compressors should be connected to the SmartLink cloud. Larue adds that downloading and using the App is easy and customer-friendly. "Registration to use the SmartLink App is free and time to set up the dashboard is the only investment a customer will need to make."

"The combination of our fully integrated, cutting-edge SmartLink portal and mobile App conveniently provides air users with invaluable insights into their compressed air system's performance from actionable dashboards. These smart value-added services assist our customers in maximising the performance of their air compressors, subsequently boosting productivity and production, and achieving lowest total cost of compressed air system ownership for ultimate business sustainability," concludes Larue

For more information, visit: www.atlascopco.com/en-za

Advertorial

Grinding Techniques – the fabricator's choice when it comes to aluminium

SOME aluminium-compounds were used by man from the earliest of times. Primitive man-made pottery from clays containing hydrated aluminium silicate and aluminium salts used by the Egyptians in the preparation of dyes and medicines are just some examples.

Today aluminium and its alloys are used in the fabrication of various items ranging from pressurised vessels, automotive components right to domestic use of foil for cooking and baking purposes. As wonderful as this sounds aluminium is not the easiest metal to cut, grind or weld. aluminium clogs easily and has a very low melting point, therefore very sensitive to heat input and prone to cracking in the heat affected zone if impurities are present. For this reason, correct welding procedures must be followed.

Identifying and using the correct abrasive product, whether it be for cutting, grinding, or blending, is core to the successful completion of any job. Besides the safety risk involved when using incorrect products and the potential harm this may cause, the effect on production lead times and final finish of parts or items being manufactured should also be considered.

Metal contamination is a major cause of component and weld failure. and occur either through – direct contamination when using the incorrect abrasive products, cross contamination when using the same abrasives on multiple materials, or general contamination due to improper processing of materials in the work environment.

Direct contamination occurs when conventional cutting and grinding discs for steel are used for applications on Aluminium. Abrasive cutting and grinding discs, as well as coated abrasive flap discs, are designed and manufactured with various components that make up the final product. Some of these components like fibre reinforcing, are added to provide structure and support to the final product for strength and support to avoid breakage and damages when in use. Together with these components, other additives are also added into the mix to provide better results, usually by increasing the oxidative and corrosive effect in mild or carbon steels. However, such oxidative and corrosive compounds (iron, sulphur, and chlorine) can cause major issues down the production line when used on aluminium applications. If the work piece is not thoroughly cleaned of these compounds, should it become contaminated, subsequent welding processes will also be influenced and might cause welds not penetrating well, or porosity that will lead to weak welds that can cause catastrophic failures if not resolved

To avoid cross contamination, care should be taken to avoid using abrasive products on mild or carbon steel, and then on aluminium. Even though abrasive products are manufactured to be free of contaminants, unwanted iron, sulphur, and chlorine compounds will be introduced when used on mild or carbon steel, which will be transferred to the aluminium upon contact.

General workspace contamination can also contribute to contamination of various materials. Ideally, a floor layout should be planned in such a way that different material types are processed at opposite ends of a factory. This will ensure (to an extent) that swarf created during cutting, blending, or grinding operations will not come in contact with the aluminium metals in the vicinity, thereby eliminating the possibility of contaminating materials.

Grinding Techniques locally manufactures specialised abrasive products free of contaminants which are perfectly suited to applications on aluminium and stainless steels, like the Superflex Non-Ferrous range specifically manufactured for use on aluminium.

From cutting, grinding to blending and polishing a Superflex product suitable for an application is easily selected. The Superflex Non-Ferrous Cutting and Grinding range provide easy clean cuts and stock removal free from contamination and without the concern of discs clogging. Premium Non-Ferrous Ceramic flap discs will provide the ultimate surface finish whilst keeping heat input to a minimum to avoid discolouring.

Grinding Techniques provides a solution driven service through its national network of branches, with a technical sales force geared to provide the best possible product solutions to optimize production.

For more information, contact our Business Development Team for a tailor-made solution +27 11 271 6400, info@grindtech.com, www.grindtech.com

WHAT YOU NEED TO BUILD YOUR CAREER IN NON-DESTRUCTIVE TESTING

1

You need to be
ANALYTICAL
INTELLIGENT
HIGH LEVEL ATTENTION TO DETAIL

If you're one of the few people who're good at science & math, and have an enquiring mind, becoming an NDT professional will give you the chance of making a valuable future.

2

Consider yourself
INQUISITIVE
PERSISTENT
INTUITIVE

Being persistent and inquisitive, with a problem-solving attitude, studying SAIW's NDT courses will be your most flexible start to a better future.

3

You must be
AMBITIOUS
MOTIVATED
KEEN

If you're ambitious & motivated, contact the SAIW or visit www.saiw.co.za OR Call 011-298 2100 to enquire about our NDT courses.

THEN

You will be able to

4

EARN WHILE YOU LEARN

Studying NDT through SAIW means you'll be able to move through all the NDT levels at your own pace and as you can afford to. You'll also be able to earn while you learn, continuing to study as it suits you.

SAIW provides training programmes, consultancy and industry support services to the metal industries in South Africa. The SAIW is active throughout Southern Africa, the Indian Ocean Islands and the Middle East. SAIW qualifications & certifications are regarded as the industry standard in South Africa and enjoy international recognition.

Non Destructive Testing (NDT) is the testing of material or manufactured components without destroying their usefulness. Applying scientific techniques such as electromagnetic induction, magnetism, capillary action, mechanical vibration or electromagnetic waves, and other testing techniques, to identify potential flaws or failures within supplied samples.

Call 011-298 2100 or visit www.saiw.co.za

SAIW
Southern African Institute of Welding

Five steps to a successful internship

By: Anne-Marie Pretorius, managing director at Bizmod Consulting.

INTERNSHIPS are a not only a way of providing real-life exposure for scholars and graduates looking to enter the job market, but also a viable avenue to unearth bright minds, new skills and future talent.

Internships play an important role in the shaping of a young career allowing young people to gain insights into a variety of working environments. In a post-Covid workplace where employees continue to work primarily from home, or in a hybrid arrangement, the challenge for both interns and employers alike is to navigate these relationships from behind a screen and keyboard - something rather unfamiliar.

Here are five considerations when undertaking an internship:

1. Broaden your expectations – When you arrive at a new job, at any level, it's unlikely that you'll immediately find deep satisfaction and love for what you do. When starting out in your career path, you'll be drawn into many activities that you don't particularly enjoy or derive much pleasure from. An internship is something that you'll have to persist at to eventually gain mastery in your career and gain ultimate satisfaction.

2. Insist on a full induction – In some instances, interns are added to a permanent team when there is an oversupply of work and under-supply of resources. The result is an 'all-hands-on-deck' approach whereby formal inductions and on-boarding might be overlooked in favour of getting the job done. However, it is vital for any new entrant to get a full sense of a business, its background, vision and reason for being, prior (or alongside) to rolling up their sleeves. Gaining a view on the business you've joined is really important to understand where your work fits in and how you can make a difference in the business.

3. Leave the role better off than when you joined – The best interns are those who arrive with an immediate willingness to learn and a high level of energy and enthusiasm. Displaying a sense of professionalism is key, but also the desire to leave whomever and whatever they work with and on, better off.

4. Be bold enough to ask – Although it might be nerve-racking, interns must demonstrate the boldness to ask if they're not sure of the task or situation. Many interns might be scared to ask questions and ultimately, it only leads to damage to both them and the task or programme they might be working on.

5. Cherish your mentor – A mentorship or internship programme is only successful when mentors are committed to the process and bring passion to the responsibility. It's important to understand that internships take an immense amount of time and dedication from team members who are tasked with teaching and guiding their intern.

Selection is really key for employers when it comes to a successful internship. Selecting an intern candidate that is going to naturally fit in from the beginning is a game changer. Whether it's from a personality, culture or approach perspective, it makes the whole process far easier for everybody, the intern included.

Reprinted from: https://www.bizcommunity.com/Article/196/500/234225.html#

Tips for successful small business employee training

By Mike Kappel, founder and CEO of Patriot Software, LLC

WHEN employees have all the training, skills, and knowledge they need, your business will run more smoothly. Employees can perform their jobs with greater competency. They can better serve your customers. And, there will hopefully be fewer mistakes and accidents at your business.

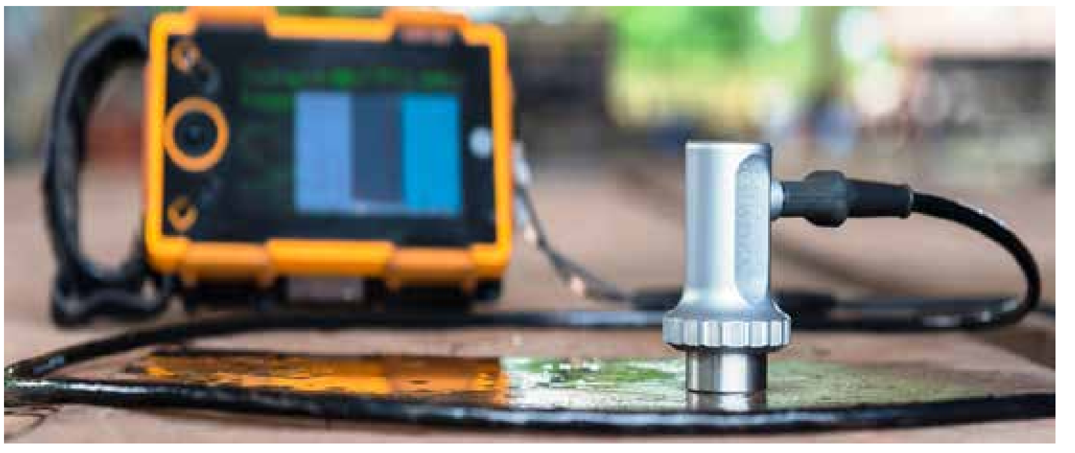
To successfully train your employees, you need an efficient training programme.

1. Create A Plan
2. Host Regular Training Sessions
3. Use Employees As Trainers
4. Cross Train Workers
5. Set Training Goals

Conducting performance reviews can help you set goals and track achievement. Ask employees how they're doing, what they're struggling with, and what they'd like to learn. You can find gaps in their skills and knowledge. You might also ask follow-up questions about their training. See if they understand what was taught and if they thought it was useful. You can use the information you get to determine if employees are meeting training goals and to set new goals. You can also adjust your training program based on how useful it has been to employees.

Advertorial

SAIW champions most successful NDT developmental programme ever undertaken in SA



THE SAIW's Non-Destructive Testing (NDT) department is soaring ahead in 2023 thanks to a record 12-month performance, and new projects underway in collaboration with a range of strategic entities such as Sasol and Eskom.

One of the most exciting projects has seen the SAIW join forces with TUV-SUD South Africa Pty Ltd in a dedicated TUV-SUD Skills Development Initiative that has resulted in extensive training of NDT personnel since 2021.

SAIW NDT Manager **Mark Digby** reports; "At least 15 ex VUT students have been assisted by TUV-SUD to achieve a Level 3 Qualification / Certification with at least one method of specialisation.

"This has proven to be one of the most successful NDT Level 3 developmental strategies ever undertaken by a South African NDT Service provider with the program being extended into 2023 and anticipated to run until at least 2025."

Sasol collaboration

Further evidence of the success of the NDT services offered by the SAIW includes the highly successful SASOL Learnership Programme (Groups A to H) that was established in 2007 and has seen at least 160 school leavers trained in four methods up to Level 2. These students have subsequently entered the lucrative inspection program as highly competent Statutory Competent persons or Inspectors of Pressurised Equipment.

The SAIW has also actively participated in the Department of Employment and Labour established SAQCC Board and supports the activities undertaken by this professional body for NDT in South Africa.

Digby explains; "One of the work streams of the SAQCC-NDT Board is to include tertiary qualified students within the regulatory framework of NDT personnel and the transition examinations established during 2017 have proven to be a very useful means to include these students within the industry requirements".

Legacy counts

Overall, the SAIW NDT division's level of success is unsurprising considering its depth of experience and historic performance in the South African economy. It has provided NDT Training since 1980 with active participation during the construction of PetroSA, Koeberg, SASOL and other power stations across SA.

Its highly experienced and competent lecturing personnel also have more than 100 years of combined experience in the Power Generation (Conventional, Nuclear & Renewable); Petrochemical; Mining; Transport; Sugar & Pulp and Foundries industries.

Another key differentiator of the SAIW NDT offering in the market is the fact that it's home to the most extensive training (and examination) sample library of any training school (and Personnel Certification Body – SAIW Certification) in South Africa. Its facilities are also substantial, with ten classrooms and five dedicated testing laboratories, that are home to equipment, calibration, and reference samples that can facilitate NDT classes of up to a maximum of 10 (UT; RT; ECT) to 15 (VT; PT: MT) students per class.

"Another core strength of SAIW NDT's division is its ability to provide a flexible customised service to its clients..."

Industry-centric

Another core strength of SAIW NDT's division is its ability to provide a flexible customised service to its clients, where training and examination can be provided at a company's premises (dependent on suitable class facilities). Examinations can also be arranged '24/7', 365 days a year, dependent on demand and location

Digby says this industry-centric approach stems from the fact that the SAIW NDT is by the industry and for the industry. "The SAIW is owned by its members who are leading industry representatives and our courses and content - while compliant with international norms and standards- are based on local industry needs and requirements."

This ensures the SAIW facility is fully compliant with international standards via SANAS accreditation, while the SAIW is an ISO 9712 Approved Training Body provider in six basic methods up to Level 3 and SAIW Certification is ISO/IEC 17024 SANAS Accredited Personnel Certification Body under the scope of ISO 9712.

Looking ahead Digby says some of the key NDT training innovations in 2023 include digital formative and summative assessments during classroom training as well as online theoretical exams (General & Specific) as part of the SAIW Certification qualification process.

To find out more about these initiatives and the SAIW's NDT services please call +27 (011 298 2100 or email mark.digby@saiw.co.za

Smart, cheap 'Joey' robot could soon help clear blockages in critical pipes underground

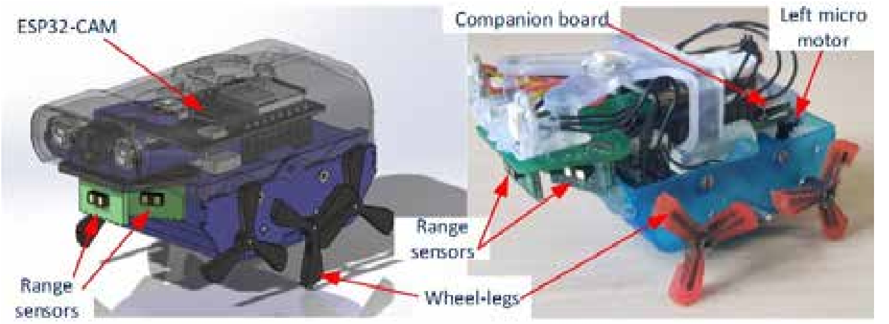
By Frontiers

BENEATH our streets lies a maze of pipes, conduits for water, sewage, and gas. Regular inspection of these pipes for leaks or repair normally requires them to be dug up. The latter is not only onerous and expensive—with an estimated annual cost of £5.5 bn in the UK alone—but causes disruption to traffic as well as a nuisance to people living nearby, not to mention damage to the environment.

Now imagine a robot that can find its way through the narrowest of pipe networks and relay images of damage or obstructions to human operators. This isn›t a pipe dream anymore, shows a new study in Frontiers in Robotics and AI by a team of researchers from the University of Leeds.

"Here we present Joey—a new miniature robot—and show that Joeys can explore real pipe networks completely on their own, without even needing a camera to navigate," said Dr. Netta Cohen, a professor at the University of Leeds and the final author on the study.

Joey is the first to be able to navigate all by itself through mazes of pipes as narrow as 7.5 cm across. Weighing just 70 g, it's small enough to fit in the palm of your hand.



Layout of the autonomous Joey mini-robot. Credit: TL Nguyen, A Blight, A Pickering, A Barber, GH Jackson-Mills, JH Boyle, R Richardson, M Dogar, N Cohen.

Pipebots project

The present work forms part of the "Pipebots" project of the universities of Sheffield, Bristol, Birmingham, and Leeds, in collaboration with UK utility companies and other international academic and industrial partners.

First author Dr. Thanh Luan Nguyen, a postdoctoral scientist at the University of Leeds who developed Joey's control algorithms (or "brain"), said, "Underground water and sewer networks are some of the least hospitable environments, not only for humans, but also for robots. Sat Nav is not accessible underground. And Joeys are tiny, so have to function with very simple motors, sensors, and computers that take little space, while the small batteries must be able to operate for long enough."

Joey moves on 3D-printed "wheel-legs" that roll through straight sections and walk over small obstacles. It is equipped with a range of energy-efficient sensors that measure its distance to walls, junctions, and corners, navigational tools, a microphone, and a camera and spotlights to film faults in the pipe network and save the images. The prototype cost only £300 pounds to produce.

Mud and slippery slopes

The team showed that Joey is able to find its way, without any instructions from human operators, through an experimental network of pipes including a T-junction, a left and right corner, a dead end, an obstacle, and three straight sections. On average, Joey managed to explore about one meter of pipe network in just over 45 seconds.

To make life more difficult for the robot, the researchers verified that it could easily move up and down inclined pipes with realistic slopes. And to test Joey's ability to navigate through muddy or slippery tubes, they also added sand and gooey gel (actually dishwashing liquid) to the pipes—again with success.

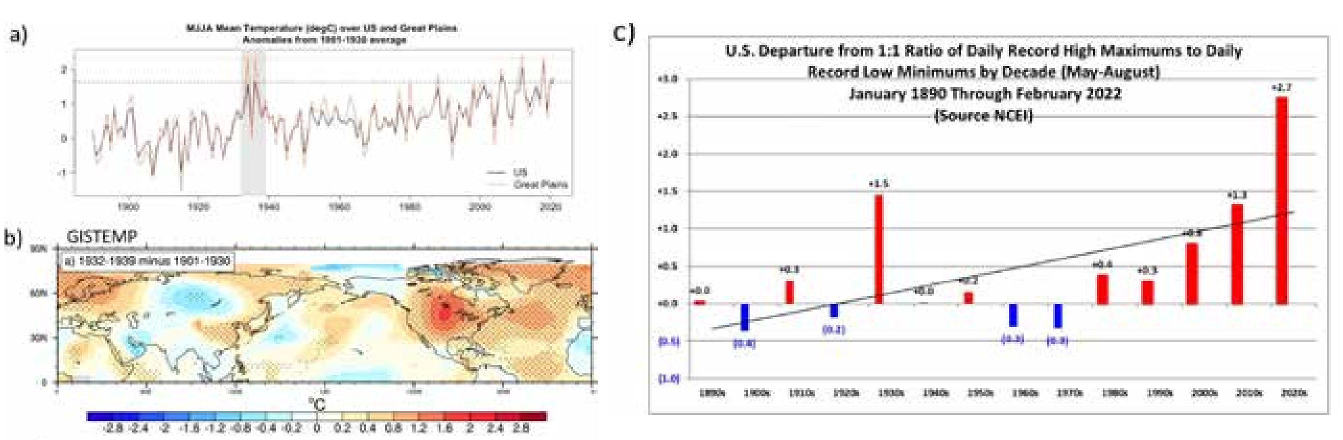
Importantly, the sensors are enough to allow Joey to navigate without the need to turn on the camera or use power-hungry computer vision. This saves energy and extends Joey's current battery life. Whenever the battery runs low, Joey will return to its point of origin, to "feed" on power.

Currently, Joeys have one weakness: they can't right themselves if they inadvertently turn on their backs, like upside-down tortoises. The authors suggest that the next prototype will be able to overcome this challenge. Future generations of Joey should also be waterproof, to operate underwater in pipes entirely filled with liquid.

Joey's future is collaborative

The Pipebots scientists aim to develop a swarm of Joeys that communicate and work together, based off a larger "mother" robot named Kanga. Kanga, currently under development and testing by some of the same authors at Leeds School of Computing, will be equipped with more sophisticated sensors and repair tools such as robot arms, and carry multiple Joeys.

1930s Dust Bowl led to extreme heat around the Northern Hemisphere



The warm 1930s and heat extremes. (a) Season average MJJA mean surface air temperature anomalies (°C) relative to 1901–1930 over the continental U.S. (black line) and the Great Plains (red line) using the BEST observations. Grey shading denotes the Dust Bowl years between 1932 and 1939, and horizontal lines indicate the maximum MJJA value during that period (occurring in 1936) for both U.S. (dashed black line) and Great Plains (dashed red line); (b) season average MJJA mean surface air temperature anomalies (°C), 1932–39 minus 1901–1930, from GISTEMP; stippling denotes differences significant at the 95% level; (c) decadal averages over the continental U.S. of the ratio of daily record high maximum temperatures to record daily record low minimum temperatures from NCEI, expressed as deviations from the nominal value of 1.0 (the value of the ratio with no change to either record highs or record lows). To obtain the total ratios, add the nominal value of 1.0 to the values plotted so that the total records ratio for the 1930s would be 2.5, with the deviation from 1.0 to 1.5. Credit: Scientific Reports (2022). DOI: 10.1038/s41598-022-22262-5

By David Hosansky, National Center for Atmospheric Research

THE 1930s Dust Bowl, fuelled by over ploughing across the Great Plains and associated with record heat and drought, appears to have affected heat extremes far beyond the United States.

New research finds that the hot, exposed land in the central U.S. during the Dust Bowl drought influenced temperatures across much of North America and as far away as Europe and East Asia. That's because the extreme heating of the Great Plains triggered motions of air around the Northern Hemisphere in ways that suppressed cloud formation in some regions and, in combination with the influence of tropical oceanic conditions, led to record heat thousands of miles away.

"The hot and dry conditions over the Great Plains during the Dust Bowl spread extreme heat to other areas of the Northern Hemisphere," said Gerald Meehl, a scientist with the National Center of Atmospheric Research (NCAR) and lead author of the new study. "If you look at daily record high temperatures, some of these areas are just now breaking the records that were set in the 1930s."

To determine the climatic impact of the Dust Bowl, the research team drew on observed high and low daily temperatures, as well as advanced computer models of the global climate system. They focused on the role of a teleconnection pattern, known as wave-5, that can regulate the meandering of jet streams and link far-flung weather patterns around the Northern Hemisphere during summer.

The study was published in Scientific Reports.

"This is a mechanism that arose in a unique way from human influence—not by burning fossil fuels but from ploughing up the middle third of the U.S.," Meehl said. "It's possible that intense regional droughts in the future could also influence heat extremes in the Northern Hemisphere."

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- Food / Bev / Dairy: Factory Engineering & Production Lines
- Hydraulics & Pneumatics
- Industry Bodies / Institutes
- LPG & LNG Gas: Storage / Processing / Logistics
- Maritime / Harbour Services
- Power Transmission: Drive Technology / Bearings / Motors
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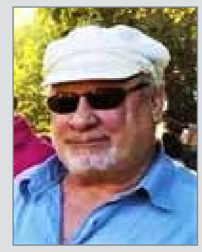
A tale of brilliance and human frailty

OPINION

ON THE CONTRARY

The columnist is a journalist and editor based in Onrusrivier. His awards for journalistic excellence include the Mondi and the Sanlam Awards.



Pieter Schoombee

A Prosperous New Year to you, dear reader! My wish is that 2023 will bring you happiness and good health.

We could look at the year ahead and the ANC's BBBEE and cadre deployment disaster, but instead of ruining the season of goodwill, I'd rather revisit one of the most fascinating business stories I know – the true story of Bob Aldworth, banker, visionary, leader, lover, loser, winner.

Late in life he wrote The Infernal Tower, with Jeremy Gordin and Benjamin Trisk (1996 Johannesburg: Contra Press), and I am indebted to the authors for their record. This is what happened:

Bob Aldworth entered banking at 22, as trainee with Barclays (now FNB). In 1960 he was included in a team that would plan and implement decimalisation. That done, he joined a team reviewing the bank's systems, where he realised computerisation was the future. He set out his ideas in writing and was asked to do a presentation.

Having convinced management, he attended the 1961 American Bankers Conference on Automation. Then information gathering at Barclays UK. Back home, he started implementing.

After a stint in New York, he was made regional general manager in Johannesburg, managing 80% of the bank's profits and reporting directly to the managing director. In 1976 he succeeded him. At 44 Bob Aldworth was the youngest chief executive of a major bank in the land.

By 1982 he was Marketing Man of the Year and Business Times Businessman of the Year. The Sunday Times reported that in those six years Bob Aldworth had increased total assets by 260%, net income and earnings per share by 280%, dividends by 332% and return on shareholders' funds to almost 20%. In 1982 alone, profits had grown by 80%.

He was also having an affair with Sandra van der Merwe, a glamorous marketing consultant and academic at Wits Business School. And married, as was Aldworth. This would change his career and his life: The first week of 1983 saw him leaving the bank he headed – the affair was all over the gossip pages.

He settled in Jeffreys Bay on the Eastern Cape coast and two years later married his second wife, Marie. When Absa was formed in 1991, he returned as senior executive at United Bank, then managing director of Allied Bank and soon executive director of Absa corporate banking.

Bob Aldworth was back. But in 1993 he resigned.

Absa came at him with a vengeance. Details of the criminal charges were complicated as no self-enrichment happened. Then the state withdrew nine charges involving some R8 million. Only one remained, a R414 000 Allied loan to a close corporation of which Aldworth was a member. He was fined R100 000 or two years in prison, plus a suspended sentence of five years.

Bob and Marie returned to Spain, where they had spent much of their time before the trial. Despite ill health, Bob Aldworth lived another thirteen years and died in May 2009.

Personally, I hope those were the happiest years of his life.

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Over a billion young people are potentially at risk of hearing loss from headphones, earbuds, loud music venues

Credit: Pixabay/CC0 Public Domain

By British Medical Journal

MORE than 1 billion teens and young people are potentially at risk of hearing loss because of their use of headphones and earbuds and attendance at loud music venues, concludes a pooled data analysis of the available evidence, published in the open access journal BMJ Global Health.

Governments around the world need to urgently prioritize "safe listening" policies to safeguard aural health, say the researchers.

The World Health Organization (WHO) estimates that over 430 million people worldwide currently have disabling hearing loss. Young people are particularly vulnerable because of their use of personal listening devices (PLDs), such as smartphones, headphones and earbuds, and attendance at loud music venues, amid poor regulatory enforcement.

Previously published research suggests that PLD users often choose volumes as high as 105 dB while average sound levels at entertainment venues range from 104 to 112 dB, exceeding permissible levels (80 dB for adults; 75 dB for children) even if for very short periods of time.

The researchers wanted to gauge the prevalence of unsafe listening practices among teens and young adults to create a global estimate of the numbers who could therefore be at risk of hearing loss, with the aim of informing evidence-based policy to safeguard aural health.

They trawled research databases for relevant studies published in English, French, Spanish and Russian, involving 12-34 year-olds, and reporting on objectively measured device output levels and length of exposure.

A group of 33 studies, corresponding to data from 35 records and 19,046 participants, was included; 17 records focused on PLD use and 18 focused on loud entertainment venues.

The researchers also estimated the global number of people who could be at risk of hearing loss by considering the estimated global population of 12-34 year-olds in 2022 (2.8 billion) and the best estimates of exposure to unsafe listening practices from PLDs or loud entertainment venues derived from the systematic review.

The pooled data analysis indicates that the prevalence of unsafe listening practices from PLD use and attendance at loud entertainment venues is common worldwide—24% and 48%, respectively, among teens and young people.

Based on these figures, the researchers estimate that the global number of teens and young adults who could potentially be at risk of hearing loss as a result ranges from 0.67 to 1.35 billion.

The researchers acknowledge some limitations to their findings, including the varied study design—a particular feature of the studies on entertainment venues—and the absence of standardized methodology.

In addition, their estimates did not account for some potentially influential factors, such as demographic details and recent changes to policy on safe listening in some countries/regions.

Nevertheless, their findings prompt them to conclude, "There is an urgent need for governments, industry, and civil society to prioritize global hearing loss prevention by promoting safe listening practices."

Using mushroom skin as a base for computer chips

By Bob Yirka, Tech Xplore

FUNGAL-grown mycelium skins are introduced as bioderived, degadable and sustainable substrate materials for elektronic sensor skins and batteries. Our findings can help to reduce electronic waste and render the electronics industry more environmentally friendly.

A team of researchers at Johannes Kepler University has found that the skin of a certain kind of mushroom can be used as a biodegradable base for computer chips. In their paper published in the journal Science Advances, the group describes how well it worked and how easily it could be cleanly discarded after the chip was no longer useful.

Most chips used to make electronic devices are set on a base of plastic. And unfortunately, the type of plastic used is not at all recyclable, which means most computer chips wind up in landfills around the world. Prior research has suggested that this leads to 50 million metric tons of electronic waste added to landfills each year.

The base of a chip is called a substrate and it was this part of the chip at which the team in Austria aimed their research efforts. After searching for a viable alternative, they came across Ganoderma lucidum, a type of mushroom that grows on dead hardwood trees. They noted that it grows a skin to cover its mycelium—its root-like part. Prior research has shown the skin protects the mushroom from other fungi and bacteria.

After removing some of the skin from several samples, the researchers found that it was flexible, provided good insulation and was able to withstand high temperatures. They also noted that if kept away from light and moisture, the skin would last a long time. On the other hand, if it was exposed to such conditions intentionally, it would quickly decompose. These are all features that the team thought would make for a very good chip substrate.

The team developed a means for depositing metal electronic circuitry components onto the skin using physical vapour deposition, which was followed up with an ablated laser. Testing of the result showed that the skin worked nearly as well as the traditional plastic substrates and that it could withstand being bent repeatedly—they found no breakage after 2,000 bends. They also found the skin could be used to make battery components. More work is required to ensure that the skin works as hoped in an industrial setting. Also, a clean process for removing the skin from the chips for disposal still needs to be found.

Fungal-grown mycelium skins are introduced as bioderived, degadable and sustainable substrate materials for elektronic sensor skins and batteries. Our findings can help to reduce electronic waste and render the electronics industry more environmentally friendly. Credit: Soft Matter Physics Division, Johannes Kepler University Linz. Images taken by Doris Danninger