

FEATURES:

Control systems + automation
Renewable energy + industrial sustainability
Measurement + instrumentation
Transformers, substations + the grid

09/2025



ELECTRICITY + CONTROL

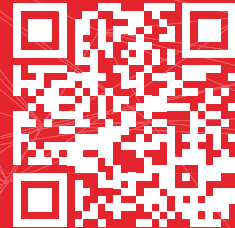
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This 17 000km² state-of-the-art service and repair facility will allow for an expansion of our service and repair capabilities encompassing product repairs, fabrication, light engineering and motor rewinding and repairs.

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SEW
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INNOVATIVE CAPABILITIES



SEW-EURODRIVE's service and repair centre's capabilities includes sandblasting, spray painting, oil recycling, product stripping and load-testing.



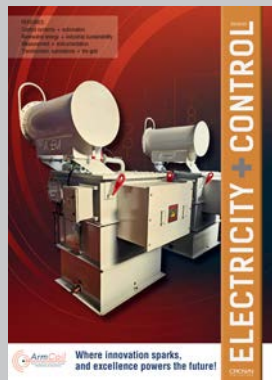
We have introduced the in-house manufacturing of baseplates and guards, drop-in solutions, light engineering and 3D scanning.



Our motor repairs division will allow for motor assembly and rewinding, curing burnout ovens and rotor balancing



DRIVING SERVICE AND REPAIR. DRIVING AFRICA. DRIVING THE WORLD



ArmCoil Afrika took on the challenge to custom-engineer, manufacture, test and deliver two high-spec NEC/R units to order, for a project in Europe.
(Read more on page 3.)

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Sustainable energy and sustainability

How do we respond to the argument pointing to the need for sustainable energy? Of course, there are so many benefits – and options available. And sustainable energy suggests a source that is renewable.

This topic also forces us to think about renewable energy sources, and sources with no carbon emissions. Wherever you look, folk are speaking about net zero. I am not necessarily suggesting they fully understand what they are saying, or what it takes to actually achieve such a goal.

But we live in a world of spin.

One of the issues we cannot ignore is that, very often, the technology used to harness renewable energy is in itself something of a challenge in terms of its 'cleanness'. That, of course, does not mean we should desist – as there are proven challenges associated with burning fossil fuels, without significant investment and care being put into managing the waste products.

All these things – including our lofty goals – are possible.

It is even possible to make a coal-fired power station relatively environmentally friendly; and certainly, we will figure out what to do (for instance) with mountains of photovoltaic panels when they reach their end of useful life, won't we?

But let's focus on two interesting facts. The first is that nuclear energy probably offers the most environmentally friendly option for bulk energy generation – notwithstanding the panic the word 'nuclear' often engenders. However (and not for this comment), very often it is what we are not aware of that is way more dangerous in any case!

New developments in nuclear fuels mean that small generation stations can be accommodated, even within urban and urban industrial areas, providing multiple options to consider with no nasty vapours pouring into the atmosphere.

More importantly, such systems can produce power on a need-to-have basis

throughout night, day, and those quiet, still afternoons...

The second is the startling growth in installed PV systems nationally. This was driven by what almost seemed like a planned strategy to put generation in the hands of private citizens! We watched in shock as the state utility staggered and nearly fell over trying to maintain its operations, didn't we?

In parallel with the proliferation of (shall we call them) roof-top solutions came the installation of some very sizable PV farms around the country, mainly in areas that receive high levels of solar radiation. Again, a significant step in the renewal of the national generation system – and a good one.

This was not without challenges, of course, and we are now beginning to focus on resolving the bottlenecks in our transmission network so energy can flow optimally across the length and breadth of the country.

If we stand back and consider what all this means, we will realise it means that sustainability as we need to see it is about more than just striving for zero carbon emissions – it is fundamentally about being sure that our enterprises survive.

And therein lies the real story. It has been nothing short of astounding to see citizens manage their way through so many very serious systemic failures – and come out as survivors and indeed winners.

Notwithstanding the remarkably serious headwinds faced by industry – often seemingly caused by own goal after own goal scored by folk one would imagine would be watching the playing field carefully and reaching out to assist those whose taxes employ them – we have grown to be increasingly resilient.

One can only ask: where would we be had things just run smoothly?

Ian

Ian Jandrell

PrEng IntPE(SA), BSc(Eng) GDE PhD,
FSAEE FSAIE SMIEEE



CONTENTS

FEATURES

CONTROL SYSTEMS + AUTOMATION

- 4** PC-based control and EtherCAT for parts sorting machines
Stefan Ziegler, Beckhoff Automation
- 6** Driving efficiency in automotive manufacturing
SEW-EURODRIVE
- 8** Products + services

RENEWABLE ENERGY + INDUSTRIAL SUSTAINABILITY

- 12** Moving away from grid dependence
Frank Spencer, SAPVIA
- 14** Products + services

MEASUREMENT + INSTRUMENTATION

- 20** Products + services

TRANSFORMERS, SUBSTATIONS + THE GRID

- 23** Government opens transmission build to the private sector
SA News, Department of Electricity and Energy, National Treasury
- 25** Products + services



REGULARS

- 1** Comment
Sustainable energy and sustainability
- 3** Cover article
Local development of NEC/R units for export
- 30** Reskilling, upskilling + training
Investing in young cyber talent
- 31** Engineering the future
Blue bonds could help address South Africa's water crisis
- 32** Write @ the back
Bridging the ESG backlash

Local development of 11 kV 360 A NEC/R units for export

In early 2025, ArmCoil Afrika (Pty) Ltd, a leading manufacturer of transformers and related substation equipment in South Africa, was approached with a highly technical export-oriented project. The request came from a well-respected South African consulting engineer and business owner who had secured an international contract requiring two custom-designed Neutral Earthing Compensator with Resistor (NEC/R) units. While this may seem routine at first glance, the project specifications revealed its complexity. Several other local manufacturers declined to quote, citing design challenges and the extensive IEC type testing required. ArmCoil saw the request as an opportunity to demonstrate its engineering depth, manufacturing capability, and ambition to compete on a global scale.

The challenge

The project involved the design, manufacture, test and delivery of two NEC/R units, each rated at 11 kV, 360 A, for use in sensitive European networks. The units had to meet strict West-Central European IEC standards, particularly around:

- Type testing in accordance with IEC 60076 standards
- Special protection and monitoring schemes
- Use of environmentally friendly insulating materials
- Highly corrosion-resistant outdoor enclosures
- Zero-compromise reliability under fault conditions.

The client's specifications also required a zigzag winding configuration, tailored to deliver a low impedance path for zero-sequence fault current, enabling effective protection coordination without disrupting sensitive network stability.

Additionally, the client requested full pre-export verification and certification, meaning the units would need to undergo factory testing, laboratory performance tests, and third-party IEC-compliant type testing – all prior to acceptance and delivery.

In short, ArmCoil needed to design and build world-class fully type tested, high-performance NEC/R equipment without the benefit of local benchmarks or reference units.

ArmCoil's engineering response

True to its innovation-first approach, ArmCoil accepted the challenge and deployed a multidisciplinary team comprising design engineers, protection specialists, manufacturing technicians, and quality assurance experts. The team worked in close collaboration with the client's appointed electrical engineer to:

1. Design the NEC/R units from first principles, including mechanical, thermal, and magnetic simulations
2. Source and validate high-grade materials, suitable for IEC compliance and extreme environmental resilience
3. Integrate smart monitoring systems that offer real-time data acquisition, fault recording, and thermal profiling.

Each NEC/R unit comprised the following key components:

- 360 A Neutral Earthing Compensator (NEC)
- 11 kV Neutral Earthing Resistor (NER)
- Two line BCTs (for overcurrent and fault detection)
- Two neutral BCTs (for sensitive earth fault protection)
- KNAN synthetic ester oil, chosen for its high fire point and bio-

degradability

- Zigzag core-winding configuration (50 Hz)
- 3CR12 stainless steel enclosure, providing long-term corrosion protection
- Advanced smart relays and remote monitoring Instruments
- Protection features including overtemperature alarms, restricted earth fault inputs, and SCADA-ready interfaces.

The units were designed for performance and safety as well as serviceability and ease of integration in foreign electrical grids.

Testing and certification

ArmCoil committed to a multi-phase zero-compromise testing and certification programme to meet IEC compliance and client assurance requirements. This involved:

- Internal Factory Acceptance Testing (FAT)
- High-voltage performance testing, performed at accredited high-voltage laboratories
- Type testing in accordance with IEC 60076, performed at the South African Bureau of Standards (SABS).

ArmCoil's NEC/R units are believed to be the first in South Africa to be type tested to the level required under the IEC standard. The two units were delivered fully certified within the project's tight deadline, successfully exported and commissioned, with positive feedback from the engineering client and end-user site engineers abroad.

The impact of this project extends beyond a single order: it validates ArmCoil's IEC type testing capabilities, demonstrates its ability to deliver customised, turnkey export solutions in the substation equipment space, reinforces confidence in South African manufacturing for international high-spec markets, and establishes new internal quality and design benchmarks that will benefit future projects.



ArmCoil custom-engineered, manufactured, tested and delivered the two NEC/R units to order, for a project in Europe.

For more information contact ArmCoil.

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Visit: www.armcoil.co.za

PC-based control and EtherCAT for parts sorting machines

Dimac designs and develops innovative solutions for 100% inspection of fasteners and small metal parts. The company has identified EtherCAT and PC-based control from Beckhoff as the mainstays of the next generation of sorting machines, which will make the La Mille concept machine – the thousandth Dimac project – faster, more powerful, and open to the integration of additional systems. Stefan Ziegler of Beckhoff Automation reports on this application.



© Beckhoff

Guido Noce (right), General Manager, and Enrico Ottaviano (left), Engineering and R&D Manager, both from Dimac, in front of the La Mille concept machine with image processing already integrated in TwinCAT HMI.

Dimac srl, based in Tortona, Italy, states that it is one of the few companies in the world to specialise in manufacturing high-speed machines for 100% sorting and quality control of small metal parts and fasteners. “High-speed is up to 1 200 parts per minute,” says Guido Noce, General Manager of Dimac. With an export share of over 70% and having installed more than 1 000 machines, the company supplies the leading American and European manufacturers of fasteners – with the automotive sector as one of its most important markets. In addition to screws, nuts, and washers, Dimac machines are used to inspect a wide range of components. These range from motors, airbags, and other electromechanical components to jeans buttons, the tiny screws used in glasses, and chain links.

High flexibility and speed

The variety of different parts and quantities requires a flexible and powerful automation solution for the sorting and inspection systems. This is because the control technology determines the speed and reliability of the machines. With its La Mille concept, Dimac initiated an ambitious project, aiming to completely redesign the existing automation solution to further enhance the performance and reliability of the machines.

“The reliability of our machines is the result of a concept based on a single piece of software that has been constantly updated with variants and new functions,” explains Guido Noce. Over the years, the many extensions to the previous solution had

led to limitations in the operation and management of the software. After 25 years of overlapping software layers, it was time to make a new technological leap. “When we conducted a market analysis among automation providers, we found that PC-based control from Beckhoff and EtherCAT were the best for fulfilling our needs,” says Enrico Ottaviano, Engineering Manager at Dimac. Guido Noce adds: “With La Mille, we want to comprehensively test the best that the market currently has to offer, in our view. The aim is to create an automation platform that will shape the next generations of Dimac machines.”

Performance and openness, deciding factors

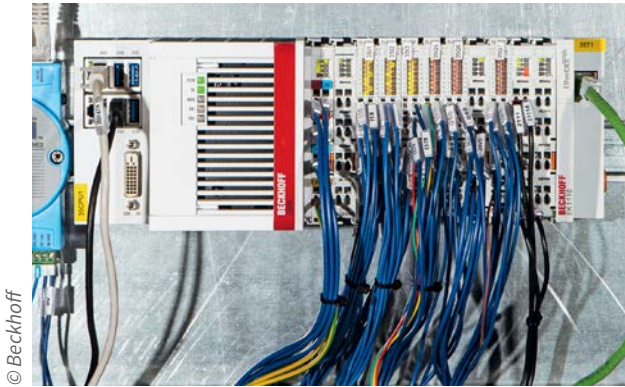
“We chose PC-based control from Beckhoff and EtherCAT primarily because of their openness and performance,” Ottaviano emphasises. He was looking for a solution that did not prescribe a specific topology or tie the company to one supplier or a limited group of manufacturers. The open EtherCAT protocol and the many providers of corresponding masters, devices, actuators, and solutions met this requirement.

In addition, the cycle times and update intervals of the decentralised peripherals needed to be significantly shorter than before. With regard to future developments, the aim is to reduce cycle times from 10 ms to around 1 ms. Noce comments: “Even during the first tests, we realised that we could achieve the required performance with the high-performance EtherCAT protocol.”

Another important aspect was the ability to use open, standardised software and development environments such as IEC 61131-3. “We chose the Beckhoff TwinCAT software system precisely because of these properties,” adds Ottaviano. Dimac uses a CX5240 Embedded PC with an Intel Atom® processor with 1.6 GHz clock frequency (quad-core) as the controller; another industrial PC is currently being used for the image processing application. In the first phase, the project team wanted to ensure that image processing was not subject to any external influences.

Added value for end users

For the end user of the machine, the La Mille control concept means higher sorting system speeds plus additional inspection criteria. “Our solution increases productivity, the number of stations, and the number of inspections that our machine can perform in the future,” says Noce. In addition, the openness of EtherCAT enables further components to be integrated. Users also benefit from the significantly improved user-friendliness based on TwinCAT HMI, for example, for diagnostics and configuration. Dimac also integrates the image processing software into the visualisation and can therefore combine all machine functions on one Beckhoff Control Panel.



© Beckhoff

The CX5240 Embedded PC and the connected EtherCAT Terminals – including the EK1110 EtherCAT extension for setting up a line topology – provide the performance and flexibility to integrate additional function modules.

Inspections during production

The 100% inspection and sorting of parts normally takes place only after production. In the production process, the most important parameters of a component are still measured manually and spot-checked in the laboratory. However, there is growing interest among manufacturing companies in integrating the data from sorting machines into inspection processes during production and using the objective and reliable data for continuous quality improvement and predictive maintenance.

Dimac is already working on integrating cobots, linear axes, and transport systems into its machine concept to replace the traditional inspections operators carry out using plug gauges and other types of gauges with automated spot checks.

Noce comments: “We see PC-based control and EtherCAT as key technologies for these applications, which, previously, we



© Beckhoff

Image processing is an important part of Dimac's sorting and inspection machines.

have often been unable to implement due to excessive development costs.”

PC-based control provides the necessary functions in an integrated system: control, image processing, motion, safety, human-machine interface, connectivity, and interoperability. Ottaviano and his team are assisted by the Beckhoff support team, and he notes: “We are very satisfied with the technical support in terms of technical expertise and response times. Using EtherCAT and PC-based control as the automation architecture will take Dimac's new generation of machines to a new level in terms of performance, reliability, and data analysis capability.”

For more information visit: www.beckhoff.com

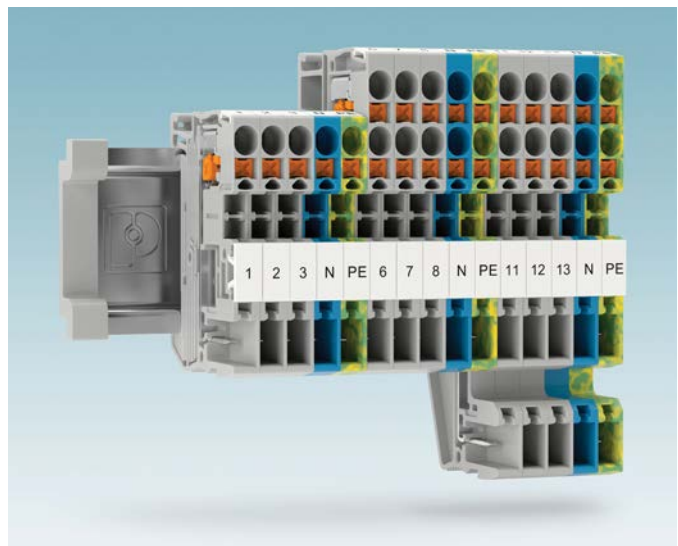
Control systems + automation: Products + services

Making wiring of control cabinets easier

The new pluggable terminal blocks with Push-X connection and Combi plug-in zone from Phoenix Contact set new standards in wiring technology. This combination enables straightforward and efficient wiring in control cabinet building by connecting the field level with preassembled COMBI connectors.

With the tool-free direct-connection technology that requires virtually no force, the Push-X connection offers a high level of operating convenience for all conductor types. Flexible conductors without ferrules can be connected especially quickly. In addition, visual and haptic feedback from the terminal point supports intuitive connection, which makes operation easier and minimises errors. The new XT 2.5.../P terminal blocks are compact with a nominal cross-section of 2.5 mm² and conductor cross-sections of 0.5 to 4 mm². They are designed for currents of up to 24 A and voltages of up to 800 V, ensuring high performance and flexibility in various applications. Another advantage is the quick release of the conductor due to the locking mechanism in the terminal point. This saves time and enables increased efficiency in maintenance work. In addition, the configurable and standard COMBI connectors with up to 15 positions offer flexibility for different wiring requirements. This makes the pluggable terminal

blocks with Push-X connection and Combi plug-in zone a modern and flexible solution for control cabinet building that enables simple, fast, and reliable wiring and helps to reduce errors and increase efficiency.



The new Push-X connection and Combi plug-in zone pluggable terminal blocks from Phoenix Contact simplify control cabinet wiring.



Willem Strydom,
Electronics Business
Development Manager at
SEW-EURODRIVE.

Driving efficiency in automotive manufacturing

When a leading automotive manufacturing company in Gauteng needed to expand a buffering zone in its manufacturing facility, it selected SEW-EURODRIVE's MOVIGEAR® mechatronic drive system for optimal efficiency, productivity and safety.

Willem Strydom, Electronics Business Development Manager, says SEW-EURODRIVE supplied 150 MOVIGEAR® units to the company to drive conveyors in a high-density storage area in the factory. “The customer prioritised a high level of efficiency and functional safety but also wanted to standardise equipment as far as possible, to streamline stockholding and maintenance,” says Strydom. “We were able to meet all the specifications stipulated with just two variants of our MOVIGEAR technology.”

The value of standardising equipment

Using conventional geared motors in an application like this would probably have required close to 30 variants to suit the various speed requirements – significantly increasing related stockholdings. With MOVIGEAR, each unit comprises a servomotor, gearbox and electronics and can ensure constant torque across a range of speeds.

“The buffering zone in the customer’s facility has different speed and torque requirements which would traditionally have demanded a wide variety of geared motors,” Strydom explains. “The versatility of MOVIGEAR has helped to standardise the equipment so the customer can keep its inventory to a minimum.”

A critical stockholding of just one of each variant is considered adequate, as the reliability and performance of this technology is well proven.

Another key benefit is the decentralised functionality of each MOVIGEAR unit. Each unit includes an onboard communication protocol and a safety card integrated with

the variable speed drive (VSD), eliminating the need for separate control panels or cabinets. A single small control station housing the PLC – no bigger than a personal computer – is sufficient to communicate with all the units.

Rapid installation

“This reduces the cost of componentry and accessories and speeds up installation,” says Strydom. “Our latest-generation hybrid cables also allowed us to apply a ‘daisy chain’ link from one unit to the next, to make this installation quicker.”

The modularity of MOVIGEAR and the system design allowed for straightforward installation by the original equipment manufacturer (OEM) of the conveyor; SEW-EURODRIVE provided commissioning assistance.

“We put our technicians on site for three weeks during project execution, so they were on hand to offer support and ensure that each unit’s installation was conducted correctly,” Strydom adds. “There is always a benefit in doing this – for us, the OEM and the customer – as we can provide our warranty and ensure that there are no surprises.”

The fine-tuning of parameters was done in a few follow-up site visits, and the project was completed in January this year. The MOVIGEAR drive systems have been operating reliably since then. The technology has proven its capabilities locally, in the automotive sector and in industries like food and beverages.

Strydom notes, for example, “In the bottling plant of a large global manufacturer, we have had similar units running for a number of years with no service interventions required. Reliability is also key for the automotive sector, where many of our customers must maintain high production volumes for local and export markets.”



MOVIGEAR® Performance forms part of SEW-EURODRIVE's latest generation of electronic drive technology, the advanced MOVI-C® automation platform.



Left: MOVIGEAR units ready for dispatch, reflecting SEW-EURODRIVE's local assembly commitment to rapid delivery of high-performance drive solutions tailored for industry. Right: SEW-EURODRIVE's local MOVIGEAR assembly includes advanced electronic components, enabling faster turnaround times and enhanced support for smart drive solutions.



Safe and energy efficient

Among the challenges faced by local industrial players are the unreliable electricity supply and rising energy costs. Customers are therefore turning to advanced technologies to reduce risk and improve competitiveness.

"MOVIGEAR enables industrial facilities to automate key conveyor processes while maintaining the highest level of safety," says Strydom. "A buffering zone, for instance, is an open area of conveyors where people are working and moving. Importantly, our onboard system incorporates integrated safety features to ensure a safe working environment."

A further benefit in this installation is the use of ultra-premium efficiency IE5 SEW electric motors. This means the units also offer significant energy savings, helping reduce operating costs and carbon footprints. Strydom estimates that energy savings of up to 38% can be achieved compared to conventional motors. Additionally, the units are built to last, with an IP69K rating for ingress protection, suitable for high-pressure washdowns when needed.

Designing for success

"On this project, we worked closely with the OEM responsible for the conveyor installation to review the design requirements and specify the units," Strydom explains. "We believe we offer the most value when we are engaged from the beginning with our mechatronic teams of mechanical and electronic engineers."

Solutions are usually developed based on the plant layout and the required conveyor speed and torque. The MOVIGEAR range includes three sizes – 1, 2 and 4 – covering torque applications from up to 100 Nm to as high as 400 Nm.

"In this project, the flexibility of our technology meant all the requirements could be met by the size 2 and size 4 units," he says.

Condition monitoring for preventive maintenance

MOVIGEAR's hybrid cable includes a digital data interface (DDI) that enables live monitoring of each unit's operation and condition. As part of the second phase of this project, SEW-EURODRIVE rolled out this functionality. The cable also enables automatic identification of each unit based on its digital nameplate.

"This phase involved implementing our condition monitoring

software and training the plant staff who will access the data," says Strydom. "The system monitors variables like vibration and temperature to predict the remaining lifespan of components like bearings, as well as monitoring oil levels."

This proactive approach replaces the need for manual inspections and oil analysis with real-time accurate predictions of equipment health.

"Essentially, the system creates a digital twin for each MOVIGEAR unit," he says. "It can send push notifications by email or apps like WhatsApp if it detects anomalies."

If required, these notifications can also be sent to SEW-EURODRIVE's service team, and the team can provide direct support when needed. Customers are trained to use a dedicated app – installable on laptops or smart devices – to understand and manage system parameters.

Initial and final optimisation

Strydom highlights the growing popularity of SEW-EURODRIVE's system optimisation service, now a standard specification in many OEM and end-user contracts. The company offers both an initial and final optimisation phase.

"After physical installation and connection, but before the system goes live, we check every connection including to the VSDs," he says. "This is documented so any snags can be resolved systematically. Only once approved by all stakeholders is the system powered up."

After commissioning, final optimisation checks ensure correct operating parameters and installation compliance.

Fast tracking

In this project, rapid deployment was a critical factor. With its substantial local stockholding in Johannesburg, backed by global resources, SEW-EURODRIVE could meet this requirement too, providing swift assembly and delivery.

"The value of the MOVIGEAR drive systems in this project has been assured through our involvement throughout the process," says Strydom. "From design to commissioning and optimisation, we delivered a tailored, integrated solution that is efficient, reliable and scalable," he says. "Our after-sales support and services, including service level agreements and inspections, ensure uptime and help our customers remain competitive."

For more information visit: www.sew-eurodrive.co.za

Networking days strengthen cross-continental partnerships



Chris Roets (centre), Managing Director of Carolina Rollermeule, returned to Uzwil for the Networking Days this year with his son, Wihan Roets (left), pictured here with Alexis Noel.

Bühler Networking Days 2025 brought together more than 1 200 business leaders from the food, feed, and sustainable mobility and materials sectors at the company's headquarters in Uzwil, Switzerland, in June. Under the theme 'Multiplying impact together', the event focused on the challenge of building businesses concerned with feeding and moving 10 billion people sustainably by 2050. Marco Sutter, Managing Director of Bühler Southern Africa, says four local customers took part in the event.

"We are moving from vision to execution, highlighting technologies, partnerships, and case studies that are already making a difference," said Sutter. "The theme is a reflection of our belief that collaboration is the key to progress."

Established in 1972 in South Africa, Bühler works closely with its customers, industry players, and government to co-create solutions that drive business success and contribute to food security, skills development, and sustainability. "We aim to scale positive impact through joint action," Sutter added.

Chris Roets, Managing Director of *Carolina Rollermeule*, said: "It was a privilege to return to Uzwil for the Networking Days, this time with my son, making it an even more memorable experience. The event was again an opportunity to connect, learn, and be inspired. Winning the Miller of the Day award was a wonderful and unexpected honour. A heartfelt thank you to Bühler and the team for hosting such a professional and engaging event."

In the spirit of Multiplying impact together, Roets added that *Carolina Rollermeule* is transitioning its factory to solar energy, and all its Bühler equipment will run on renewable power. "This marks a major milestone in our journey towards sustainability and responsible production," he said.

"We are also multiplying impact through quality and food safety. A key takeaway from the Networking Days was seeing the Bühler Sortex solutions and engaging directly with the team behind this development. That experience was instrumental in our decision to invest in the system. With its advanced optical sorting capabilities, the Sortex SPARK Pro+ enables us to

detect and remove even the smallest impurities, significantly raising the standard of our grain products."

The SPARK Pro sorter is Bühler's most user-friendly and affordable optical sorter to date. With its zero-spillage design that prevents material waste and 75 years of engineering experience behind it, the sorter delivers food safety and quality at unmatched value. "Together with Bühler, we are modernising our operations and helping to build a safer, more sustainable food system for the future," said Roets.

Collaboration as a catalyst

Speaking at the event, Bühler Group CEO Stefan Scheiber emphasised the power of collaboration and cooperation to multiply the impact of innovation. "Every breakthrough, partnership, and bold decision creates ripples, spreading knowledge, inspiring action, and

driving progress. By working together, businesses and industries add incrementally to progress and accelerate it by compounding their influence and scaling solutions far beyond what any single effort could achieve."

The key message of the event was that sustainability is a sound business strategy that drives profitable growth and long-term resilience, and it is the outcome of strong leadership. Professor Johan Rockström, a leading expert on global sustainability, Director of the Potsdam Institute for Climate Impact Research, and the architect of the Planetary Boundaries framework, highlighted the urgent need for industry to operate within earth's safe limits. He encouraged leaders to speak openly about the business value of sustainability. "We must think of sustainability as central to competitiveness, security, stability, and health," Rockström said. "When a decision improves your performance, attracts talent, opens new markets, or enhances resilience, communicate that clearly: show that sustainability is not a burden – it's a competitive advantage."

Speakers throughout the event echoed the magnitude and urgency of the challenge, calling for accelerated innovation – in digital tools, process technologies, and business models – to deliver more value with fewer resources. Representatives from industry, business, and academia exchanged practical solutions to ongoing and emerging sustainability challenges.

Bühler is a trusted technology partner across the food value chain, from grain handling and milling to rice processing, chocolate production, and more. With its expertise in this sector, it assists customers to unlock efficiency, quality, and sustainability, and its service teams ensure process reliability and uptime. "We provide machines to co-create sustainable food solutions," said Sutter.

Delivering on its promises

At the 2019 Networking Days, Bühler promised to have solutions ready to multiply by 2025 to reduce energy, waste, and water in its customers' value chains by 50%. Since then, the group has invested nearly CHF 500 million in research and development to deliver on that promise. It has analysed the savings potential of 15 key value chains

Continued on page 11

Tool and die making: a foundation for manufacturing

As a Tier 1 automotive component manufacturer Malben Engineering has a strong tool and die making foundation which means it can collaborate with original equipment manufacturers (OEMs) and global toolmakers on new tooling, and it provides in-house support for manufacturing.

Technical Director, Marco Smargiasso says, “Malben’s vertical integration and investment in its tool and die making (TDM) capability is a key differentiator, especially because South Africa is short on TDM skills.”

He says local industry has lost over 80% of TDM capacity to support its own manufacturing, due to outsourcing to international markets and a lack of infrastructure investment.

“This is according to the INTSIMBI National Tooling Initiative, a national, multi-stakeholder initiative which was established under the auspices of the South African Department of Trade Industry and Competition (dtic) and the Production Technologies Association of South Africa (PtSA) to implement a turnaround strategy for South Africa’s distressed tooling industry,” he adds.

A strong foundation

Malben started out as a tool and die maker in 1974 and – unlike many tool and die makers at the time – it then transitioned successfully into mass automotive component production. However, also unlike many current competitors, the company still retains and continues to invest in TDM as an in-house support service.

Smargiasso attributes the local TDM deficit to a lack of economies of scale. “To have a stable TDM business, you need consistent work flow. In the automotive component sector, it tends to be ‘feast or famine’. When an OEM launches a new vehicle, tool and die making is in demand, and locally there are not enough suppliers.

“Then, there is typically also a big gap between model launches. And another challenge faced by TDM businesses is that the OEMs tend to carry over many parts from old to new models, so model life cycles usually range from seven to 10 years. With no new tool and die making demand, tool and die makers cannot survive.”

South Africa is home to seven major automotive OEMs that make about 600 000 vehicles per year. Comparatively, China’s 16 automotive OEMs produce over 30 million.

The decline in TDM locally is not unique to South Africa, Smargiasso adds. “With the largest automotive industry in the world, China has out-competed TDM sectors globally and OEMs now outsource most tooling for new models to China.”

Malben’s step-change, when it expanded its manufacturing capability in 2021/22, followed the launch of new vehicle models by its largest OEM client, which required more than 200 new tools. Malben produced 40 of those tools – which made it a leader in its sector locally.

The company has also created a tooling facility to maintain and make replacement components for the tools it uses in production. Plant Manager, Jithin Kottikkal, says, “We would not be able to run our manufacturing operation without the support

of our tool room. We have invested in software and technology that keeps us relevant and competitive.”

Over the past two years, the main investment has been in reverse engineering software. “Our tool room handles repairs and improvements. We have found slight discrepancies between computer-aided draughting (CAD) models received from China, and the tool itself. So, we take the original and reverse engineer it, and make any adjustments based on that,” Kottikkal explains.

Tooling up for the future

Smargiasso emphasises the value of Malben’s historical experience in tool and die making. “We use this to analyse the tool designs presented to us by external manufacturers. We make sure that the designs will deliver the correct product quality and run capacity,” he says.

He believes the 80/20 principle applies. “We determine 80% of a project’s cost within the first 20% of the lifecycle. By getting the quality and the tooling design correct upfront, the home-line trials, customer sign-off and approval process go smoothly. More importantly, it means



The Plant 2 press shop at Malben Engineering, showing 1 200- and 1 600-tonne Yadon presses.

that for the rest of the project life – normally 10 years – we do not have a tool that becomes an albatross.”

Commercial Director, Marius Schafer concurs. “Even though we do not have the capacity to manufacture very large tools, we continue to invest in the intellectual property, knowledge and expertise needed to manufacture high-quality parts. As a Tier 1 automotive component supplier, Malben’s value-add and a differentiator for our customers includes the meticulous review of tooling for functionality, robustness, durability and in terms of process layout.”

This is achieved via process modelling and stamping simulations.

To remain up to date, Malben continues to invest in new equipment. It is planning for the installation of a new 2 500 tonne press, for instance.

“Because of our tooling expertise and upgraded technologies, our internal investment in people and skills, intellectual property and in leveraging different links and partnerships, we can quickly pivot as required, adopting and incorporating new technologies on the market where they will support our work,” Smargiasso says.

Practical technical training in industrial robotics

Yaskawa Southern Africa has announced a strategic collaboration with Sol-Tech, a private technical and vocational training institution based in Pretoria, to strengthen technical education in industrial robotics and support the development of future-focused talent for South Africa's manufacturing sector.

Core to the collaboration is a shared commitment to bridging the gap between theoretical training and practical skills development. Yaskawa Southern Africa is providing its globally recognised industrial robots together with industry-relevant training materials and support from its dedicated training department to enhance Sol-Tech's engineering and mechatronics curriculum. The initiative forms part of Yaskawa's broader investment in local skills development and reflects



Raymond Meyer of Sol-Tech and Leon Coetzer from Yaskawa confirm their organisations' collaboration in robotics training.

its long-term vision to empower the next generation of technical professionals.

"South Africa's manufacturing sector is undergoing a significant shift towards automation, and with that comes the need to equip young professionals with real-world experience in robotics," says Leon Coetzer, Training Officer at Yaskawa Southern Africa. "In this collaboration with Sol-Tech, in addition to supplying equipment we are supporting practical learning in the classroom, guided by industry standards."

Sol-Tech has already integrated Yaskawa's material into its training programme and has established dedicated robotics facilities on its campus, offering students hands-on access to the latest technologies. It reports that the response has been overwhelmingly positive.

"Students are keenly engaging with the Yaskawa technology on campus," says Raymond Meyer, Programme Head: Electrical at Sol-Tech. "The freedom our training model affords has encouraged vigorous practical interaction with the robots, which has sparked increased interest and enthusiasm in the field."

Sol-Tech's long-term vision is to position itself as a leader in future-ready industry-aligned technical training. Meyer says partnering with Yaskawa Southern Africa has created "one of those rare opportunities" for the institution to elevate its offering. "We strive to keep our training curriculum and standards relevant in the continually changing technological environment. Robotics is a field that demanded our attention, and this collaboration helps ensure our students are equipped for the automation-driven world of work."

The collaboration also signals potential for broader impact. As the demand for certified mechatronics technicians grows, both institutions see scope to scale through national skills initiatives and align with international education benchmarks.

Secure connectivity enabling remote access

To meet the growing demand for secure, flexible and reliable remote access in industrial network connectivity for its clients, Referro Systems has added Rockwell Automation's Stratix 4300 to its inventory of products.

"We are excited to bring the Stratix 4300 Remote Access Router to our customers," says Referro MD Adrian van Wyk. "We believe this represents the next generation of industrial connectivity; it combines flexibility, security and ease of use.

"At a mine site, for example, various machines and systems may need to provide remote access connectivity to enable efficient, safe operations. This allows operators to enhance efficiencies and reduce downtime," says van Wyk.

He adds that the network connectivity further enables operators to manage assets and machinery from remote locations, reducing personnel exposure to potentially hazardous environments and fast-tracking remediation.

The Stratix 4300, van Wyk says, offers a comprehensive platform that supports a range of network interfaces, including wired LAN and WAN connections, Wi-Fi, and LTE cellular options. "This versatility enables users to tailor their connectivity approach to the demands of their sites and applications," he says. This can be done either by leveraging high-speed gigabit Ethernet ports for fixed installations or by using wireless technologies to overcome infrastructure limitations.

From wired-only models to wireless-enabled versions that provide 2.4 GHz and 5 GHz Wi-Fi bands or LTE cellular connectivity, customers can select the device configuration suited to their performance or security needs.

"Security is top of mind for all our customers," says van Wyk. He highlights that the Stratix 4300 Remote Access™ Router is a dedicated platform for FactoryTalk® Remote Access™ Manager software. "This combination provides support for installation, programming updates, and on-demand troubleshooting and maintenance, enabling secure VPN connectivity that safeguards sensitive automation assets from unauthorised access.

"It also supports centralised management, user authentication and comprehensive audit logging. These features are critical to maintaining compliance in modern industrial environments," he notes.



Referro Systems has added Rockwell Automation's Stratix 4300 to its inventory of products.

Cable care supports machine longevity



Igus energy chains act as a protective guide for cables and hoses and are increasingly used across a wide range of industries.

The management of moving cables and hoses in machine building is critical to the safe operation and longevity of the equipment, with modern systems like energy chain cable carriers often replacing conventional systems like cable festoons, reels or free-hanging loops.

German polymer manufacturer, igus, offers its innovative polymer chains to the South African market. The energy chains act as a protective guide for cables and hoses, ensuring that they move in a defined, controlled path without tangling, twisting or wearing prematurely. They are widely used in manufacturing, automation, packaging, mining, robotics and machine tool industries. Due to their low-maintenance characteristics and ability to handle different types of energy (electrical, hydraulic, pneumatic, fibre optic) and auxiliary components such as hoses, all in one neat, flexible solution, igus energy chains are fast replacing traditional festoon and cable reel systems.

“Our e-chain cable carriers are increasingly being designed into new systems or in retrofitting festoons and cable-reel systems in most industries. The e-chains simply act as a moving conduit that keeps the cable neat and always protected,” says igus South Africa Managing Director, Ian Hewat.

He cites ten main reasons why engineers and system integrators in South Africa are increasingly turning to igus energy chains when designing and building machines.

Cable-friendly design: igus energy chains have smooth inner surfaces and a controlled minimum bending radius based on cable specification. The energy chains also protect cables and hoses from micro-abrasions and stress cracks. This reduces premature failures and extends cable life

even in highly dynamic applications.

Modular, lightweight and strong: made from high-performance polymers, igus chains are lighter than metal systems yet offer effective strength and stability. Their modular construction means they can be easily extended, shortened or customised on site, which makes them ideal where tight project timelines are to be met.

Multi-media integration: igus energy chains can carry electric cables, pneumatic lines, hydraulic hoses and fibre optic cables simultaneously in a coordinated and well protected housing. This helps streamline machine design and reduces the number of separate systems required.

Predictable service life with warranty: igus backs its products with a guaranteed service life based on millions of lab-tested cycles. Many igus chainflex cables carry up to a four-year warranty or the prescribed minimum cycles lifespan. OEMs and machine users are thus assured of performance.

Low-friction energy-efficient operation: with their self-lubricating plastic design which significantly reduces drag forces, igus chains glide with minimal resistance. This makes them more efficient than festoon or reel systems that suffer from mechanical resistance or cable overlap.

Maintenance-free operation: no greasing or lubrication is needed throughout the life of the chain. This reduces downtime and makes igus energy chains ideal for use in clean environments like food processing or high-dust areas like cement and mining operations.

Quick configuration and customisation: designers can use the free igus online configurators to select, model and download their preferred energy chain setup. This speeds up the design process and ensures compatibility with machine layout.

Intelligent condition monitoring: with igus's iSense smart plastics add-on sensors can be embedded to monitor wear, cable tension and chain motion in real-time. This enables predictive maintenance and reduces the risk of cable failure.

Space-saving and safe: energy chains allow for neatly routed cables and hoses that don't hang or swing, improving machine aesthetics and workplace safety. They also fit into compact machine designs where festoons or loops would be impractical.

Broad industry applications: igus e-chains are in use in over 50 industries – from CNC machines and robotics to packaging lines, quarries and marine applications. Their proven versatility makes them a reliable choice across virtually any moving cable application, with travels from as short as 100 mm up to the current longest application of 950 m.

Continued from page 8

and developed new technologies and solutions.

“As well as benefitting the environment, this work drives operational efficiency, creates jobs, and builds long-term resilience. We are helping our customers significantly reduce their energy consumption, waste generation, and water usage, delivering real impact up and down the value chain,” said Ian Roberts, Bühler Group CTO.

Bühler supports its customers in growing their businesses while lowering their environmental footprint in various ways. It offers new state-of-the-art solutions and optimises current systems through services including machinery refurbishment, digital process control, and predictive maintenance. These services lead to higher productivity and yields, resulting in better returns on investment as well as positive environmental impacts.

Thus, Bühler is delivering on its promise to multiply solutions that reduce energy consumption, waste, and water use in its customers' value chains by 50%. According to its value chain analysis, when combined with other technologies and solutions beyond the Bühler portfolio, peak savings potential exceeds 80% in some value chains.

In processing aluminium into finished products, for example, the potential CO₂e reduction is 71%; in transforming cocoa beans into chocolate, it is 77% and 65% in processing rice.

Bühler Southern Africa is working with its customers to bring these solutions home – advancing food security, efficiency, and sustainability across the African continent.



Bühler Networking Days bring together business leaders from the food, feed, and other industry sectors at the company's headquarters in Uzwil, Switzerland.

Moving away from grid dependence

Solar and battery systems have become so inexpensive that many private individuals, farmers and companies are recognising that in many locations in South Africa it is now less costly to be off the electrical grid than to be on it. Frank Spencer, spokesperson for SAPVIA, outlines the cost benefits of switching to solar, and highlights some concerns.



Frank Spencer,
SAPVIA.

The move away from the grid has been driven by two key factors. First is the rapidly rising cost of electricity supplied by Eskom and municipalities in South Africa, where tariffs have increased above inflation every year for the past 17 years. Second has been the rapidly declining cost of photovoltaic (PV) solar panels and lithium batteries over the same period, with manufacturing quantities growing exponentially each year and consistently exceeding even the most optimistic projections.

Until recently installing solar and battery systems was done generally to save money during the daytime (due to the super-cheap solar electricity production), and to protect against load shedding (through the battery component). However, for many locations in South Africa, it is now possible to generate electricity from such systems to cover the user's daytime as well as nighttime demand, to the extent that remaining on the grid is no longer necessary.

This is further being driven by the fact that the fixed costs to bring the wires to properties are now rising significantly faster than the energy charges to bring you electricity over those same wires. So why have the wires at all?

It is true that to cover 100% of your electricity supply with solar and battery storage can be challenging. There are two cost-effective ways to mitigate the challenges. One is to install a backup petrol/diesel generator, where its occasional use may be expensive, but the combined cost of the solar +

batteries + generator + fuel could still be less than the cost to buy electricity from the grid. The other is to switch to an electric vehicle, which can act as the backup to the solar battery system, and be recharged on the grid if necessary.

The sunnier the location, and the higher the electricity tariff, the better the economics of grid defection can be, which is why this growing trend is more predominant in the northern part of South Africa.

The big questions

This raises the important question of: 'Where does this leave Eskom?', which, arguably, is too big to fail, and on which many who cannot afford solar battery systems are completely dependent. Those who leave Eskom raise the costs of electricity for others. Hence, another corollary question could be: 'Is leaving the grid the right thing to do?'

At the South African Photovoltaic Industry Association (SAPVIA), we believe that the primary source of Africa's and South Africa's energy will be the sun (which also drives the wind and water systems that provide energy), including low cost solar and battery systems. However, it is also clear that the optimal delivery of low-cost power across South Africa should be done by a combination of solar, wind and battery systems, of all scales, and linked together by a modern transmission grid network. Such a distributed smart-grid can deliver reliable, affordable, clean electricity across the country.

Private off-grid systems are, in some senses, inefficient,



In many parts of South Africa, it is now possible to generate sufficient electricity from solar and battery energy storage systems to cover a user's needs, so remaining on the grid is no longer necessary.

as any extra energy they could produce, that isn't used, could theoretically be shared with the grid. Furthermore, economies of scale mean that extra-large solar and battery systems could provide lower cost electricity than small, private systems.

So perhaps leaving the grid isn't the right thing to do, but what does one do in the face of a utility that has not yet fully adopted the change required to transition into a utility of the future?

Fortunately, government regulation is pushing Eskom in the right direction. The national utility is being broken up into three separate entities: Generation, the entity holding all the current coal and nuclear power stations, with ambitions to build many gigawatts of renewables; Transmission, the entity running all the large high-voltage overhead power lines criss-crossing the country; and Distribution, the entity bringing the low-voltage wires to the meters of most of Eskom's customers. Transmission and Distribution are currently viable businesses, but Generation is not, and this is the heart of Eskom's cost problems. However, as more cheap renewable energy generating plants are built, by Eskom and the private sector, this can be addressed and managed as the scale of this low-cost generation eclipses Eskom's challenges.

In addition, the South African Wholesale Electricity Market (SAWEM) is to be launched next year and implemented over the course of three to four years. This will allow the private sector to compete on a fair footing to provide the lowest cost electricity in each hour of the day, and use well-structured market forces to bring the lowest cost, cleanest electricity on to the grid.

But a number of challenges remain. We need to ramp up the build rate of solar and wind from the few gigawatts per year currently, to perhaps five times that, in order to support economic growth and successfully realise the ambitions of the South African Renewable Energy Masterplan. With this comes a tremendous opportunity to grow skills, jobs and economic development in South Africa, as well as to manage the energy transition.

We also need to solve the issue that the tariff structuring of Eskom and municipalities has reached the point where it is becoming more cost-effective to leave the grid completely, which is a non-optimal solution. Competition needs to be introduced into the distribution space, where currently Eskom and the municipalities have monopolies over their customers, and customers that produce their own electricity are frowned upon. This approach needs to change completely, where the value of prosumers, consumers that buy and sell to the grid, and their grid-connected solar battery systems is duly recognised.

These are not minor issues, but SAPVIA remains confident that they can be solved. With the help of renewables, we have moved beyond load shedding. Government policy for the past 25 years has slowly been turning us in the right direction. What remains is for all to keep pushing towards always available, cleaner, low-cost electricity for all, and a growing economy in our sunny land.

For more information visit: www.sapvia.co.za

Renewable energy + industrial sustainability: Products + services

Seamless switch from grid to solar hybrid backup power

JSE-listed cable manufacturer, South Ocean Electric Wire (SOEW), has completed a solar installation which it says marks a global first with a seamless switch from grid to backup power in zero seconds.

Developed in partnership with GreenSun, a renewable energy supplier, the system enhances SOEW's operational resilience in South Africa's challenging environment of power disruptions and random power outages. The installation, completed at SOEW's Alrode, Johannesburg facility, leverages advanced AI-driven inverter technology and a custom-designed battery storage system to provide uninterrupted power for critical manufacturing processes. It optimises energy use based on time-of-use tariffs, weather patterns and kVA demand changes," says Tertius Ness, Chief Operating Officer of SOEW.

"The benefits of this installation are transformative. The zero-second switch eliminates downtime, which was previously costing SOEW an estimated R2 million annually due to load-shedding interruptions. By maintaining continuous power to production lines, the system safeguards product quality and delivery schedules, critical for SOEW and its clients in construction and infrastructure.

"Furthermore, the installation reduces energy costs by 30%, leveraging solar power from our roof-top installation during peak sunlight hours and storing excess energy for nighttime use. This translates to annual savings of about R1.5 million. Environmentally, the shift cuts CO₂ emissions by 600 tonnes

annually, supporting SOEW's aim to achieve carbon neutrality by 2030," Ness added.

He noted that the system's technical strength is in its hybrid inverter, which synchronises grid and battery power, enabling an instantaneous transition without the typical 10 to 20 second delay seen in conventional setups.

"GreenSun's engineers customised the configuration to handle SOEW's peak load of 450 kW, ensuring scalability for future expansion. The installation also includes real-time monitoring, allowing SOEW to optimise energy usage and respond proactively to grid instability. This data-driven approach has already improved energy efficiency by 15% since it was commissioned in June this year.

"GreenSun's solution integrates cutting-edge technology with SOEW's specific energy needs, supporting a 500 kW solar array and 1 MWh battery storage. Its innovative approach and deep understanding of our operational demands were key factors in this collaboration. The solution meets our immediate energy challenges and aligns with our long-term sustainability goals," Ness said. "It secures our operations and offers a replicable model for other manufacturers facing similar challenges."



The SOEW factory in Alrode.

Eskom launches its first Renewable Energy Offtake Programme



*Eskom Distribution
Acting Group
Executive, Agnes
Mlambo.*

Looking ahead to a future competitive energy industry, Eskom is transitioning its generation mix from predominantly coal to a fleet with an increasing proportion of clean energy sources by 2040. In line with this strategy, the national utility has launched its first Renewable Energy Offtake Programme with the issue of a Request for Proposals (RFP), inviting large power users to procure 291 MW of solar photovoltaic (PV) capacity through long-term power purchase agreements (PPAs) from Eskom-owned renewable energy sites.

The programme follows an Expression of Interest (EOI) process and extensive engagement with commercial and industrial customers, which showed strong demand for direct contracting through long-term PPAs. These agreements will enable businesses to align their operations with global sustainability standards, reduce their carbon footprints, and green their supply chains, enhancing competitiveness. The RFP offers tailored solutions to meet operational requirements and contribute to South Africa's decarbonisation goals.

Successful bidders will enter PPAs ranging from five to 25 years, with renewable energy to be delivered in phases from various Eskom projects. The earliest project is expected to reach commercial operation by December 2027.

"This is the next step in the focused execution of our strategy to integrate additional renewable energy into the grid, in line with global electricity industry trends for environmentally sustainable

solutions that support broader decarbonisation objectives. We have seen strong interest in Eskom's capabilities in green energy supply, which this programme demonstrates. Just over a year into our turnaround strategy, while maintaining our focus on ending load shedding, we are also pivoting Eskom into becoming a sustainable and competitive company and ensuring security of supply through a customer-centric approach," said Eskom Group Chief Executive, Dan Marokane.

Eskom Distribution Acting Group Executive, Agnes Mlambo said: "This programme demonstrates Eskom's commitment to innovation and building a cleaner, more resilient energy future. Offering customised renewable energy offtake solutions, we are enabling our customers to transition to low-carbon operations as we aim to deliver a secure and competitive supply through customer-centred solutions.

"Engaging with the private sector in this structured manner gives impetus to Eskom's efforts to create a sustainable pathway for clean power integration into the grid," Mlambo added.

Eskom continues to develop a balanced energy mix, comprising coal, nuclear, gas, renewables, and energy storage solutions such as battery energy storage systems and pumped hydro.

A dedicated renewable energy business will accelerate deployment, targeting 2 GW of construction-ready projects by 2026 and scaling up to 32 GW, including green hydrogen, by 2040.

The RFP is open to service providers to submit proposals via the Eskom Tender Bulletin by 19 September 2025.

For more information visit: www.eskom.co.za

Solar energy supplying dispatchable power

As the global energy sector strives to meet net-zero commitments, utility-scale solar is undergoing a fundamental transformation. No longer defined by megawatt capacity alone, solar projects are now being evaluated on their ability to deliver dispatchable power, enhance grid stability, and provide critical ancillary services. This requirement is particularly pronounced in Africa, and in South Africa, where the Just Energy Transition is accelerating the shift towards resilient, grid-integrated renewable energy.

Jaco Uys, SVP Projects Sub-Saharan Africa at Scatec, says, "Across the continent, and especially in South Africa, we are seeing a strategic move away from variable-only generation. What matters now is whether a project can deliver clean energy consistently, on demand, day or night." This means thinking beyond solar panels, to fully integrated energy systems."

South Africa's Eskom-constrained grid has spotlighted the urgent need for stable, responsive power. Grid compatibility is central to energy planning. As independent power producers (IPPs) will increasingly be permitted to co-develop transmission infrastructure under the country's new Independent Transmission Projects (ITP) framework, the focus is shifting to hybrid models that combine generation with advanced control technologies.

At the forefront of this movement is Scatec's Kenhardt project, a hybrid solar-battery development in the Northern Cape. Combining 540 MW of solar PV with 225 MW/1 140 MWh of battery storage, Kenhardt delivers consistent dispatchable energy as stipulated in a 20-year Power Purchase Agreement with Eskom. This project was recently recognised at the 2025 Solar Energy Conference in Norway for its trailblazing approach in combining renewables with

storage to strengthen energy reliability. Nic Bailey, SVP Operational Excellence and Digitalisation at Scatec, says, "Kenhardt demonstrates what is possible when you pair clean generation with flexible output. We are supplying power to the grid, and we are supporting it."

Reflecting on the solar PV industry, Bailey says, "We're not witnessing major shifts in solar technology. We are seeing incremental improvements in efficiency, equipment size, and LCOE (levelised cost of energy) year on year. That's a positive for IPPs like Scatec. It allows for predictability in planning and stability in execution."

"Amid challenges in the solar module market, the booming battery energy storage sector is emerging as an important growth area," Uys adds. "It is reshaping the value chain and fuelling supplier diversification."

In this new era, solar-plus-storage have become essential. Projects like Kenhardt prove that renewable energy can be clean, reliable, and bankable, aligning financial models with long-term energy security goals. Hybrid solutions represent the next chapter in the solar story – offering power and progress.



Scatec's Kenhardt project in the Northern Cape combines 540 MW of solar PV with 225 MW/1 140 MWh of battery storage.

The benefits of hybrid energy solutions for manufacturers



Eduardo Werninghaus,
CEO, WEG Africa.

The use of solar energy is surging in South Africa and research conducted by the CSIR indicates that much of the steadily increasing installed capacity is in the commercial and industrial sectors. However, the energy produced is primarily ‘self-consumed’, which suggests that many manufacturing sites draw power directly from their solar installations and do not supplement their energy independence by using energy storage or hybrid energy solutions.

Eduardo Werninghaus, CEO at WEG Africa, says there are three main reasons for this: cost, reliability, and support.

“Manufacturers are big solar adopters. In South Africa’s industrial parks, many facilities have panels on their roofs. But that’s often still at the ‘surface level’. The need to justify the capital costs associated with energy projects often deters these organisations from installing more comprehensive systems. Many manufacturers would increase their use of solar if they could count on greater reliability and support, especially in energy storage and hybrid power.”

Why manufacturers limit their solar adoption

Usually, solar panels coupled with an inverter can help a manufacturer supply some of its lighter operational energy needs. But to power heavier machinery and processes that can run 24/7, solar has limitations.

The most obvious is the reliance on sunlight during daylight hours; even cloudy days bring notable dips in energy generation. Another limitation relates to certain types of machinery that require slow starts or experience dramatic swings in power usage.

Many manufacturers still see solar as a complementary energy source, not a viable alternative to grid-based energy. But Werninghaus says they could do more with access to the necessary expertise that delivers and supports adequate energy solutions.

“Comprehensive solar and energy solutions are more specialised,” he notes. “There are not many brands that can deliver the guarantees customers want to see before they consider taking this route. Companies like WEG have developed end-to-end capabilities offering manufacturers energy solutions that help them become fully self-reliant,” Werninghaus says.

The hybrid energy future

An end-to-end energy solution tends to gravitate around an original equipment manufacturer (OEM) that has established development, production, solution design, and deployment excellence across its value chain, from generation, transmission, and distribution to load usage and storage.

This thread of products and services is important to meet the cost, reliability, and support criteria; each area overlaps with the others, making each essential to ensure customers realise value from their energy investments. OEMs providing such integrated solutions deliver on cost, reliability and support.

Cost: manufacturers are unlikely to invest in comprehensive

energy infrastructure unless they can demonstrate a clear justification. An OEM providing an end-to-end energy value chain covers equipment and materials, engineering, and the business expertise to align with a manufacturing customer’s requirements – including space usage, energy fluctuations, compliance, and deployment. OEMs like WEG also reduce costs through economies of scale and local manufacturing.

Reliability: to justify investment, manufacturers need to know their energy systems will continue to deliver. Reliability needs the right ingredients, from the type and number of solar panels, battery energy storage systems (BESS), and software to manage supply and demands to hybrid designs including generators and steam turbines. End-to-end solution providers deliver reliable energy systems because they have access to and control over the various components, skills, and innovation.

Support: without adequate and responsive support for their installed solar and hybrid systems, manufacturing operations can still find themselves in the dark. OEMs providing an end-to-end solution control their supply chains, especially when they have an established local manufacturing footprint. They consistently produce components, develop skills, and build local networks to ensure reliable maintenance and support.

Solar is an abundant and freely available source of energy on which manufacturers can capitalise. With the right solution and comprehensive OEM support, they can limit their vulnerability to power outages. They can build a buffer against rising energy prices and play a part in Africa’s energy transition.

For more information visit: www.weg.net



Solar is an abundant source of energy that manufacturers can capitalise on, with the right support.

Facilitating decarbonisation in the mining sector

Pan African Resources (Pan African), a dual JSE- and AIM-listed gold producer and tailings retreatment specialist, has entered into an energy supply agreement with energy aggregator NOA Group Trading (NOA), securing a renewable energy profile equating to an allocation of 44 MW ac (112 GWh) per year – representing about 10% of Pan African's total electricity load.

The ten-year agreement, which includes an option to extend to 15 years, is a structured and scalable solution allowing Pan African to source renewable energy from multiple generation facilities across the country, ensuring increased reliability of energy supply to its Barberton Mines, Evander Mines and Mogale Tailings Retreatment (MTR) operations in Mpumalanga and Gauteng. This approach optimises generation profiles by leveraging diverse geographic and resource-specific characteristics.

The agreement also includes the provision of verified International Renewable Energy Certificates (I-RECs), enabling Pan African to progress towards its decarbonisation goals and report emissions reductions of some 137 000 tonnes of CO₂ per year.

"This is another strategic step in our journey towards sustainability and operational resilience following the commissioning of our solar renewable energy plants at Evander Mines in 2022 and Barberton Mines in 2024," said Cobus Loots, CEO of Pan African. "In addition to materially reducing the group's carbon emissions, these projects will assist in stabilising the electricity supply to our South African operations, and in realising commensurate cost savings that will sustainably reduce our overall AISC (all-in sustaining cost) per ounce of gold production in the longer term."

NOA, backed by African Infrastructure Investment Managers (AIIM), has now secured several major power supply agreements in the mining sector. This deal reflects the growing demand for reliable, cost-effective renewable power from mining operations as the industry pivots toward greener energy alternatives.

"We recognise the enormous potential in South Africa's mining



Pan African Resources and the NOA Group have signed a 10-year renewable energy supply agreement.

sector, with around 15.8 GW of renewable energy initiatives currently under way," said Karel Cornelissen, CEO of NOA Group. "Our focus on scalability and tailored energy solutions means we can offer competitive tariffs and help clients meet their ambitious ESG commitments."

Cornelissen added that this transaction was concluded in just three months, underlining the agility and entrepreneurial drive of both companies. "Speed to market and contract flexibility are central to our value proposition. This is what's possible when two committed and solution-oriented teams come together."

Pan African is widely acknowledged as a leader in mine-site renewables, having commissioned South Africa's first utility scale distributed generation facility, the 9.975 MW ac solar PV plant at Evander in 2022, providing about 30% of the Elikhulu tailings retreatment plant's power demand at Evander. The company also commissioned its 8.75 MW ac Fairview solar PV plant at its Barberton Mines operations in August 2024. It is currently advancing the development of an additional ~20 MW solar facility at Evander Mines and has initiated a feasibility study for renewable energy infrastructure at its recently commissioned MTR operation.

Fresh funding for C&I solar solutions



In providing solar energy solutions for businesses, Candi focuses on reliable long-term partnerships where revenue is tied to results.

Candi Solar, a leading distributed energy company that simplifies clean power supply for businesses in emerging markets, has secured USD 24 million in fresh funding from its existing investors. The raise includes a USD 20 million

convertible loan from Norfund and STOA, as well as a USD 4 million top-up to its existing mezzanine facility with the Energy Entrepreneurs Growth Fund (EEGF). This brings Candi's total capital raised to over \$140 million, reinforcing the company's position as a long-term energy partner in some of the world's most carbon-intensive energy markets.

With 165 installations across South Africa and India, and over 132 MWp in clean energy deployed, Candi Solar continues to play a valuable role in helping businesses to overcome high energy costs and unstable electricity supply. In South Africa, the company has active operations around the country, delivering solar solutions for clients such as Kings Park Stadium HQ, Schneider Electric, Pick 'n Pay, Hi-Tech Inks, Toyota, and Bracken Timbers – where the solar installation has already saved R3 million in just three years.

Candi Solar has built a model that blends the capital expertise of international investors with the local know-how of an on-the-ground energy partner. Over the past 12 months,

Continued on page 17

Building technical skills in wind energy

As part of its commitment to skills development and youth employment, Nordex Energy South Africa has inducted a new group of interns into its national wind power internship programme. This follows the successful completion of the inaugural training programme and full absorption of all participants from that first intake, each of whom has been permanently employed by the company.

Launched in November 2023, the 18-month internship programme is a strategic investment in building the country's skilled workforce, specifically, skilled wind turbine service technicians. Aligned to national energy goals, the programme provides young engineers – qualified in electrical, mechanical, or mechatronics disciplines – with critical workplace experience at Nordex-operated wind farms around the country.

Lubabalo Vandala, a graduate of the first cohort in the internship programme and now a Service Technician at Copperton Wind Farm said: "Having a mentor and being able to work alongside other technicians gave us a broader perspective and practical understanding of fault analysis. This programme has opened doors for us – we're now excited about growing within this industry."

With South Africa's renewable energy build-out accelerating, the demand for skilled technicians is growing, as is the deployment of larger, more advanced wind turbine technologies. By investing in local skills, OEMs like Nordex are supporting job creation and the sector's resilience.

To source candidates for the second intake, Nordex adopted a new peer-referral model – calling on experienced technicians to nominate candidates from within their professional networks. This approach has helped identify individuals with a strong fit for the sector's demanding fieldwork and team dynamics.

The new intake of seven interns began their placements in June 2025, starting with technical and safety training before joining site-based service teams under the guidance of assigned mentors. Interns are immersed in turbine operations, including troubleshooting, maintenance, warehouse logistics, and technical presentations on key wind systems such as condition monitoring

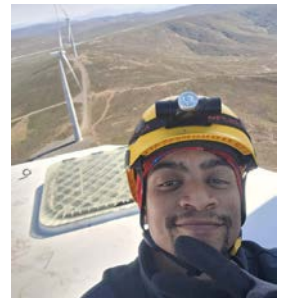
systems (CMS), pitch and yaw systems, and energy conversion technologies.

"The impact of the mentor-intern interactions has been significant. We've seen a direct link between strong mentor engagement and intern development," said Zelrese Brair, Head of People & Culture at Nordex Energy South Africa. "Several interns from the first cohort were selected early on for advanced tasks, based on performance and potential."

Aidan Swartz, former intern and now a Service Technician at Roggeveld Wind Farm, reflected on what he learned. "This internship set a strong foundation for my career. I received on-the-job training and technical instruction from experts, which gave me a deep understanding of turbine systems. I wouldn't have had that exposure had I taken a different path in the electrical field."

Performance monitoring and feedback loops have enabled continuous refinement of the programme. Notably, site-specific placements (rather than rotational ones) and targeted support have improved the interns' experience as well as operational continuity.

The programme places interns across wind farms in the Eastern, Western and Northern Cape provinces, including Garob, Amakhala, Roggeveld, Copperton, and Dorper wind farms.



Aidan Swartz, former intern and now a Service Technician at Roggeveld Wind Farm.



Lubabalo Vandala, one of the graduates of the first intake of interns, now works at Copperton Wind Farm.

Continued from page 16

the company has added more than 60 MW to its portfolio with operations in eight provinces in South Africa and 22 Indian states and union territories.

With this growth, Candi is redefining how solar works for businesses. As more companies adopt solar energy, a new challenge has emerged: making sure those systems deliver over time.

Candi's performance-based model focuses on reliable long-term partnerships where revenue is tied to results, beyond the installation. With advanced monitoring, intelligent upgrades, and hands-on system management, clients gain the confidence that their solar installation is delivering consistent value, without their having to manage the operational burden.

Candi has introduced various solutions tailored for businesses with existing solar installations.

- Solar Refi is a refinancing solution that unlocks capital from current assets and transfers performance manage-

ment to Candi.

- Solar Protect+ is a performance-backed service where Candi takes over operations, maintenance, and monitoring, and ensures guaranteed generation. If the system underperforms, Candi takes the hit. This means clients gain downside protection, and Candi is incentivised to deliver upside.

Positioned for growth

"The latest round of funding enables us to deepen our presence in core markets, expand our product suite, and continue to attract world-class talent," said Fabio Eucalipto, Co-founder and Director at Candi Solar.

"More than that, it validates a long-term approach in a space often dominated by short-term thinking. This raise is about building the financial and operational structures that make clean energy investable at scale in emerging markets. Solar energy on its own doesn't solve the problem; how you fund it, run it, and prove it works over time are also important."

Addressing carbon neutrality in hard-to-abate sectors

As the global drive toward carbon neutrality pushes ahead, some countries and industries are aiming for 2040, others have set their sights on 2050, to reach their targets. For heavy industry and hard-to-abate sectors, reaching these goals presents significant challenges, yet pressure is mounting across all industries to make progress.

Addressing this transition, Envusa Energy offers tailored, scalable solutions to support organisations on their path to carbon neutrality and sustainable energy. A 50/50 joint venture between EDF power solutions and Anglo American, Envusa Energy delivers clean, scalable energy solutions and is playing a key role in helping major industrial operations, including Anglo American, progress towards their carbon neutrality goals. The company is now expanding its service in offering tailored solutions to support various organisations on their path.

“Our objective is to extend our services into the wider market and support other hard-to-abate entities in Southern Africa on their carbon neutrality journey,” says Nicole Mason, Acting CEO of Envusa Energy.

Taking ambition into action

Sectors such as mining, steel, and cement are among the largest contributors to carbon emissions globally. Envusa understands that each organisation is different, each faces its own set of complexities shaped by industry, scale, and geography. This drives Envusa to develop tailored energy solutions, carefully aligned with the specific operational realities and long-term sustainability goals of each client. Rather than a one-size-fits-all model, Envusa has adopted a portfolio-based strategy that allows for partnership and collaboration between the independent power producer (IPP) and the off-taker. The company develops and integrates a range of energy assets – wind, solar, and battery storage – across geographies and aggregates them to supply a portfolio of clients.

“As well as meeting power demands, this approach mitigates risk and enables cross collateralisation at a portfolio level,” says Mason. “Our competitive advantage lies in creating a balanced and complementary energy mix that brings us closer to achieving carbon-neutral electricity supply.”

A proven platform

Envusa’s two major partners, EDF power solutions, with its global experience in energy systems, and Anglo American, with its deep regional presence and a strong commitment to sustainability, give the business a significant advantage in delivering optimal solutions to off-takers. Its partnership with Anglo American has delivered a proven platform, with the mining company on track to reach its goal and move towards carbon-neutral electricity across its operations by 2040.

“The capabilities and commitment of the people at Anglo American, Envusa Energy, and EDF power solutions have

proven to be effective and have allowed us to accelerate progress in ways that would have been difficult to achieve independently,” Mason adds.

The company also brings technical credibility and long-term reliability to its off-takers. It claims to be currently the only IPP and energy trader in the market with the capacity to deliver a genuine portfolio-based approach. Every project is assessed comprehensively to ensure alignment with its Net Positive Impact (NPI) goal. This supports the preservation of ecosystems while enabling development.

Building communities

For Envusa, a Just Energy Transition is inseparable from community development. Through its social economic development approach, the company adapts its strategy to each project’s location, engaging early with local stakeholders.

“Community relationships are vital, no matter where a project is located,” says Mason. “Our community interface is critical to the success of our business.

“Each project is different. For us, the most important thing is to listen to communities and respond to their needs and priorities. Energy is fundamental to social and economic development and delivering clean, renewable power to regions experiencing energy shortages is deeply rewarding. It empowers communities and enables long-term socio-economic development.”

The road ahead

For Mason, the most exciting aspect of the company’s work is its transformative impact on the Southern African energy landscape. Envusa is fast approaching a major milestone as the Koruson 2 cluster of projects, comprising 240 MW of solar PV and two 140 MW wind projects, to deliver 520 MW of capacity in total, is nearing commercial operation. This will mark a major step forward for the company in achieving its long-term goals.

“There is significant potential for us to expand, to contribute to the region’s energy needs and to play a role in advancing a more open and competitive electricity trading market in South Africa,” says Mason.



The Mooiplats solar PV plant is part of the Koruson 2 cluster of projects, now nearing commercial operation.

High efficiency storage with long-term reliability

Trina Storage has released independently verified operational data from a 150 MW utility-scale agrivoltaic and storage project, confirming strong performance in efficiency and long-term reliability.

The project, part of a solar + storage hybrid renewable energy installation, has been in continuous operation for over a year. Performance evaluation was conducted by UL Solutions and the China Quality Certification Centre (CQC), two globally recognised third-party authorities. Testing results show the system consistently achieved 95.2% dc-side efficiency and 87.1% system-level round-trip efficiency, placing it among the most efficient large-scale energy storage systems currently in operation.

“We are proud to see our technology delivering real value under field conditions,” said Shawn Deng, Head of Global Product & System Integration at Trina Storage. “From cell-to-ac capability to third-party validation, our goal is to build trust through performance. We will continue working with global partners to test next-generation systems in diverse environments and provide transparent, data-driven benchmarks for the industry.”

Integrated efficiency from cell to grid

The project is powered by Trina Storage’s Elementa Series, a smart, flexible energy storage solution built with Trina Storage’s proprietary in-house battery cells. Designed for flexibility and scalability, Elementa delivers high efficiency, safety, and long-term reliability by optimising performance across the system – from cell to grid.

Key system features include a smart thermal management system, which keeps cell temperature variation within 3°C, and

auxiliary power consumption as low as 1.8%. Together, these capabilities reduce energy loss by around 30% compared to conventional systems and contribute an estimated 200 000 kWh of additional electricity annually, boosting overall output and returns.

Strong economic performance

After more than a year in operation, the system retains 98% of usable capacity, indicating minimal degradation and strong cycle performance. This long-term reliability supports a 15 to 20% reduction in Levelised Cost of Storage (LCOS) compared to industry averages, supporting project bankability.

With its high efficiency and stable performance, the system enables participation in multiple market applications, including energy arbitrage, frequency regulation, and reserve services, helping operators diversify revenue streams and shorten investment payback periods.



The 150 MW agrivoltaic + storage project powered by Trina Storage’s Elementa Series.

Stackable energy storage system

TESVOLT, a leading European full-service provider of innovative energy storage system solutions for commerce and industry, introduced its new battery storage solution TESVOLT TAYTAN to the market earlier this year. The system consists of battery modules that simply plug into each other – with no external cables. Between three and ten modules can be stacked, depending on the required storage capacity – serving the needs of smaller commercial operations. The battery modules for the new energy storage system are manufactured by TESVOLT in its new gigafactory in Wittenberg, Germany. The battery system is designed to work with different inverters, and built-in Infineon chips protect it against cyberattacks. A 12-year performance guarantee ensures investment security.

Produced in Germany

“Although the new storage system is produced in Germany, the pricing is in the same ballpark as comparable Chinese storage systems. We can do this because our new gigafactory in Wittenberg enables high-volume production with the sophisticated manufacturing processes we have developed,” says Simon Schandert, CTO and Co-founder of TESVOLT AG. “One major advantage we have over Chinese storage system providers is that we offer on-site service and we have all the spare parts on hand in our Wittenberg facility. We do not leave our specialist partners hanging when problems arise.”

Cyber protection incorporated

“These days it is particularly important that battery storage systems are safe from cyberattacks. Batteries are considered critical

infrastructure, but the risk of battery systems being switched off remotely, or third parties gaining access to sensitive data is real in the current geopolitical context,” says Daniel Hannemann, CEO and Co-founder of TESVOLT. “That’s why we use Infineon chips, which offer the highest security against cyberattacks available.”

Modularity provides scalability

Each battery module has a storage capacity of 6.25 kWh. The TESVOLT TAYTAN starts at three modules, which equates to a total capacity of 18.75 kWh. A maximum of 10 modules can be stacked on top of each other, which means the new storage system can reach a total capacity of 62.5 kWh. Up to four battery storage systems can be operated in parallel via an inverter.

A further advantage is that the new battery storage system doesn’t require an active cooling system. The battery modules release their heat to the metal casing, so they are cooled by the ambient temperature. The TESVOLT TAYTAN can also be operated without an active heating system. The storage system can be operated at ambient temperatures of -20 to 50°C and is suitable for outdoor use.



The TESVOLT TAYTAN new battery storage solution allows for up to 10 x 6.25 kWh modules to be stacked.

High-precision fill quantity control

Precision is important in the production of food supplements. When Vital Products GmbH, a leading contract manufacturer of nutritional supplements, was looking for a precise and efficient solution to check the weight and ensure the completeness of its products, the main objective was to reinforce the company's high quality standards using reliable technologies.

Minebea Intec supplied its Flexus® WS 1 kg checkweigher with the powerful SPC@Enterprise software solution to meet the needs of this application. This combination enables precise weight control and comprehensive process monitoring and analysis.

The Flexus® checkweigher checks the weight of the plastic bottles accurately to ensure that each product meets the defined specifications. At the same time, the check scale performs a

completeness check to ensure that all containers are filled correctly. The seamless integration of the SPC@Enterprise software allows Vital Products to evaluate the required production data in detail, identify weak points and optimise processes.

The advantages are clear: quality assurance and greater efficiency with simple operation and seamless integration of the software into the production process. The detailed data analysis



Minebea Intec's checkweigher and software support quality compliance in the food supplements produced by Vital Products.

means quality standards can be easily monitored and met, and it facilitates audits. This strengthens internal process reliability and end customers' confidence in the products produced by Vital Products.

The company was pleased with the solution supplied, noting particularly the reliability of the checkweighers and the support of the Minebea Intec Service and Support team. This positive experience led to a further enquiry: two additional checkweighers are to be added to the production lines so the entire production plant will be equipped with Minebea Intec's technology.

A customised solution

The project demonstrates how Minebea Intec creates added value through its innovative solutions and customer-oriented service. The combination of precision, efficiency and process control has improved production quality at Vital Products and laid the foundation for a long-term partnership. This is an example of how customised solutions from Minebea Intec can help to meet demanding customer requirements and deliver a competitive advantage.

Rainer Skotnik, Managing Director at Vital Products GmbH, comments: "The solutions of Minebea Intec, especially the Flexus checkweigher, have significantly improved our product quality and processes. Precision, reliability and excellent service are convincing across the board."

Key benefits

- Precise weight control and completeness checks ensure compliance with strict quality standards.
- Detailed data evaluations enable production processes to be optimised and increase process reliability.
- Seamless software connection facilitates quality control and supports audits.

Smart pressure indication in hygienic areas

ifm pressure sensors have proven to be a reliable solution in the food and beverage industry for many years. Following the successful updates to the transmitters and display versions, ifm's new

Pressure Gauge has now been revised and boasts new and improved features. The multicolour LED display enables clear and unambiguous visualisation of pressure ranges, switching points, minimum and maximum values and trend curves. Mechanical pointers, which are prone to errors, are replaced by durable and highly visible LEDs. This technological advance ensures improved clarity and reliability.

Robust ceramic measuring cell

The pressure sensor itself has a highly robust ceramic measuring cell which can easily withstand even extreme pressure peaks and overloads. Due to the measuring cell's high resistance to abrasive media, it offers a durable and reliable solution for demanding applications. Unlike conventional sensors with a metallic diaphragm, the ceramic measuring cell does not require oil as a pressure transfer medium. This completely eliminates the risk of medium contamination if

the sensor is damaged; a property that makes the pressure sensor particularly suitable for use in the food and beverage industry with its strict hygiene requirements.

IO-Link

In addition to typical functions such as parameter setting and process value transmission, the Pressure Gauge offers further information and options via IO-Link:

- Display optimisation (brightness, colour, layout)
- Minimum and maximum memory, counter
- Device temperature.

Key features

- Optimum interpretation of measured values, for example, through operating ranges that can be customised in colour as well as threshold and trend displays
- Pressure peak and overload-resistant ceramic measuring cell
- Fast compensation of dynamic temperature changes
- Permanent 150°C medium temperature
- Very high resolution with 32-bit process value transmission via IO-Link.

For more information visit: <http://www.ifm.com>



The ifm electronic manometer now with LED display.

We don't wait for the future. We make it.



Production processes, above all, must be safe, reliable and efficient. With our level and pressure measurement technology, you get exactly that. Durable sensors and accurate measured values make your work smarter, easier and more sustainable.

Everything is possible. With VEGA.

Redefining synthetic fuel production

The mobility revolution stands out as a key aspect of climate protection efforts, with synthetic fuels produced using renewable energy sources emerging as a promising solution to reduce CO₂ emissions. Polish company Ekobenz is a prominent player in



The VEGA Tools app enables remote monitoring of the measured values in the separation tank.

this field; it specialises in producing bio-hydrocarbons. The company uses advanced manufacturing techniques where VEGA sensors monitor levels and interfaces, overseeing separation layers in the process.

Synthetic fuels are created through chemical synthesis and represent a viable alternative to fossil fuels, particularly those derived from petroleum. One of the significant advantages of synthetic fuels is that they can be used in existing vehicles, replacing conventional fuels and cutting CO₂ emissions considerably.

To produce synthetic fuels, Ekobenz uses ethyl alcohol obtained from waste products, with a catalyst to trigger the bio-hydrocarbon synthesis. This process generates bio-butane-propane (bio-

LPG), liquid bio-hydrocarbons (bio-petrol), and aromatic bio-hydrocarbons. "To help reduce CO₂ emissions, we've developed technologies that are unique worldwide," says Piotr Kobiec, Head of Production at Ekobenz. The company boasts a cutting-edge processing plant equipped with innovative automation solutions and top-notch instrumentation technologies. VEGA sensors constitute an essential component of the plant, facilitating reliable monitoring of critical process parameters.

In a three-phase separator, the VEGAFLEX 81 sensors, which are designed based on the guided wave radar principle, measure the hydrocarbon/water interface. The data they provide is key to

managing the amount of water pumped from the container to the wastewater treatment plant, thus preventing any unintended escape of hydrocarbons.

Continuous level measurement within the column's floors is also needed. Stable monitoring of the medium's level in the production process is crucial. This is achieved with multiple VEGAFLEX 86 radar sensors installed in a bypass tube, delivering precise measurements, even under extreme pressure and temperature conditions.

VEGA's measuring instruments are recognised across industries for their accuracy and maintenance-free operation. Before deploying VEGA sensors, Ekobenz used level transmitters with magnetic floats that were not meeting its requirements due to their complex operation, measurement inconsistencies, and the need for frequent cleaning. VEGAFLEX sensors offer reliable measurements for almost any liquid, and in challenging conditions too, where buildup, steam or foam are present. The sensors can endure constant high temperatures, from 140 to 280°C, and meet the company's Ex certification requirements in line with ATEX standards.

VEGA sensors also provide ease of use. 'As simple as possible for the user' is a guiding design principle for VEGA, and Ekobenz values this. Integrating the sensors into the plant was straightforward and could be done efficiently with the support of PACTware software, which facilitated the configuration of the measuring instruments. PACTware enables swift adjustments to sensor parameters, carries out diagnostics, and produces documentation.

"User-friendly operation is important for us," says Piotr Kobiec, as he confirms his satisfaction with the VEGA instruments. Another significant benefit is that the VEGA Data Viewer is included free of charge in the Ekobenz service package. Kobiec particularly appreciates the high measurement reliability of the nearly maintenance-free sensors. Additionally, innovative solutions provide various methods to monitor the measured values remotely – from a computer, tablet, or smartphone – making oversight more convenient.

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

High-performance mass spectrometer for trace-level analysis

SPECTRO Ametek has launched the new SPECTROGREEN MS Quadrupole Mass Spectrometer, an innovative ICP-MS solution for high-performance routine trace-level elemental analysis offering unmatched ease of use. The SPECTROGREEN MS combines advanced technology with simplified workflows to meet the needs of laboratories in environmental, pharmaceutical, food, consumer product testing, and industrial applications.

Key features

Powerful analytical performance: Featuring a high-matrix interface, efficient collision/reaction cell technology, and a state-of-the-art quadrupole analyser, the SPECTROGREEN MS ensures high sensitivity, stability, and interference control, to meet standards such as EPA 200.8, USP 232/233, and ISO 17294-2.

Ease and speed: Streamlined workflows, quick stabilisation times, and features like the optional SPECTRO Intelligent Valve System deliver shorter sample-to-sample times and rapid washout. The Quadrupole Digital Sequencer (QDS) allows analysis of both high-concentration and trace isotopes in a single measurement. Maintenance is minimised with XYZ-stage-mounted components for fast, reliable access.

Intuitive, customisable software: The SPECTRO ICP-MS Analyser Pro software offers a modern interface with a step-by-step setup method, automatic optimisation, and flat-file data storage for traceability, reducing training requirements and enabling fast, accurate results.

Minimal maintenance: Designed for reliability, the SPECTROGREEN MS includes a ratchet-based torch holder and advanced vacuum components for easy maintenance. Its gas dilution system simplifies high-matrix sample analysis, saving time and reducing errors.



The new SPECTROGREEN ICP MS provides reliable, routine, trace-level analysis for industrial applications.

Government opens transmission build to the private sector

As part of ongoing efforts to unlock infrastructure investments and strengthen South Africa's energy sector, government is inviting the private sector to invest in the country's transmission infrastructure through the Independent Transmission Projects (ITP) Programme.



Government is, for the first time, inviting private investment into expanding and strengthening the national grid.

At the end of July 2025, Minister of Electricity and Energy Dr Kgosientsho Ramokgopa officially opened the prequalification stage for the ITP Programme. Submissions responding to this Request for Qualifications were due by 9 September this year.

This is the first time that private investment is being invited to support South Africa's transmission infrastructure, paving the way for a faster rollout of new high-voltage power lines and additional substations across the country. It will bolster the efforts already under way by the National Transmission Company of South Africa (NTCSA) in implementing the Transmission Development Plan, which indicates a requirement for more than 14 000 km of new lines and 105 new substations to be built. Ramokgopa confirmed the Grid Infrastructure Investment Plan finalised by Eskom and the CSIR maps out priority zones for expansion in line with the Integrated Resource Plan. The ITP is central to this long-term strategy.

Support from Treasury

The programme is supported by Eskom and by National Treasury. Speaking at the launch of the Request for Qualifications for the ITP in Johannesburg, Deputy Minister of Finance Dr David Masondo said: "The introduction of ITPs is a key objective of Operation Vulindlela Phase II and will play an important role in the broader reform of the energy system. This includes the introduction of a competitive electricity market, which will allow multiple generators and traders

to compete to provide electricity to consumers at the lowest cost and with the greatest efficiency."

Masondo said the reform of the energy system is advancing rapidly and government is fully committed to it. The objective is to ensure long-term energy security and expand access to affordable electricity for all South Africans.

He added that National Treasury is supporting this process with a Credit Guarantee Vehicle, designed as mechanism to unlock private capital and complement public financing for infrastructure while minimising contingent liabilities.

South Africa faces a significant need for infrastructure financing. "This calls for the scaling up of public financing for infrastructure as well as drawing in private capital through public private partnerships (PPPs). The objective of the Credit Guarantee Vehicle is to mobilise private capital to address South Africa's infrastructure financing gap by mitigating offtake risk for private investors," Masondo said.

"The vehicle will also support the efficient deployment of development partner funding under the Just Energy Transition Partnership (JETP) and the achievement of the country's decarbonisation commitments," he said.

Although the initial focus will be on enabling investments in transmission infrastructure, it is anticipated that the Credit Guarantee Vehicle will be expanded into other areas such as logistics and water, over time.

Masondo said: "The vehicle will be incorporated as a private company in South Africa, regulated by the Prudential Authority. It will operate as a

Continued on page 25

Focused on low-carbon and renewable energy globally

EDF Renewables and EDF Group International Division have combined their expertise to form EDF power solutions. This strategic move consolidates international capabilities under a single entity globally, strengthening the company's ability to deliver integrated low carbon and renewable energy solutions.



Tristan de Drouas, VP of EDF power solutions (Southern Africa).

By leveraging its technological, commercial, and geographical synergies, the business is positioned to support partners and customers in regions where it operates as an independent power producer (IPP), with a strong focus on delivering decarbonised energy.

"EDF power solutions is ready to support all existing and new clients as they transition to renewable energy – operating across 25 countries, with multi-technology expertise in wind, solar, hybrid, hydropower and pumped hydro storage, battery energy storage systems and biomass," says

Tristan de Drouas, VP of EDF power solutions (Southern Africa).

For EDF power solutions, this step represents a significant shift in the company's operational approach. The EDF group is reinforcing its commitment to providing integrated, scalable, and flexible low-carbon energy solutions, tailored to meet the diverse needs of public and private sector stakeholders. With a gross installed capacity of 31 GW in its low-carbon electricity generation portfolio and 10 000 employees internationally, EDF power solutions delivers competitive, responsible, and value-driven projects that support decarbonisation and the development of more efficient electrical grids in the drive to counter climate change.

Supporting the evolution of South Africa's energy sector

EDF power solutions is playing a part in the unbundling and modernisation of South Africa's energy infrastructure.

"We are currently building 1.5 gigawatts (GW) of generation capacity in South Africa, on 11 renewable energy sites for both government and private clients. The projects are expected to come online between the end of 2025 and 2026. They include solar farms, battery energy storage systems, wind energy facilities, and the

construction of a Main Transmission Substation for the national utility," says de Drouas.

"With around 40% of project value sourced locally and 1% of revenue committed to socio-economic development, our approach is rooted in sustainability, innovation, and partnership.

"With proven expertise and technical capacity, EDF power solutions is equipped to support the national utility and stakeholders more broadly through the energy transformation. We anticipate further involvement in grid infrastructure as the country transitions towards decentralised generation and wheeling frameworks," de Drouas adds.

"We have seen rapid growth in the demand from private offtakers seeking to source their electricity directly from private players and IPPs like EDF power solutions. This shift towards private sourcing introduces a range of new requirements for Eskom. It has always been, and remains, our intention to continue supporting the national utility in addressing the evolving demands of the energy transition, in the generation and transmission domains."

Hydropower potential in Southern Africa and Lesotho

South Africa's Integrated Resource Plan (IRP) highlights the commitment of government and the national utility, Eskom, to incorporating hydropower in the renewable energy mix. EDF power solutions notes that South Africa and Lesotho together hold significant hydropower potential, and it is positioning itself to play a leading role in this field.

"EDF as a group has long been a leader in the hydropower industry," says de Drouas. "In Africa, the Nachtigal hydro plant, which EDF power solutions built in Cameroon, became operational on 18 March 2025. This flagship project delivers 420 megawatts of power, supplying 30% of Cameroon's electricity needs. It serves as a model that EDF power solutions intends to replicate across Southern Africa, with projects currently under construction in Malawi, Mozambique, and Madagascar. These initiatives demonstrate that we can lead the integration of hydropower projects into the region's electrical systems.

"As policies and frameworks for future hydropower development take shape, EDF power solutions is ready to contribute and is



Battery energy storage and the main transmission substation at Umoyilanga Dassiesridge.

committed to working closely with local governments. The company prides itself on being a strong technical player, as well as a developer.”

Enhancing grid resilience

The rapid adoption of intermittent renewable technologies, driven primarily by local initiatives and fast implementation, presents challenges for the stability of the national grid. Over the past 15 to 20 years, regions worldwide have experienced rapid growth in renewable energy and its impact on the grid.

“This is why we see a clear need in South Africa for the integration of battery solutions into the grid, not only to complement solar plants and wind farms, but also to help stabilise grid tension and frequency. This is a technology that EDF power solutions has mastered locally, with reference projects already under way,” says de Drouas.

“Our Oasis 2 project, awarded in the second bid window of the Battery Energy Storage Independent Power Producer Procurement Programme (BESIPPPP), presents a project case. With 77 MW of capacity and 308 MWh of storage, it is designed to stabilise supply and enhance grid resilience. These technologies are critical to unlocking the full potential of intermittent renewable energy like wind and solar.”

EDF power solutions differentiates itself in the energy sector by implementing complex solutions that integrate battery systems on client premises, within its renewable generation facilities, or near grid infrastructure. These solutions help mitigate the effects of intermittency and support the broader shift from a centralised energy model, historically reliant on large coal-fired plants, to a more decentralised grid, where power generation is increasingly distributed.

Integrating renewable energy in South Africa

EDF power solutions is responding to the ongoing power shortage in Southern Africa by rapidly increasing its renewable



The Umoyilanga Dassiesridge wind farm, currently in construction, includes battery energy storage and a main transmission substation.

energy projects. De Drouas, states that the EDF group plans to maintain this growth, building on average 500 MW of new projects annually until 2030, on top of the 1 500 MW of wind, solar and battery assets that it currently has under construction. This new infrastructure will contribute to the uplifting of communities, providing access to affordable and reliable electricity, and supporting socio-economic development.

A significant part of the group's planned growth comes from Envusa Energy, a joint venture between Anglo American and EDF Power Solutions. Envusa Energy focuses on providing renewable energy solutions to the commercial and hard-to-abate sectors. It aims to develop between 3 and 5 GW of renewable energy capacity by 2030 and is already delivering customised power purchase agreements and energy management strategies to large energy users. “With this vehicle we aim to serve other clients across the region to help with their needs in their own energy transition towards sourcing low-carbon electricity,” says de Drouas.

Transformers, substations + the grid

Continued from page 23

standalone entity with an independent balance sheet and will target a minimum credit rating of AAA.” He added that a professional executive management team and board of directors with relevant experience and expertise is to be appointed to operate and manage the fund.

The Credit Guarantee Vehicle will issue a combination of payment and termination guarantees to a Special Purpose Vehicle established for the project. This will substantially derisk early investments in ITPs until the model is proven and established.

“We are targeting an initial capital raise of US\$500 million from a range of development partners. National Treasury has committed to providing first loss capital of 20%, which will be an initial US\$100 million increasing to US\$500 million (R9 billion) if needed.

“In February 2025, the Minister of Finance, Enoch Godongwana, wrote to selected development partners inviting them to submit an expression of interest to invest in the vehicle. The responses

received have been overwhelmingly positive,” Masondo said. “More than 32 development partners have been engaged thus far.”

Formal engagements with participating partners are continuing and will lead to the delivery of conditional equity participation commitment letters in the third quarter of 2025. This will enable the Credit Guarantee Vehicle to be operationalised by July 2026 to align with the first phase of ITP projects.

“South Africa's ITP programme, backed by credit guarantees, represents a globally innovative model which has been designed with our own context and needs in mind. It is expected to attract substantial new investment in infrastructure, and it will enable thousands of megawatts of new renewable energy capacity to be connected in areas where grid capacity is currently limited. This, in turn, will support the country's economic growth, facilitate the creation of jobs, and power our economy into the future,” Masondo said.

For more information visit: www.sanews.gov.za

Preparing participants for a liberalised electricity market

As South Africa advances towards a more open and competitive electricity market, the National Transmission Company South Africa (NTCSA) has launched the SAWEM School to equip market participants with all they need to know.

The SAWEM School provides a structured, three-days-per-month programme that combines theoretical insight with practical simulations. The objective is to prepare independent power producers (IPPs), aggregators, traders, large customers and other stakeholders for participation in the South African Wholesale Electricity Market (SAWEM).



The NTCSA highlights that certification from the SAWEM School will be compulsory for market entry.

“The SAWEM School is your launchpad into the competitive electricity market,” said Keith Bowen, Senior Manager: Market Operations at NTCSA. “It’s a key step towards building a knowledgeable, compliant and capable participant base.”

Certification from the SAWEM School will be compulsory for market entry, in line with the SAWEM requirements. Only those who complete the programme will be eligible to operate in the SAWEM market once it is live.

The curriculum includes:

- In-depth understanding of market roles and responsibilities
- Practical training on dispatch, gate closure and balancing mechanisms
- Financial settlement, credit requirements and risk management
- Real-world case studies led by NTCSA experts.

“Our priorities are to ensure system integrity and the readiness of participants. SAWEM School plays an important role in achieving both,” Bowen added.

The school forms part of NTCSA’s commitment to creating a stable, fair and efficient electricity market that supports economic growth and energy sustainability.

For more information visit: www.ntcsa.co.za

Umbila Emoyeni – a landmark for green energy in Mpumalanga

Seriti Resources CEO Mike Teke and Seriti Green CEO Peter Venn recently hosted the Minister of Electricity and Energy, Dr Kgosiensho Ramokgopa, at Seriti Green’s flagship Umbila Emoyeni renewable energy project. The minister’s visit underscores Seriti Green’s alignment with the South African government’s priorities to accelerate the Just Energy Transition (JET) and build a sustainable, low-carbon energy future.

Located between Bethal and Morgenzon in Mpumalanga, the first three phases of the Umbila Emoyeni project – each comprising a 155 MW wind energy facility – are scheduled to begin commercial operation in the first half of 2027. Once operational, the project will supply about 75% of the Seriti Group’s electricity needs, supporting its decarbonisation goals.

The site forms part of a broader 900 MW hybrid renewable energy cluster, comprising five wind farms and one solar photovoltaic (PV) facility, expected to be fully commissioned by 2027. When completed, it will be the largest hybrid renewable energy facility in South Africa.

The anticipated total capital investment for the project is R70 billion. Some R385 million will go towards funding small and medium-sized businesses and social development projects.

A key focus of the minister’s visit was the Main Transmission Substation (MTS), currently under construction. This R1 billion investment will enable the efficient delivery of clean energy from the project to the national grid. Umbila Emoyeni will have the capacity equivalent to that needed to power some 500 000 households.

When he visited the site, Minister Ramokgopa addressed community members, suppliers, employees and government officials, saying energy is a mechanism for boosting the economy.

“Energy leads and the rest follows. It must be affordable, and the mix must be right. Umbila Emoyeni is a perfect illustration of

the best of the renewable energy sector, and it is significant that it is happening in Mpumalanga,” Ramokgopa said.

He also praised local farmers and the community for their support.

Seriti Green CEO Peter Venn emphasised the role of renewables in job creation: “I am proud of this main transmission substation standing here in the fields of Morgenzon, and the 1 200 people on site taking part in the construction.

“More than 50% of the skills needed in renewables are in the coal industry. We are not going to be able to replace all the jobs done by the coal mine workers. But the skills can be easily transferred from coal to renewables, and that is what this project brings about,” Venn highlighted.

Seriti Resources CEO Mike Teke explained the role of coal in the JET. “As we stand here today, Seriti is not selling any of its coal mines. We are going to transition and the transition is going to be smooth and just. This project for us is a vote of confidence. We are going to build more like it,” Teke said.

Seriti acknowledges that for the energy transition to be truly just, it must be inclusive and consultative. This requires meaningful engagement with workers, affected communities, government, and the broader business and energy sectors. The aim is to ensure a responsible transition that minimises job losses and fosters new employment opportunities in the green economy.



CEO of Seriti Green, Peter Venn, highlighted the importance of transferring skills from coal to renewables and creating new jobs in green energy.

Power solutions for Mozambique mineral sands mine

Providing tailored electrical power solutions to the African market has positioned Trafo Power Solutions as a key player in the region. Its success is rooted in its expertise, extensive experience and thorough understanding of the needs of mining operations across the continent. The company has the capabilities to meet the specific challenges associated with electrical power supply in these harsh and demanding environments.

One of Trafo Power Solutions' latest projects highlights its ability to provide specialised transformer solutions to meet the rigorous conditions of mining applications. It recently supplied nine transformers to an electrical contractor for installation at a mineral sands operation in Mozambique. The delivery includes seven 800 kVA transformers designed for skid mounting, to enable easy mobility across the expansive mining site. The other two units, rated at 160 kVA, will be pole-mounted. All transformers in this order are rated at 22 kV to 415 V, aligning with the site's specific voltage requirements.

David Claassen, Managing Director of Trafo Power Solutions, explains that this latest order follows a previous successful supply of four dry-type transformers directly to the mining operation. The earlier batch included 3 150 kVA transformers, also rated at 22 kV to 415 V, and installed within IP23 enclosures. The transformers were equipped with the necessary control and protection equipment to ensure robust performance in the highly corrosive operating environment of the mine.

"The mineral sands mining environment is particularly harsh, with high humidity and salinity levels that can accelerate corrosion. Our transformers are specifically designed to withstand these conditions, providing longevity and reliability in such an aggressive setting," says Claassen.

A key factor in this repeat business was the mine's confidence in the performance of the previously supplied transformers. "When the need arose for additional transformers, the customer specifically requested Trafo Power Solutions, which reflects our commitment to delivering quality solutions that meet the exact needs of mining operations," Claassen adds.

One of the critical design considerations for the transformers was to minimise electrical losses and ensure the ability to handle large non-linear loads from the mine's variable speed drives (VSDs). The transformers were engineered according to SANS 780 Edition 5.1 standards to achieve the lowest possible losses. Additionally, due to the site's known voltage supply instability, the transformers were designed to withstand fluctuations while maintaining consistent and reliable power.

Aside from the technical specifications, the project also posed significant logistical challenges. The remote location of the mine required careful logistical planning to ensure the seamless transportation and installation of the transformers. "Logistics is always a key factor when supplying equipment to mining operations in remote areas. We worked closely with our partners to ensure a smooth delivery process despite the challenges," says Claassen.

Further reinforcing its relationship with the electrical contractor and the mine, Trafo Power Solutions has secured an additional order for 18 transformers, which are scheduled for delivery by the third quarter this year. This ongoing



Trafo Power Solutions has provided nine transformers to a mineral sands operation in Mozambique; seven were skid-mounted so they can be easily repositioned on site as needed.

partnership confirms the company's reputation as a trusted supplier of high-quality purpose-built transformers tailored for mining applications in Africa.

As Trafo Power Solutions continues to expand its presence across the continent, its commitment to delivering reliable, durable and efficient electrical power solutions remains at the forefront of its strategy. With a strong focus on engineering excellence and a deep understanding of mining conditions, the company is well-positioned to support the sector's evolving power infrastructure needs.

For more information visit: <https://www.trafo.co.za/>

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Showcasing T&D equipment hands-on for customers

ACTOM has launched a new Customer Experience Centre at its Knights facility in Boksburg, Johannesburg. It is designed to offer customers easier access, clear visibility and insight into operational, full-scale equipment. At the centre, clients can interact with the equipment and discover how ACTOM's technologies work together to solve real-world challenges.

The new Customer Experience Centre brings together working examples of ACTOM's Transmission and Distribution (T&D) offerings, including medium-voltage switchgear, distribution transformers, high-voltage equipment, protection and control systems, and ac/dc standby equipment. The equipment has been specially configured to offer maximum visibility into key internal features, with cutaways, viewing windows, and safe operating access.

"The idea is to create an environment where clients can interact with working equipment in a way that enables them to build an understanding of the technology and operating principles of the equipment," says Johan Jordaan, Technology Development Specialist at ACTOM – MV Switchgear Division. "We are offering customers the chance to see first-hand how our products work and how they interface with one another across our divisions."

The centre includes a fully equipped presentation and training room, allowing for technical walkthroughs, equipment demonstrations, and interactive workshops. Engineers can use functional units to deliver hands-on product training or test pilot configurations with clients.

"It is a collaborative space where we can explore challenges, demonstrate capabilities, and co-develop solutions that meet our customers' particular requirements," says Jordaan.

ACTOM also plans to explore future enhancements, such as augmented reality experiences, to deepen customer interaction with

its technologies.

The centre was inspired by the logistical challenges of transporting large, delicate demo equipment to industry exhibitions. The new space means clients can explore ACTOM's capabilities in a relaxed environment without the interference of a working factory or a busy trade show.

This is the first Customer Experience Centre focused on ACTOM's T&D equipment and incorporates contributions from several divisions, including Static Power, which is located off-site. The centre reflects ACTOM's broader shift towards integrated, client-focused engagement and innovation. "This is a further step towards putting our customers at the centre of how we operate, design, and deliver," Jordaan says.

The ACTOM Customer Experience Centre is open to clients, partners, and stakeholders by appointment.

For more information visit: www.actom.co.za



From left: Rhett Kelly, Design & Development Manager at MV Switchgear; Mervyn Naidoo, Group CEO; Johan Jordaan, Technology Development Specialist at MV Switchgear; Andries Mthethwa, Group Chairman; Donovan Stevens, MV Switchgear Divisional CEO.

SANAS accredited for Dissolved Gas Analysis testing



WearCheck transformer technicians Kefilwe Ntshabele and Tumelo Seobi.

Specialist condition monitoring company, WearCheck, is now accredited to perform Dissolved Gas Analysis, DGA, for transformers. This follows a recent assessment by SANAS – the South African National Accreditation System.

The company's Johannesburg transformer oil testing laboratory now has ISO/IEC 17025 accreditation for testing DGA, moisture, acidity, dielectric strength, and PCBs (polychlorinated biphenyls) in transformer oils.

Gert Nel, WearCheck's Transformer Division Manager, outlines

the importance of DGA in the maintenance of transformers. "Dissolved gas analysis is used mostly for fault detection in transformers, and it is critically important that the analysis is accurate. By analysing the gases dissolved in the transformer's oil, we gain important clues about the health of the transformer.

"WearCheck is pioneering the way in transformer maintenance in Southern Africa, and this SANAS accreditation is a powerful attribute for our laboratories."

Transformers help to transfer electricity over long distances, often playing key roles in the infrastructure of a region and ensuring power supply to cities, industrial plants and other critical users. Therefore, early detection of faults and potential failures is important.

DGA saves transformer operators money on avoidable repairs and time and helps prevent greater problems such as interrupted power supply. It also helps prolong the life of the transformer.

Nel explains the process: "Small amounts of gases are formed in the oil when a transformer is in operation. Using DGA, hidden problems inside the transformer are revealed by detecting the gases in the oil.

"Some of the common transformer problems and the associated gases include oil overheating (ethane and ethylene), insulation paper overheating (carbon monoxide, carbon dioxide, and acetic acid gases), air ingress (oxygen and nitrogen), and partial discharge (hydrogen gas and carbon monoxide gases), sparking and arcing type of faults

Continued on page 29

The advantages of using an adjustable cable gland



Pratley's adjustable cable gland can accommodate cables with different armouring, from paper-thin braid armouring to thick steel wire armour.

South African manufacturer Pratley continues to demonstrate its engineering leadership with its adjustable cable gland, designed for use across a range of industrial applications and to reduce maintenance and labour costs.

"Our adjustable cable gland offers exceptional cost savings, versatility, durability and efficiency," says Tristan Blades, Technical Projects Manager. Its adjustability allows it to accommodate everything from paper-thin braid armouring to thick steel wire armour. The interchangeable nipple design also allows for extended-length nipples, making it ideal for applications involving thicker gland plates, which is where conventional glands usually fall short.

A key cost-saving feature in the gland's design is the built-in spigot. This allows a smaller gland to fit securely into a larger knockout hole, such as an M20 gland into an M25 knockout, minimising the need for different gland types and streamlining

inventory requirements. "It is a solution that makes installations quicker and more flexible," Blades notes.

Furthermore, Pratley's 95% stock availability policy and commitment to customer service mean that replacement parts are readily available. This supports minimal operational downtime and quicker turnaround times for repairs.

"A manufacturer offering near-total stock availability on the shelf can make an enormous difference," says Blades. "It eliminates delays related to manufacturing lead times and helps maintenance teams keep operations running smoothly."

Durability is another standout feature. Unlike ordinary cable glands, the adjustable cable gland's loose cone bush is made from a special high-tensile brass to prevent distortion under tightening or mechanical stress. In addition, the loose cone bush allows it to self-centre under the armouring automatically, ensuring the best grip on each armour wire.

The gland also incorporates a differential nut which features two slightly different coarse pitch threads. This achieves the mechanical advantage of an ultra-fine pitched thread, strengthening the gland's clamping ability. "It is like having the clamping advantage of a virtual thread, or like having a built-in gearbox in the gland," Blades adds.

Feedback from the field highlights the positive impact of the innovative adjustable cable gland. "Many of our customers have reported significantly lower maintenance costs using this cable gland. And it is such an easy gland to install. Additionally, as one gland that can be used across multiple armoured cable applications, it simplifies the installation process and delivers long-term savings," Blades highlights.

Pratley has a policy of producing products that out-perform all comparative products on the world market. "It is something we live and breathe by, and our adjustable cable gland meets that mark," says Blades.

For more information visit: www.pratleyelectrical.com

Continued from page 28
(methane and acetylene).

"The early detection of potential transformer faults enables remedial action to be implemented, and major failures averted."

Case study

Nel shares the case of a WearCheck client that had requested only M/A/D (moisture / acidity / dielectric) results over the years, and when the first DGA was done, it showed a critical error.

"The DGA indicated an internal electrical problem, but the client was not convinced and did two oil changes within 24 months, hoping this would solve the problem. However, changing the oil did not fix the

problem; what it did was it removed evidence of the problem. The electrical fault was still present in the transformer, and a new trend was then required after the oil had been changed.

"In this case, the DGA indicated a fault, and the oil changes did not fix the fault. This is important, as a lot of clients only test for M/D (moisture / dielectric), and not the full DGA analysis. Eventually, the client made the decision to include all tests in its ongoing maintenance plan and took the recommended remedial action to fix the electrical fault."

The picture (page 28) shows WearCheck transformer technicians Kefilwe Ntshabele, SANAS nominated representative and Technical Signatory, and Tumelo Seobi, Laboratory Supervisor and SANAS Technical Signatory, with the accreditation certificates the laboratory holds.

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Investing in young cyber talent



This year's students at the MiDO Academy are benefitting from hands-on mentorship and work experience as part of their learning.

The MiDO Academy offers a full-time training programme focused on stimulating inclusive economic growth in South Africa by empowering young people with critical cybersecurity skills. As well as preparing learners for work in the cyber sector, it opens doors to opportunities, sets up careers and builds pathways to lasting change.

Local cybersecurity services organisation, Orange Cyberdefense, has reaffirmed its commitment to the MiDO Academy with ongoing support and hands-on mentorship programmes. “As an organisation that prides itself on being able to offer its clients expert cybersecurity skills, it makes sense for us to be involved in cultivating the next generation of skills in our community,” says Dillon Bensusan, Marketing Manager at Orange Cyberdefense.

The programme's third cohort of 21 learners now in training is currently immersed in an intensive curriculum structured to develop their technical and professional capabilities.

“Often, a big challenge for people in the early stages of their careers is that they need work experience in order to get hired, but the question is always: how do they get that work experience without being given an opportunity?” says Bensusan.

To address this, Orange Cyberdefense is introducing a comprehensive hands-on work experience component into the MiDO curriculum, aimed at giving students real-world work experience.

“We often hear about the cyberskills shortage, but there seems to be a shortage of investment in the people who are expected to fill this gap,” comments Zade Boniface, Senior Incident Response Analyst at Orange Cyberdefense, and a monthly guest speaker at the MiDO Academy.

The work experience initiative, which was trialled with five students in the previous cohort, is now being rolled out to the full 2025 cohort for four months starting from August. It is led by Senior Security Researcher at Orange Cyberdefense, Wicus Ross. The project will see learners being exposed to real-world cyber assignments – from threat hunting and vulnerability testing to collaborative research on live cases – under expert guidance.

“Our observations from the 2023 cohort who took part in the Work Experience Programme indicated that students with structured project exposure were integrated into the workforce more quickly than their peers,” notes Ross. “These students were able to draw on concrete elements of their project experience during interviews and assessments. Their ability to reference real

contributions to a published industry report – *Security Navigator 2025*^[1] – gave them a significant advantage. Seeing these young professionals in action, applying theoretical knowledge to real environments, is immensely rewarding,” says Ross. “This project fast-tracks their growth and readiness for employment in the cyber sector.”

Personal mentorship, bridging theory and practice

Complementing the structured work experience programme, Boniface has taken a personal approach to supporting the MiDO learners. He dedicates one day each month to visit the MiDO classroom, and he makes himself available as a sounding board for the students; they can raise any questions they may have about anything, technical or professional.

“My core motivation is to give young people the support and guidance I would have liked to have had when I was starting out,” says Boniface. “There are many people who helped me along the way, and this is my way of paying it forward.”

In line with the aim of the Work Experience Project, Zade shifts the students to a ‘ready for work’ mindset and helps to bridge the step from their theoretical studies of CompTIA A+, N+, S+ to how these apply in the real world. He assigns research projects that challenge learners to think critically, and the students are then required to present their findings either in writing or by presenting to the class.

SDP accreditation

The MiDO Academy recently achieved official accreditation as a Skills Development Provider (SDP) for the Occupational Certificate: Cybersecurity Analyst (NQF Level 5). This reinforces MiDO's commitment to rigorous, nationally recognised training that prepares learners for real-world roles.

“By immersing learners in workplace projects with support from industry, we are teaching skills and, importantly, we are unlocking pathways out of poverty and into digital careers,” says director of the MiDO Academy Dale Simons.

“For Orange Cyberdefense, this partnership reflects our mission to build a safer digital society – one that is inclusive, empowering, sustainable and safe. It is as much about youth development as it is about providing South African businesses with the skills they need to fight cybercrime,” Bensusan adds.

Together with the MiDO Academy, Orange Cyberdefense is helping to nurture the next generation of cybersecurity professionals, equipping them with technical knowledge and believing in their potential to change the world.

“Without partners like Orange Cyberdefense which is genuinely invested in supporting our efforts to build inclusive talent pipelines, we wouldn't be able to do what we do. It's only through partnerships like this that we can make an impact and we really appreciate the support,” says Anna Collard, Co-founder and Advisory Board Member of the MiDO Academy.

Reference:

[1] <https://www.orangecyberdefense.com/za/security-navigator>

For more information, visit: www.midoacademy.org and www.orangecyberdefense.com/za

Blue bonds could help address South Africa's water crisis

Lerato Nkanza, Partner, and Hemal Heeralal, Candidate Attorney, Webber Wentzel

Water scarcity is a growing global concern affecting the lives of millions. In South Africa, limited supplies of usable water, compounded by ageing national, provincial and municipal water infrastructure, continue to impact the daily lives of individuals and businesses across the country. Service delivery pressures, increasing demands on the state, and delays in completing key projects have added further complexity. There is a growing need for solutions that are economically viable and socially responsible. Addressing these challenges will require coordinated financial solutions, driven by collaboration among stakeholders.

Blue bonds: a viable solution

The evolution of the bond market has seen the development of green bonds, which are financial instruments designed to channel capital towards projects that address environmental and climate-related challenges. The first green bond was issued by the World Bank in 2008. Since then, the Green Bond Principles, developed by the International Capital Market Association (ICMA), have provided a structured framework for financing projects with clear environmental benefits.

Within this broader category, blue bonds have emerged as a sub-set of green bonds. According to the International Finance Corporation (IFC), blue bonds are debt instruments that finance projects aimed at, among other things, improving sustainable water management. The IFC links blue finance explicitly to two United Nations Sustainable Development Goals (SDGs): SDG 6 (Clean Water and Sanitation) and SDG 14 (Life Below Water).

Given the urgency of addressing SDG 6, proactive measures are required in South Africa to mitigate the threat of water scarcity and ensure reliable access to clean water. Blue bonds present a viable solution to channel funding into restoring and expanding South Africa's water infrastructure. These instruments may be used to finance initiatives such as the research, design, development and implementation of efficient water supply and treatment solutions. There is clear potential for their application in tackling the country's water infrastructure challenges.

Suggested criteria for issuing Blue Bonds

In line with the IFC's Guidelines for Blue Finance, there are suggested criteria that blue bond issuances are encouraged to meet. These serve as a guide to help ensure alignment with recognised principles, rather than strict requirements.

Issuance in accordance with the Green Bond Principles

Most green bonds today are issued in line with the Green Bond Principles, which also apply to blue bonds as a sub-set. The Green Bond Principles are structured around four core pillars.

- Use of proceeds – The funds raised must be allocated to eligible projects that address sustainable water management. This includes initiatives focused on water supply and sanitation infrastructure.
- Process for project evaluation and selection – Issuers should clearly outline how eligible blue projects are selected and evaluated.
- Management of proceeds – Proceeds from the blue

bond issuance must be tracked and managed separately to ensure they are allocated only to eligible projects.

- Reporting – Regular reporting on the use of proceeds and the impact of the funded projects is expected. Transparent and rigorous reporting is key to avoiding 'blue washing' and allows impact investors to monitor the effectiveness of water resource management and evaluate investment performance.



Above: Lerato Nkanza, below: Hemal Heeralal, Webber Wentzel.



Alignment with the SDGs

Projects financed by blue bond proceeds should support SDG 6 (Clean Water and Sanitation) without causing material risk to other SDGs, particularly SDG 2 (Zero hunger), SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action). This means the design, implementation and outcomes of blue bond projects should be environmentally sustainable, socially inclusive, and economically viable, without compromising food security, energy access, responsible resource use or climate resilience. When implemented effectively, these can deliver wide-reaching benefits to local communities, investors, and policymakers.

Adherence to internationally recognised standards

Projects financed through blue bonds should indicate alignment with internationally recognised sustainability standards such as the IFC Performance Standards and the World Bank Environmental, Health, and Safety Guidelines. These benchmarks ensure transparent and responsible management of environmental and social risks and help bolster the credibility of blue bond projects among sustainability-focused investors.

Where applicable, issuers may also apply industry-specific or product-specific standards to ensure that blue bond investments exceed national regulatory requirements.

A path forward with blue bonds

The issuance of blue bonds is more administratively demanding than that of traditional green bonds, which only require alignment with the Green Bond Principles. However, the environmental and social value of blue bonds often outweigh the additional effort required. As SDG alignment and adherence to sustainability standards are increasingly mandated or adopted voluntarily by financial institutions, these requirements may not be overly onerous when considered in the context of existing ESG frameworks.

Blue bonds present a strategic opportunity to mobilise capital and strengthen governance in support of sustainable development. In South Africa, they could play an important role in addressing the water crisis and advancing SDG and ESG objectives at the same time.

For more information visit: www.webberwentzel.com

Bridging the ESG backlash

Stephan Jooste, Managing Director – Sustainability, Africa, Zutari



Stephan Jooste, Zutari.

In the evolution of the global sustainability agenda, the Environmental, Social and Governance (ESG) structure, once heralded as a pragmatic framework for embedding long-term resilience into business, is facing growing resistance. It is under scrutiny from political and cultural fronts, particularly in markets previously considered ESG frontrunners.

In this context, I often find myself returning to the core purpose behind sustainability – creating long-term value in a world of escalating uncertainty. The backlash we are seeing may appear reactionary, but it should not distract us from the facts. Climate volatility is increasing. Resource scarcity is deepening. Social equity remains unresolved. These are not ideological constructs; they are real, measurable forces shaping our world.

The recently released *Sustainability at a Crossroads Report 2025*, developed by GlobeScan, ERM, and Volans, confirms the shifting tides. Based on insights from 844 sustainability experts across 72 countries, the survey highlights a sobering truth in that over 90% of experts believe the current sustainability approach needs to be revised, and more than half are calling for a radical overhaul. Most respondents from Europe, the Middle East, and Africa are particularly critical of progress to date. Fewer than one in ten believe our efforts have been ‘excellent’.

More striking is that seven in ten experts now report significant backlash against sustainability agendas in their countries, up 13 percentage points from 2024. These are not outliers; this represents a global pattern. But backlash, however noisy, is not the same as obsolescence. It often signals that the work is beginning to hit a nerve, disrupting entrenched norms, assumptions, and interests.

A shifting landscape

The past six months have seen a flurry of changes from Securities and Exchange Commission (SEC) rollbacks in the US to political resistance in the EU, a regulatory freeze in the UK, policy slowdowns in Australia, and mixed signals from emerging markets. Companies are reacting in various ways, with some dropping ESG language altogether and others maintaining sustainability commitments but keeping them quiet.

What this tells us is that, even amid reputational risk and political pushback, there is a persistent, underlying drive for sustainable action, whether that is based on obligations, transactions, or deep conviction. This moment of tension is also a moment of truth. The ESG narrative has been dominated by investor concerns and regulatory compliance. As a result, it has often failed to capture the imagination or trust of workers, customers, and communities. The legitimacy crisis is real, but it is not inevitable. If sustainability is to remain relevant, it must be embedded into business purpose, not just branding.

How do we move forward?

At Zutari, we believe that navigating the ESG backlash requires a recalibration, not a retreat. This is what I have learned from working with clients across the continent.

- Embed sustainability where it matters: Go beyond reporting and embed sustainable thinking into product development, operations, talent strategies, and capital allocation. This is about creating value.
- Be honest about trade-offs: Sustainability will not always be easy, or instantly profitable. But the alternative of pushing short-term gains is far riskier. The decisions made today will define our resilience tomorrow.
- Build broad coalitions: Sustainability cannot be imposed from the top down. It must engage employees, customers, suppliers, and the communities where businesses operate. That is how legitimacy is earned, and impact is amplified.

We are not naïve about the challenges ahead. The *Sustainability at a Crossroads Report* finds that more than half of experts believe current global shocks from economic to political and environmental are a threat to sustainability.

Governments, in particular, are perceived to be lagging. Yet the report also highlights a critical insight: that there is still momentum in the corporate sector and civil society to drive real change. Mechanisms like green bonds, circular economy models, and integrated sustainability strategies are seen as high-impact levers for transformation.

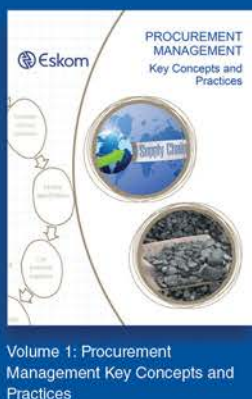
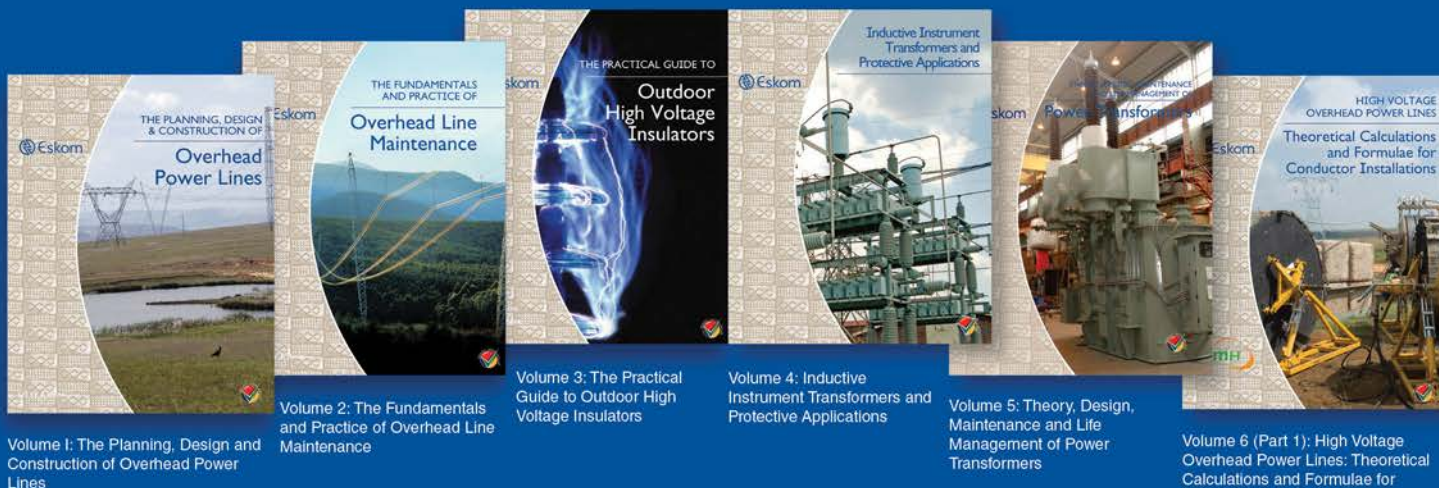
It is encouraging to see that academic and research institutions are gaining credibility as trusted sources of innovation. As engineers, planners, and advisors, at Zutari we share this responsibility. We bring rigour, systems thinking, and a deep commitment to co-creating solutions that are locally grounded and globally relevant.

As Dr Ioannis Ioannou of London Business School aptly puts it: “The backlash will eventually subside. What will endure are the decisions made in this moment – what to prioritise, what to safeguard, and what principles to uphold.”

We are at a crossroads. Those who take a long view and resist the noise and stay true to the purpose of sustainability will build resilience and unlock new opportunities for innovation, inclusion, and growth. Let us not be deterred by the backlash; let’s lead through it, because the future is about resilience – and resilience demands leadership.

For more information visit: www.zutari.com

The Eskom Power Series was conceived in response to the continuing worldwide loss of critical technical skills and experience. The aim of the series is to promote international best practice, including experience accrued by Eskom over the years, as a guide and legacy and to serve as a source of reliable, reputable and highly technical information.



Based on the success of the Eskom Power Series and the Eskom Leadership & Management Series, the Professional Development Series was created. It aims at developing various professions within South Africa so that large state-owned enterprises and the private sector can grow and facilitate job creation in the country. Unlike the Power Series, both the Eskom Leadership & Management Series and the Professional Development Series have a broad readership, including those residing in the private sector, State Owned Companies (SOCs) and academic institutions.

The Eskom Leadership & Management Series was introduced by Eskom at the request of readers and stakeholders of the Power Series who felt that the series should be expanded to include non-technical topics. These topics are often not well understood by technical practitioners and can pose a risk to the sustainability of their businesses. To date, the Power Series team, with assistance from experts in the various fields, has produced two volumes.



Eskom has also published: GENERATION, TRANSMISSION AND DISTRIBUTION: A large Southern African utility. This is an introduction to the technology that has developed, over time, in response to growing demand in the electricity utility industry in South Africa. It provides a 'soft-landing' for those who need, or want, to engage with the technology in a large electricity utility.

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