FEATURES:
Industry 4.0 + IIoT
Renewable energy + energy management
Measurement + instrumentation
Safety of plant, equipment + people

12/25-01/26

ELECTRICITY+CONTROL

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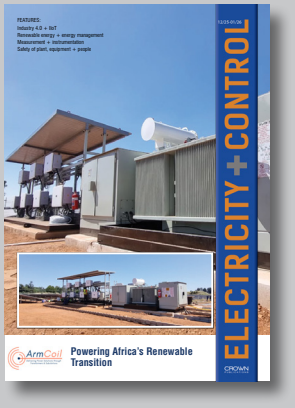

As renewables continue to power new generation capacity across Africa, transformers and auxiliary electrical infrastructure need to be engineered specifically to handle renewable energy operating dynamics.
(Read more on page 3.)

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The turning of the year

2025! So, we end one year and start the next.

There is little doubt that 2025 was an interesting year. Of course, it was tough – but it also presented one or two sparks of hope, I think. If we leave sport aside for a moment, the G20 was a success – and although there are certainly appropriate but cynical views about why we suddenly saw folk working to repair, maintain and 'make nice' Johannesburg, as the host city – the impact was positive.

We also saw the Medium-Term Budget Policy Statement provide a few flickers of positive sentiment.

And we saw what was some quite extraordinary washing of dirty linen in public via various commissions and enquiries – in a way which suggested it may be very hard to hide what everyone can see happening.

What can we take away from all of this?

Well, if there is a will there is a way.

If there is political will and the money can be found (don't think too much about this comment…) things can be done. And they can be done well.

It also seems that folk in general have had it with enquiries that seem to present pretty obvious outcomes, and nothing is done following the fact. It seems that regular citizens will no longer tolerate that.

The last general observation is that we may be seeing a meeting of minds at the highest levels of political leadership – some indication that the Government of National Unity may be developing a more constructive approach to the way the country is managed – and that is having an impact.

Let's wait and see …

This was also an interesting year for me personally, as I found myself having to step away as a Director of Crown Publications. I have loved every moment I have spent with the company – and I will continue to play a part – but in a different role. Karen Grant continues as the Managing Director of the company, and Wilhelm du Plessis as Publisher. I have every confidence in their leadership.

2025 was a challenging year – but the glimmers of light we began to see will always remind me of how bad some previous years have been (just don't tell them that)!

As we end the year, and look ahead to 2026, allow me to extend my deepest appreciation to the Editor of *Electricity + Control*, Leigh Darroll, the Advertising Manager, Paul Engelbrecht, the Design and Layout artist, Katlego Montsho as well as the Web and Circulation Manager Karen Smith and her team, and Brenda Grossman, Administrator: Production & Database.

I wish all our readers, supporters and friends a safe and relaxing Festive Season.

And I wish you and your families the very best for 2026. Let the new year be new in every respect! May it be successful and rewarding for you all.

Here's to 2026!

Ian

Ian Jandrell

PrEng IntPE(SA), BSc(Eng) GDE PhD,
FSAAE FSAIEE SMIEEE

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Powering Africa's renewable transition

Africa is entering a decisive chapter in its energy evolution. Solar PV, wind farms, hybrid systems and battery storage are becoming the backbone of new generation capacity. As renewables penetration accelerates, electrical infrastructure must evolve to withstand the continent's unique operational and environmental challenges.

ArmCoil's GreenCore Series is engineered to meet these demands. Designed and manufactured in South Africa, GreenCore transformers and reactors deliver reliability, thermal stability and intelligent monitoring tailored specifically for renewable energy duty cycles.

Purpose-built for dynamic energy systems

Modern renewable plants operate under conditions where conventional grid transformers are often stressed. GreenCore addresses these realities with designs optimised for:

- Rapid solar/BESS load swings and fluctuating generation
- High-frequency inverter-driven harmonics
- Elevated ambient temperatures across African climates
- Remote site logistics and maintenance constraints
- Remote monitoring in real time.

Thermal and electrical performance

GreenCore transformers incorporate:

- Advanced winding geometries for harmonic resilience
- Low-loss magnetic cores for reduced heat and improved efficiency
- Thermal designs supporting severe cyclic loading
- High ambient temperature capability for extended lifespan.

These features protect insulation integrity and ensure predictable performance across varying operating scenarios.

Smart monitoring for predictive operation

The GreenCore Smart Monitoring System transforms each transformer into an intelligent, connected asset. Operators gain access to:

- Real-time thermal and electrical data monitoring
- Harmonic indicators and load behaviour patterns
- Early-stage anomaly detection
- Predictive maintenance triggers and alarm management.

This level of insight reduces unplanned downtime and improves operational efficiency across remote or multi-site renewable facilities.

Sustainable by design

Environmental responsibility is embedded in every GreenCore unit:

- High-efficiency, low-loss core designs
- Optional biodegradable ester fluids for improved fire safety
- Reduced lifetime losses and lower operating expenditure.

Quality and standards compliance

The GreenCore Series is manufactured within a certified framework:

- ISO 9001 – Quality management
- ISO 14001 – Environmental management
- ISO 45001 – Occupational Health & Safety management
- ISO 17025 – Test Laboratory Competence.

All transformers are tested per IEC 60076 and SANS 780:2021, ensuring full performance verification and traceability.

Where GreenCore excels

GreenCore is engineered for the full spectrum of renewable energy applications:

- Solar PV step-up transformers
- Battery Energy Storage System (BESS) isolation/step-down transformers
- Hybrid plant transformers
- Reactors for harmonic filtering and grid coupling
- Auxiliary and LV/MV service transformers.

Why choose GreenCore

- Renewable-duty engineering designed for Africa's operating realities
- Intelligent monitoring that enhances uptime and asset visibility
- High thermal and harmonic resilience for inverter-driven systems
- Sustainable materials with reduced environmental impact
- Proven ArmCoil quality backed by accredited testing and certifications.

Ready for deployment across Africa

GreenCore isn't an adaptation of a standard transformer – it is a renewable-centric design built from the ground up. As South Africa and the African continent advance towards cleaner, decentralised and more reliable power systems, GreenCore provides the infrastructure foundation for the next generation of energy projects.

Reliable. Intelligent. Purpose-built. Ready for Africa.

ArmCoil's GreenCore transformers are engineered specifically to operate with renewable energy systems in the African environment.

For more information contact ArmCoil.
Tel: +27 (0)11 763 2351
Visit: www.armcoil.co.za

Subsea cables power the data centre-driven digital economy

The internet as we know it would not exist without the vast, largely invisible network of subsea cables lying deep beneath the ocean's surface. Stretching across thousands of kilometres, these cables are the arteries of the global digital economy, carrying over 95% of the world's data traffic. Teraco here looks at increasing investments in this infrastructure to serve escalating data demand, globally.

Left: Subsea cables connect countries – and they connect large ecosystem data centres which have become critical points of presence for subsea cable operators. Right: Internet traffic is doubling every two years, demanding faster and more dense connections.

Research by TeleGeography indicates that, in 2025, there were 570 in-service subsea cable systems worldwide, with an additional 81 systems planned, a record high within the past two decades. This explosive growth is being driven by soaring global data demand, the rapid rise of artificial intelligence (AI), and the need for more resilient, high-capacity connectivity.

Surge in investment

According to TeleGeography's Transport Networks Research Service, investment in subsea cables has accelerated at an unprecedented pace. Over the past nine years, an average of $2 billion has been spent annually on new cable construction. However, between 2025 and 2027, spending of more than $13 billion in additional subsea cables is expected.

Since the early 2000s, when state-backed enterprises and telecom consortiums dominated, the investment landscape has changed. Today, technology giants like Amazon, Google, Meta, and Microsoft are leading the way, building private subsea cables to interconnect their global data centre networks directly and deliver low-latency, high-capacity services to users worldwide.

Several factors are driving this surge in subsea infrastructure investment: exponential data growth, content provider dominance, network resilience, and the ageing of existing subsea cable infrastructure.

Internet traffic is doubling every two years, demanding faster and more dense connections. Tech giants now account for most of the subsea bandwidth usage, prompting them to build their own cables instead of leasing capacity. Enterprises increasingly require mesh networks that span multiple cables to ensure business continuity during outages. Some legacy cables are nearing the end of their lifespan, requiring next-generation systems with significantly higher capacity and lower unit costs.

The future of connectivity

Trends shaping the future of subsea connectivity include: the rise of interconnections within data centres, geographic diversity and network resilience, technological advances, sustainability and climate resilience, and security and maintenance.

Subsea cables connect countries – and they connect data centres. With AI workloads, streaming platforms, and cloud computing demanding massive throughput, large ecosystem data centres have become critical points of presence for subsea cable operators. The closer a business is to these hubs, the lower its latency, and the faster its access to global markets.

Many cables are being built along new routes to connect previously underserved regions, particularly in Africa, Southeast Asia, and South America. By diversifying routes, operators reduce the risk of single points of failure and enhance disaster recovery capabilities.

New cable technologies are enabling faster data transfer speeds, increased capacity, and greater durability. Improved fibre designs, advanced materials, and innovative deployment methods are allowing operators to manage greater demands and navigate challenging seabed conditions.

Climate change has created new risks, including stronger ocean currents, severe storms, and increased seabed instability. In response, cable operators are burying cables deeper, using reinforced designs, and selecting routes more carefully to strike a balance between environmental impact and connectivity needs.

With an average of 150 to 200 cable faults reported globally every year, proactive monitoring and maintenance are essential. Furthermore, national security concerns have prompted increased investment in physical and cybersecurity measures to protect the world's digital backbone.

Africa's role in the global subsea ecosystem

Africa is seeing major investments in new subsea cable systems on both the east and west coasts. With new cables landing in the region, including 2Africa and Google's Equiano, local businesses have access to unprecedented levels of bandwidth and interconnection. A number of cables, such as ACE, EASSy, METISS, SAT3/SAFE, Seacom, and WACS also enable improved connectivity in the region.

Within this ecosystem, Teraco's network-dense data centre infrastructure has become a cornerstone of Africa's internet connectivity. Its facilities host over 250 network providers, including all major subsea cable operators traversing the continent.

This creates an extensive interconnected environment where clients can switch instantly between network providers during cable outages, access alternative routes across east and west coasts to maintain uptime, and cross-connect directly with carriers, ISPs, and cloud platforms at scale.

NAPAfrica, one of the top seven global Internet Exchange Points (IXPs), operates within the Teraco ecosystem, enabling networks, ISPs, and content providers to exchange traffic directly. During subsea cable outages, NAPAfrica has consistently managed surges in traffic volumes, maintaining critical services and supporting seamless internet access for millions.

Building a more resilient future

Subsea cables form the backbone of our connected world, but they are only as powerful as the infrastructure they link to. Teraco is enabling enterprises, service providers, and hyperscalers to use this global network, providing resilient interconnection, scalable capacity, and a data centre ecosystem purpose-built for the digital age. As investment in subsea cables continues to rise, the convergence of data centres, subsea infrastructure, and edge connectivity will define the next chapter of global digital transformation.

For more information visit: teraco.co.za

Developing smarter technologies for water management

Adroit Technologies, a leader in industrial automation and digital transformation solutions and well experienced in working with water utilities, is advancing its research and development into an AI-powered Water Management Platform, to help address one of South Africa's most urgent infrastructure challenges: non-revenue water losses.

The R&D programme is exploring the potential to develop a first if its kind, AI-driven 'pseudo-metering' capability, one that can infer consumption and pressure data in areas where physical meters are not installed. "We have proven the initial concept and have now secured the support of government and other industry leaders to develop this AI-driven platform," says Frits Kok, Co-CEO at Adroit Technologies.

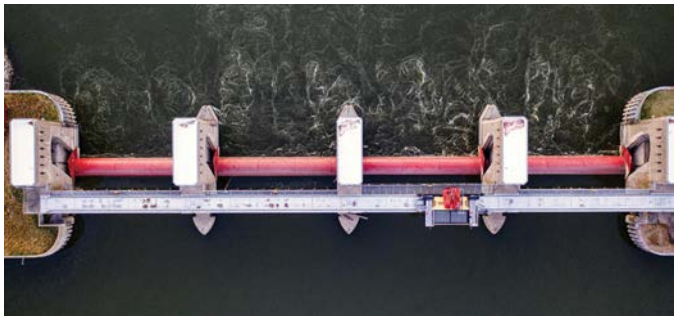
With nearly 40% of the country's treated water lost to leaks, theft, and ageing infrastructure, Adroit Technologies is looking at new ways to enhance intelligent, data-driven water management. Using advanced machine learning (ML) and neural network algorithms, the research platform can analyse existing telemetry and SCADA data to detect leaks, forecast demand, and infer flow rates in areas without sensors, potentially opening a route to more efficient, transparent municipal water systems.

"Smarter, data-driven solutions can help address South Africa's water infrastructure challenges," says Kok. "Our current R&D is focused on developing next-generation AI capabilities that will, in time, complement our existing water management technologies, which are already helping utilities reduce water losses and make informed operational decisions."

A national challenge

Urban growth, vandalism, and limited monitoring capacity have placed severe strain on South Africa's water systems. In many municipalities, leaks and pump failures are discovered only after outages occur.

Through its ongoing research, Adroit Technologies aims to integrate new AI tools with existing SCADA and telemetry systems



Adroit Technologies is exploring new ways to enhance intelligent, data-driven water management.

to deliver predictive analytics, real-time alerts, and actionable insights, helping engineers identify hidden losses and optimise operations before crises arise.

The AI-driven pseudo-metering can infer consumption and pressure data where physical meters are missing or damaged. It has the potential to help under-resourced municipalities monitor conditions across water networks that were previously 'data blind'.

Adroit Technologies' current research is focused on developing a scalable, national-level AI framework that leverages forecasting, anomaly detection, and digital twin modelling to enhance decision-making and support more efficient water use.

A hybrid neural network architecture (CNN-LSTM) and self-healing data middleware are being designed to operate effectively even with incomplete or delayed data, a common challenge across South Africa's municipalities.

"This research is about enabling resilience," says Hugo Pienaar, Director of Digital Services at Adroit Technologies. "By combining AI with decades of SCADA expertise, we are helping municipalities envision how to predict issues before they happen and manage scarce water resources more efficiently."

For more information visit: https://adroitscada.com/#

New software, new portfolio for electrical systems design

The new Eplan Platform 2026 is available. Eplan has used its regular annual review this year to redevelop its entire portfolio, with a greater focus on customers and their requirements in their respective market sectors.

Eplan Vice President Customer Journey Jan Fleming says, "The Eplan Platform 2026 provides maximum support for users in their respective application fields."

A central point is significantly reduced complexity. The new software portfolio makes the full power of the Eplan Platform clearer and, with numerous enhancements, provides a comprehensive solution in specific application fields. It can be integrated easily into existing IT landscapes.

Eplan recognises that companies are facing major challenges in successfully configuring their businesses and making them secure for the future. It supports its customers in shortening the time to value. Eplan 2026 provides comprehensive solutions that are customised to the tasks and workflows in different industries and customer sectors which customers can use immediately. They are optimised for basic engineering, electrical engineering and control cabinet manufacturing so users do not need to evaluate and procure additional modules and options.

Eplan's Vice President Customer Journey Jan Fleming explains: "We have systematically aligned our product portfolio to the tasks and workflows of our customers. The Eplan Platform 2026 provides maximum support for users in their respective application fields. This makes for simplicity in engineering and, at the same time, incorporates valuable additional services that help our customers become more efficient.

More functions

All products in the Eplan Platform 2026 have been fundamentally reworked and functionally expanded. The launch of the new platform parallels a completely new product portfolio. Previously optional extensions are now standard in some versions of the software.

Tailoring the portfolio to the specific requirements of certain market sectors, the new platform includes Eplan Preplanning, which meets these requirements for operators and planners; control cabinet construction is planned using Eplan Pro Panel; and machine builders will find all the relevant functionality for their tasks in Eplan Electric P8.

New features include the cloud-based Eplan collaboration apps, the Eplan Data Portal, parts management eStock and eManage for data management, all of which are covered in the scope of services for Eplan Electric P8, Eplan Pro Panel and Eplan Preplanning. Previously optional extensions are now included in some configuration levels. This allows users to make their processes more efficient and consistent. The same applies for all project phases and for different industries, from concept development to detailed engineering and manufacturing to commissioning and operations.

Supporting operators

Eplan Preplanning now also covers electrical engineering requirements in the early planning phase, in the form of single-line schematics, in addition to the integration of preplanning data and professional creation of P&I diagrams. So, as well as being used by system integrators, the software can be used by operators and planners in basic engineering. Users benefit from preconfigured contents such as symbols, example data and forms that are tailored to the specific tasks in machine building, control cabinet and switchgear system engineering, energy technology and building automation.

With or without cloud services

Depending on the configuration level, customers can collaborate internally and externally using the Eplan Cloud: cloud-based apps for device management, data management and the view of Eplan projects using the Viewer are included. As soon as users activate their licences for the Eplan Platform 2026, the extended range of functionality is available to them. All they have to do is install the new software – at no additional cost.

Connections add value

The new Eplan Platform can also be integrated into ERP and PDM systems via standardised interfaces. Digital data from the electrical engineering can be used directly in manufacturing of control cabinets and by wiring machines and plant systems. In the area of automation technology, commercially available PLC planning and programming systems can also be directly connected via standard formats.

Accessing data faster

Another helpful new feature is that access from device management in Eplan allows direct device data selection in the Data Portal. Users no longer have to 'jump' from the platform to the portal. Just a click in Eplan Electric P8 brings them directly to device selection in the portal and they can download the required project data. This also applies to the cloud-based device management. In addition, devices can be described more precisely with more than 400 new properties for devices.

Everything at a glance

The Eplan Download Centre is available to every Eplan user. At eplan.com, users can access software, tools, useful eLearning content and licensing information. They will also find information about the version currently in use as well as individual updates, which allow easy jumps for updates to older versions.

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

New software for electrical design in industry

Electrical Designer simplifies main circuit design in one easy, automatic workflow.

Siemens has expanded the TIA Selection Tool Cloud with the new 'Electrical Designer' feature for electrical planning. This smart software is the first and only in the IEC market (the market where International Electrotechnical Commission standards apply) that includes basic electrical knowledge and standards expertise, eliminating the need for time-consuming research and complex manual work. Electrical Designer simplifies main circuit design by automatically selecting components, verifying short-circuits, sizing cables, and creating all the necessary documentation in one easy process.

Electrical planners often encounter limitations when designing electrical equipment for machines. An overabundance of caution and time pressure can result in old plans being adopted, with outdated or inefficient concepts included. Additionally, mechanical design data and documents often cannot be processed seamlessly in the electrical design and have to be reworked. This presents potential for savings and quality improvement.

Siemens' Electrical Designer, part of the TIA Selection Tool Cloud, helps the design engineer save time and avoid errors, so improving planning quality. Tasks that used to take hours can be done in less than half the time: the Electrical Designer automatically selects the components for the complete main circuit in accordance with IEC 60204-1, provides short-circuit verification, allows for precise cable sizing, and creates the necessary documentation – all in one workflow. This eliminates the need for time-consuming manual calculations. With cloud technology, users can collaborate on projects from anywhere and always have access to the latest planning data.

This development strengthens Siemens' position as a technology leader in digital control panel design and opens up new possibilities for more efficient engineering. "Electrical Designer from Siemens represents a quantum leap in electrical planning," said Andreas Matthé, CEO Electrical Products at Siemens Smart Infrastructure. "It's the world's first browser-based solution to combine standards compliance, short-circuit analysis, and automatic dimensioning. It cuts planning time in half, eliminates errors, and provides specific standards knowledge. For us, this is the future of engineering."

At a glance

- Electrical Designer offers end-to-end verification of short-circuit resistance in accordance with IEC standards, from the individual load to the feed point in the machine.
- Complete machine design replaces individual calculations: If the software knows the loads for the machine, the tool automatically selects suitable switchgear, controls, and network components and generates parts lists and complete documentation.
- Electrical Designer automatically checks the requirements defined in the relevant standards (currently IEC 60204-1).
- As a completely browser-based solution, there is no need for installations and updates. Electrical Designer offers device-independent access at any time using the latest software, enables easy project transfer, and helps companies cut planning times. This increases scalability and supports investment protection.
- The software's flexible calculation logic allows planners to simulate different short-circuit scenarios to adapt the electrical system optimally to local grid conditions.

Electrical Designer is available free of charge to all TIA Selection Tool Cloud users.

For more information visit: www.siemens.com

IIoT controller for field or control cabinet

Ifm describes its IIoT controller as a powerful, communicative and flexible PLC solution for use in machine and plant digitalisation. Powerful, because at ambient temperatures of up to 55°C, the 1.3 GHz quad-core processor works at a high performance level. Communicative, because it handles various protocols, irrespective of whether it is a matter of connections to the IT network or the integration of automation technology I/O data.

In addition, a Plug & Work connection of IO-Link devices can be provided – including IODD interpretation (I/O Device Description is at the heart of I/O Link). Flexibility is a further feature, as the IIoT controller is freely programmable via CODESYS V3.5.

For users that would like to manage the device remotely, the CODESYS Automation Server enables remote debugging and remote web visualisation.

Connecting to different clouds

The IIoT controller allows for transmission of the recorded and prepared data to the most common cloud platforms such as AWS, Microsoft Azure and AnyViz. It also 'speaks' the common standard digitisation languages such as OPC UA and MQTT. Whenever data is to be recorded and processed in real-time, I/Os can be read and controlled by using Industrial Ethernet protocols such as PROFINET, EtherCAT, EtherNet/IP or Modbus TCP.

For more information visit: Http://www.ifm.com

The IIoT controller is available with IP20 protection rating for use in the control cabinet, or with IP67 rating for use in the field

Enabling integrated digital mine management

Becker Mining South Africa has launched Smartflow®, an agnostic integrated software platform that connects hardware systems, communications networks and operational processes into a single mine management solution. It brings together IoT-enabled monitoring, safety devices and production data, providing operators with real-time oversight of underground and surface operations through a 3D web-based interface.

The Tracking and Location Module monitoring vehicles and personnel inside the mine.

Smartflow can track personnel, vehicles, energy use, ventilation and haulage. The software applies predictive analytics to support timely decision-making. By merging data into a unified digital environment, the platform helps to improve efficiency, reduce downtime and enhance occupational safety.

The modular Smartflow structure is designed for interoperability, allowing for easy integration with Becker Mining systems and specific other mining equipment. Modules range from location and tracking, collision awareness and dispatch management to monitoring energy usage and ventilation, leaky feeder systems, telemetry and haulage control. Each module can operate independently or as part of the connected Smartflow platform, providing flexibility for different mining conditions. The advanced engineering module enables the system to be used in mine design and future planning.

In keeping with the global commitment to improve sustainability, environmental, social and governance (ESG) compliance are integrated into the platform. The energy monitoring module, for example, records consumption at substation level, generates billing and efficiency reports and supports operational strategies that minimise waste.

Ventilation control and haulage optimisation reduce unnecessary power consumption and extend the service life of equipment. Preventive and predictive maintenance limit costly downtime and reduce premature equipment replacement, contributing to resource efficiency in mining operations.

Workforce wellbeing is a central feature of Smartflow. The telemetry module collects information on equipment operation and operator behaviour, identifying misuse or fatigue and ensuring training needs are met.

Vital signs monitoring can also be integrated into the software, to support safer working conditions where these may be compromised and enabling rapid response to health incidents. To enhance safety on site, the collision awareness system adds another layer of protection, using Wi-Fi and Bluetooth to detect personnel and vehicles and provide early warnings of potential accidents. Other features also support safety in mining operations.

Smartflow is currently in use across underground and surface sites in mines around the world. Becker Mining says future developments are focusing on additional modules and expanded ESG applications. The company offers customised solutions to meet the needs of each mine.

Additionally, the team offers technical advisory, repair, test and backup services throughout Africa, as well as a specialised consulting, training and support facility to ensure optimum efficiency of equipment and safety for workers.

For more information visit: www.za.becker-mining.com

Getting the right data to the right place at the right time

DeltaV™ Edge Environment brings data together to empower operators.

In modern operations, success hinges on getting the right data to the right person at the right time. When information is delayed, incomplete, or buried in silos, operators and decision-makers cannot respond with the speed and clarity required for safe, efficient performance.

Emerson's DeltaV™ Edge Environment changes that. More than a gateway, DeltaV Edge Environment enables OT and IT to connect securely to all DeltaV data and make it available across the enterprise, without disrupting control system integrity.

Combining DeltaV Edge with tools like AspenTech Inmation™, users can:

- Deliver contextualised data in real time to operators, engineers, and decision-makers
- Support faster responses with visibility into performance trends and anomalies
- Break down silos between systems, shifts, and teams
- Enable advanced analytics, dashboards, and reporting; all from a single, reliable source.

This means operations teams stay informed, aligned, and empowered to act faster, encountering fewer surprises. DeltaV Edge helps teams unlock the full potential of their operations data.

For more information visit: www.emerson.com/en-us/

Global collaboration supporting the AI boom

Tokyo Stock Exchange listed Hitachi, Ltd and Hitachi Energy, a global leader in electrification, recently announced support for the 800 volt direct current (Vdc) power architecture that Nvidia is working towards [1] by developing a cleaner, more efficient way to power the next-generation of artificial intelligence (AI) infrastructure. At this level, the power architecture paves the way for more energy-efficient 'AI factories' at a global scale.

Modern AI workloads are pushing data centres beyond the limits of traditional power architectures, which were designed for smaller compute loads. Hitachi Energy's advanced grid-to-rack architecture supports the 800 Vdc rack design and streamlines the flow of electricity from the grid to servers. It offers a simpler, more efficient, and more sustainable power system built for modern data centres, one that cuts energy waste, reduces cooling needs, and accelerates the deployment of hyperscale AI facilities.

"As the energy arm of the Hitachi Group, Hitachi Energy brings over a century of expertise in grid technologies and power electronics to this collaboration," said Jun Taniguchi, Senior Vice President and Executive Officer, CEO of Strategic SIB Business Unit, Hitachi, Ltd. "Through our wider focus on the data centre industry, the Hitachi Group's combined expertise enables clean and sustainable development of the AI factories of the future."

It is forecast that up to 125 gigawatts (GW) of AI data centre capacity could be developed globally between 2025 and 2030 [2], comparable to Spain's total installed generation capacity [3]. Meeting this demand requires unprecedented investment and advances in computing as well as in energy infrastructure.

Hitachi and Hitachi Energy support the 800 Vdc power architecture Nvidia is working towards for the next generation of AI infrastructure.

As a global market leader in transformers, high-voltage technology, digitalised grids, and service, Hitachi Energy is investing $9 billion globally, the largest investment in the industry, to expand manufacturing, R&D, engineering, and partnerships. This includes a historic $1 billion investment to advance the production of critical grid solutions in the US. The investments will be key to meeting energy needs, including the energy needs of AI data centres, and supporting a robust, future-ready electric grid.

For more information visit: https://www.hitachienergy.com

References

[1] Nvidia 800 V data centre architecture
The exponential growth of AI workloads is increasing data centre power demands. Traditional 54 V in-rack power distribution, designed for kilowatt scale racks, isn't designed to support the megawatt-scale racks coming soon to modern AI factories. NVIDIA is leading the transition to 800 VDC data centre power infrastructure to support 1 MW IT racks and beyond, starting in 2027. To accelerate adoption, NVIDIA is collaborating with key industry partners across the data centre electrical ecosystem.
[2] The cost of compute power: A $7 trillion race to scale data centres | McKinsey
[3] Installed capacity | System report Red Electrica January 2024

Immersion cooling for AI and HPC applications

NYSE listed Vertiv, a global leader in critical digital infrastructure, has introduced the Vertiv™ CoolCenter Immersion cooling system, expanding its liquid cooling portfolio to support AI and high-performance computing (HPC) environments ready to maximise the superior thermal properties of liquid cooling. The system is available now in Europe, the Middle East, and Africa (EMEA).

With immersion cooling the servers are submerged in a dielectric liquid which provides efficient and uniform heat removal across all components, where power densities and thermal loads exceed the limits of traditional air-cooling methods. Vertiv CoolCenter Immersion serves as a complete liquid-cooling architecture, enabling reliable heat removal for dense computing, ranging from 25 kW to 240 kW per system.

"Immersion cooling is playing an increasingly important role as AI and HPC deployments push thermal limits far beyond what conventional cooling systems can handle," said Sam Bainborough, EMEA Vice President of thermal business at Vertiv. "With the Vertiv CoolCenter Immersion, we're applying decades of liquid-cooling expertise to deliver fully engineered systems that handle extreme heat densities safely and efficiently, giving operators a practical path to scale AI infrastructure without compromising reliability or serviceability."

The Vertiv CoolCenter Immersion is available in various configurations, including self-contained and multi-tank options, with cooling capacities from 25 kW to 240 kW. Each system includes an internal or external liquid tank, coolant distribution unit (CDU), temperature sensors, variable-speed pumps, and fluid piping, delivering precise temperature control and consistent thermal performance. Dual power supplies and redundant pumps provide high cooling availability, and integrated monitoring sensors, a 9-inch touchscreen, and building management system (BMS) connectivity simplify operation and system visibility. The system is designed also to enable heat reuse opportunities, supporting more efficient thermal management strategies across facilities and broader energy-efficiency objectives.

Vertiv™ Liquid Cooling Services provide end-to-end expertise, from system design and installation to maintenance, training, and lifecycle optimisation, helping customers evaluate and implement the most effective liquid-cooling architectures. Supported systems include rear-door heat exchangers, direct-to-chip liquid cooling, and immersion cooling, enabling reliable, scalable, and efficient thermal management for AI, HPC, and other high-density computing environments.

For more information visit: www.vertiv.com

SAREGS points to a pipeline of 220 GW in renewables projects

Leigh Darroll, Editor, Electricity + Control

The results of the latest South African Renewable Energy Grid Survey (SAREGS) point to a strong and growing pipeline of development projects in the renewable energy sector, including solar, wind, battery storage and hybrid projects, plus support for ancillary services.

The results of the 2025 survey were presented by the NTCSA on 27 October 2025 in a webinar co-hosted by the NTCSA (National Transmission Company South Africa), SAPVIA (the South African Photovoltaic Industry Association) and SAWEA (the South African Wind Energy Association). These parties work together to conduct the survey annually with members of the respective industry bodies playing an essential part in providing the information on where new projects are planned, using which technologies, and over what timeframe, which goes into determining grid transmission requirements over the near- to longer-term.

Insights provided by the survey can help the NTCSA and Eskom prioritise transmission upgrades in high-demand zones, aligning investment with confirmed project pipelines.

For the 2025 surv3ey more inputs were received, from 673 respondents, significantly up from 483 respondents in the previous year.

Presenting the results of the survey, Ronald Marais, Senior Manager for Strategic Grid Planning at the NTCSA, thanked all the contributors for their input and noted that the SAREGS is an important element feeding into the Transmission Development Plan which is reviewed and updated usually annually by the NTCSA.

The results of the SAREGS are shared on the NTCSA website and there is an interactive map where visitors can explore different interest areas.

The annual SAREGS provides a valuable guide for the NTCSA and critical insights for all involved in the sector, including planners, investors, IPPs, manufacturers, and EPC contractors.

Highlights of the survey

Planned projects indicate 60 to 70+ gigawatts (GW) of renewable energy development in the near-term. Classified as Type A projects, these are projects with all plans in place, EIAs (Environmental Impact Assessments)) approved, and ready to roll out, pending financial close.

A further 30 to 45 GW is indicated in mid-term projects, that is, to 2035. These are Type B projects, gearing up to move forward through the required approval and financing processes.

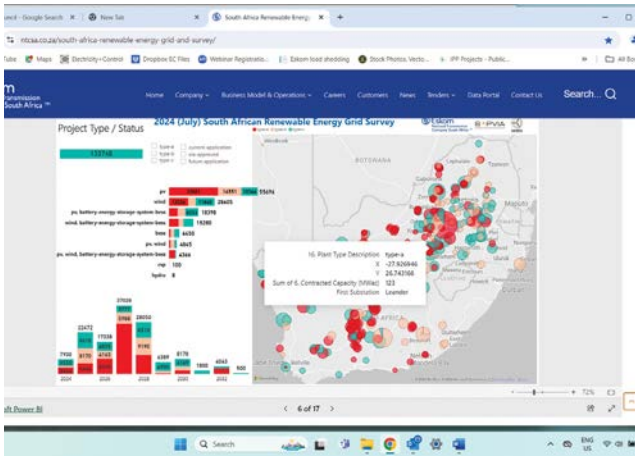
And over the longer term, another 41 to 103 GW of potential renewable energy development is under consideration.

Together, these planned projects amount to an overall pipeline of some 220 GW of interest in developing renewable energy in South Africa.

The projects span all technologies: solar PV, wind, standalone batteries, and hybrid solar or wind and battery energy storage systems. Solar PV continues to be the predominant technology.

The survey also reflects the geographical location of the planned projects, by technology and by type. This information can then be mapped in relation to the regional transmission corridors and substations of the national grid.

Interestingly, the survey shows growth more widely across different provinces of the country, notably in the North West, Limpopo and Mpumalanga (primarily wind energy), and the Free State, with demand still strong in the



The results of the SAREGS are shared on the NTCSA website – this screenshot illustrates renewable energy projects planned to 2034, by technology and location.

Northern, Western and Eastern Cape but static in Gauteng.

From the indicated readiness/timing of the planned projects by Type A, B or C, the NTCSA can also gauge timing of the need for new transmission substations to be built. Noting that main transmission substations (MTSs) typically handle about 1 400 MW of power per substation, Marais said the NTCSA can work out where new substations will be needed and when, also taking account of the technologies to be used in the respective projects and their particular demands/impact on the grid.

Marais further noted a greater readiness from private sector players to provide ancillary services, which would include reserves, black start capabilities, and reactive power supply, using different technologies.

As well as providing a valuable guide for the NTCSA, the annual SAREGS provides critical insights for planners, investors, IPPs, manufacturers, EPC contractors, and other market players.

A potential concern

In the Q&A session following the presentation of the results, Marais emphasised that a key focus for the NTCSA is strengthening the grid, to control voltage levels and voltage angles, with a further key focus on enabling grid flexibility. Without flexibility, the new input from renewables that can be integrated into the grid is limited.

With regard to the recently released Integrated Resource Plan, IRP 2025, Marais confirmed that the survey showed renewable energy components of the plan could readily be met.

And looking beyond the country's preoccupation with supplying enough electricity to meet demand consistently and sustainably, Marais highlighted another potential concern. He pointed out that the near-term interest in renewable energy development amounts to 72 GW (on the upside), whereas the forecast load for the near term is, comparatively, 20 to 24 GW. This means the rollout of renewables projects will need to be contained to meet electricity demand; and/or the economy and in turn electricity demand will need to grow more strongly than is currently forecast: if electricity supply from new renewables build were to surpass demand, the value of the output (and return on the investment) would fall to zero.

From SAPVIA's perspective

Stakeholders across South Africa's renewable energy sector joined the much-anticipated SAREGS 2025 Results webinar on 27 October 2025, marking a key moment in the sector's collaborative efforts to align renewable energy project development with national grid planning.

The 4th Annual South African Renewable Energy Grid Survey (SAREGS), conducted in partnership with the NTCSA, provides crucial insights into the state of grid capacity, project development, and emerging trends such as wheeling and corporate power procurement. This year's results underline the sector's rapid growth and the urgent need for coordinated infrastructure expansion to unlock stranded renewable capacity.

Key findings

- Wheeling and off-taker dynamics: The latest survey reflects a significant shift towards wheeling arrangements and private power purchase agreements, following the approval of South Africa's Wheeling Framework. Data collected provides visibility into corporate procurement trends and third-party grid access.
- Identifying grid congestion hotspots: SAREGS 2025 highlights areas where grid constraints have delayed or stalled projects. These insights are expected to help the NTCSA and Eskom prioritise transmission upgrades in high-demand zones, aligning investment with confirmed project pipelines.
- Policy integration: The survey continues to feed directly into key national planning tools including the Transmission Development Plan and the Congestion Curtailment Proposal, which aims to free up 3.4 GW of stranded capacity in constrained regions.

The 2025 Renewable Energy Grid Survey also highlighted continued momentum and scaling across the sector.

- Total reported capacity planned now exceeds 220 GW.
- Installed capacity surged by 86 GW compared to 2024.
- Development-stage projects grew by 60 GW, signalling a robust pipeline.
- Hybrid systems now represent 46% of total contracted capacity compared to 25% in the previous year.
- 190 additional contributors participated, reflecting expanding industry engagement.

This year's survey again reaffirmed the industry's willingness to share project data to support coordinated transmission planning. To maintain commercial confidentiality, raw survey data remains under the sole management of the NTCSA's planning team; SAPVIA and SAWEA receive only aggregated insights.

"The SAREGS results demonstrate that the renewable energy industry is more than ready to respond to its allocation in the recently announced IRP 2025. The survey provides a data-driven view of where the transmission and distribution bottlenecks are and, more importantly, where transmission infrastructure development should be prioritised. Industry and the NTCSA are now better equipped to work together to unlock capacity where it's needed most," said Dr Rethabile Melamu, CEO of SAPVIA.

"With the IRP and the Wheeling Framework now in place, these results provide the foundation for a more efficient and

transparent grid planning process that supports public and private sector investment."

SAREGS 2024 delivered valuable stakeholder data, representing over 120 GW of South African energy generation projects under development.

The 2025 results reflect a maturing collaboration between government, grid operators, and the private sector. The insights generated will inform Eskom's TDP and Grid Capacity Connection Assessments (GCCA), helping to align infrastructure delivery with the pace of renewable energy development.

SAPVIA and SAWEA have called on independent power producers to continue engaging with the survey process in future iterations to ensure planning remains responsive to market realities.

Comment from SAWEA

The 2025 South African Renewable Energy Grid Survey reveals 72 GW of renewable energy projects at advanced stages of development – projects that could be ready to connect to the grid within the next seven years. This aligns with the 71.7 GW total capacity (wind and solar PV combined) envisioned in the Integrated Resource Plan (IRP) 2025 over the longer timeframe of a 16-year horizon.

The survey reaffirms that South Africa's renewable energy sector is aligned with IRP ambitions – and well ahead of them – demonstrating investor confidence, project maturity, and delivery readiness across the value chain.

Led by the NTCSA in collaboration with the South African Wind Energy Association and the South African Photovoltaic Industry Association, SAREGS continues to serve as a critical coordination tool that aligns the national development pipeline with transmission planning and investment decisions. It emphasises the growing need for collaborative action between industry and government to ensure grid infrastructure keeps pace with market momentum.

"The survey shows exponential growth across all technologies in renewable energy, with wind increasing from 43.8 GW in 2024 to as much as 60 GW this year, (excluding hybrid projects)," says Niveshen Govender, CEO of SAWEA.

Over the past four years, the renewable energy pipeline has expanded from 63 GW in 2022 to 220 GW in 2025, a more than threefold increase, highlighting the sector's sustained growth and the urgency of grid expansion, flexibility, and modernisation to support accelerated deployment.

Aligning with the IRP, implications for wind energy

The IRP 2025 allocates 43 GW of new onshore wind capacity by 2042, averaging roughly 2.7 GW per year. In contrast, SAREGS 2025 identifies over 60 GW of wind projects already in development, including 17 GW of advanced or shovel-ready capacity with most of this capacity expected to come online in the next five years.

This gap between policy allocation and pipeline reality presents a strategic opportunity and a critical challenge.

- The opportunity: The sector's readiness shows that South Africa can exceed current policy targets, potentially accelerating decarbonisation, job creation, and energy security.
- The challenge: Without corresponding grid investment and enabling regulatory reform, much of this capacity risks remaining stranded, delaying the country's energy transition.

However, through SAREGS, NTCSA has a robust, data-driven tool to map and guide transmission development proactively across the country.

The findings reinforce the urgent need to fast-track transmission infrastructure build, modernise grid operations, and adopt flexible planning frameworks that can accommodate faster renewable uptake than currently envisioned by the IRP.

"The SAREGS 2025 results make it clear that South Africa's renewable energy sector is ready, and eager to deliver," says Govender. "With 60 GW of wind projects planned for grid connection within seven years, it is clear that the pipeline is ahead of policy, and the next frontier lies in unlocking grid access to convert this potential into usable generation capacity."

Key findings

- Wind and wind hybrid projects now account for over 110 GW, representing more than 50% of total reported planned capacity.
- Wind and wind + BESS – 60 GW.
- Wind projects Type A (in advanced development) – 17 GW.
- Industry engagement has surged with 673 contributors in 2025 (483 in 2024).
- Project maturity continues to strengthen, with 72 GW classified as Type A (advanced development) and 45 GW as Type B (under development).
- Geographically, mature developments remain concentrated in the Cape and Hydra regions, with new projects expanding into previously underused grid zones.
- An increasing number of projects now provide ancillary services – enhancing grid resilience.
- The sector is showing a strategic shift towards hybrid and co-located projects, optimising land use, generation profiles, and grid efficiency.
- SAREGS continues to inform national planning instruments, including the Transmission Development Plan (TDP), and Integrated Transmission Projects (ITPs).

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

Powering progress – dry-type transformer technology evolves to serve a wider market

Trafo Power Solutions, in partnership with TMC Transformers, is advancing the use of dry-type transformer technology across Africa, delivering customised, robust solutions for demanding industrial applications, particularly in mining and similarly in other sectors.

With their combined engineering expertise, innovation and use of advanced simulation tools, they are driving the evolution of safer, more efficient and higher-capacity dry-type transformers for indoor as well as outdoor environments.

As a leading provider of electrical power solutions on the continent, Trafo Power Solutions has pioneered dry-type transformer applications locally, introducing customers to the specific benefits of the technology in their operations. Managing Director, David Claassen attributes much of this success to TMC Transformers' readiness and capability to engineer customised solutions for unique and demanding requirements.

"We have collaborated for seven years now, and we share the same commitment to going the extra mile to provide what the customer needs," says Claassen. "The same 'can do' culture in both companies gives us a sound foundation from which to produce quality solutions – and to advance dry-type transformer technology wherever we can."

Based in Italy, TMC Transformers is driven by a team with over 40 years of combined experience in the transformer industry. Andrea Ghidini, the company's Sales Director, says, "We have built our reputation on designing and manufacturing specialised solutions, so our market looks to us for answers when they are dealing with electrical parameters outside of the ordinary. This might relate to a dry-type transformer of unusual size or capability, such as 25 MVA and 50 kV on the primary winding or for applications involving very high harmonic levels or high secondary coil currents of 20 000 to 30 000 amps."

Robust construction

Claassen notes that Trafo Power Solutions serves a large customer base in the mining sector, where operations are often in remote African locations with poor road infrastructure.

"This means transformers must be designed to be robust enough to handle severe vibrations and mechanical stresses during transport to site," he says. "Once in place, the units face harsh on-site conditions typical of mining, with high levels of dust and moisture."

Precision-engineered cast resin transformers in the TMC production plant – ready for testing and final quality inspection.

Left: Andrea Ghidini, Sales Director at TMC Transformers. Right: David Claassen, Managing Director at Trafo Power Solutions.

Dry-type transformers were once commonly installed mainly indoors or in enclosed spaces – inside marine vessels or in buildings, for example – due to their air-cooled design which eliminates the need for oil and significantly reduces the risk of fire or explosion. This makes them suitable for placement near areas of human activity.

"One of the advances we have seen, however, is that dry-type technology is no longer limited to these niche indoor applications, especially as users grow more concerned about safety and environmental risk," says Claassen. "Among the most common outdoor applications of dry-type transformers that we have designed and installed have been for mining operations," he adds.

In these outdoor deployments, the transformers must function reliably in extreme daytime heat as well as dusty and damp conditions. To address this, dry-type technology has evolved with higher protection ratings and design innovations to manage the heat buildup within more tightly sealed enclosures.

Cooling options now include forced air systems with fans, air-to-water heat exchangers combining both cooling methods, and water-cooled systems using either direct or indirect water flow.

Custom engineering

Ghidini confirms the shift of dry-type transformers into outdoor settings and notes that this trend has taken the installation of dry-type transformers into sectors like solar energy, battery energy storage plants and the oil and gas sector.

"Another significant advance in our field has been in the scale and capacity of dry-type transformers," he says. "While these units initially had limited parameters – around 10 to 15 MVA and 36 kV – we now see capabilities rising to 20 to 25 MVA and beyond, with primary coils reaching up to 50 kV."

This means dry-type transformers can take on grid connection roles previously reserved for conventional oil-cooled transformers. According to Ghidini, much of this progress is due to a strong emphasis on custom engineering.

"Custom engineering has always been an important part of the value we offer as a partner to customers in our various markets," he says. "We invest a great deal of time and effort to understand exactly what their application is and what they need from us. Our approach, then, is to think creatively about how we can meet their requirement – even if there are

new avenues that we have to explore."

Rather than simply supplying what a customer requests, TMC Transformers prefers to examine the application in detail to identify potentially better alternatives.

"We therefore look at all the electrical parameters and alternative materials and check the customer's approach with our own systems analysis and simulations, to see what improvements can be achieved," he says. "Simulations are very useful in testing and confirming all the electrical and mechanical variables before we decide on a final solution with the customer."

Claassen says this approach aligns closely with the way Trafo Power Solutions works, drawing on deep technical expertise to deliver the most effective and robust outcome.

"Our customers come to us to procure a transformer or larger electrical power system, but they also get the benefit of our engineering insights," he says. "We can help to finetune a design, consider better alternatives or in some cases pick up a blind spot that could create challenges for them later."

Advanced software support

Another advantage of the Trafo Power Solutions-TMC partnership is access to TMC's advanced software tools including finite element analysis and thermo-dynamic simulations. Claassen says this supports technological advances and market confidence. "With its strong foundation of engineering expertise, TMC can scientifically verify the designs before the manufacturing stage is initiated," he says.

Through their partnership Trafo Power Solutions and TMC Transformers continue to drive innovation, pushing the frontiers of what dry-type transformer technology can achieve. By combining deep engineering expertise, advanced simulation tools and a commitment to solving real-world challenges, the two companies are expanding the scope of dry-type transformer applications and setting new benchmarks for safety, reliability and performance across a range of demanding industries.

"As the energy landscape evolves and industrial demands intensify, our collaborative approach ensures our customers receive a future-ready solution tailored to their needs," Claassen concludes.

An outdoor-rated enclosure features an air-naturally-cooled medium voltage cast resin transformer, built for durability and long service life.

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

Renewable energy + energy management: Products + services

A toolkit for IPPs and electricity traders

The need for reliable, affordable power is a day-to-day requirement – and growing. In South Africa, sellers of electricity – independent power producers (IPPs) and traders – are central in meeting this need, yet they face a marketplace that is fragmented, complex, and often hard to navigate. Gerjo Hoffman, CEO of Open Access Energy, makes the point that to build a stronger energy future, we need solutions that simplify the process, reduce risk, and open the door to more transparent trading. Here he explains Energypro, a software suite developed by Open Access Energy and designed to make energy trading easier, smarter, and faster.

Gerjo Hoffman, CEO of Open Access Energy.

Hoffman says, too often, IPPs spend weeks preparing proposals and cost estimates, and buyers struggle to compare offers that don't align. This results in missed opportunities, stalled projects, and an erosion of trust in the market.

Energypro provides a single space where sellers can build professional, comparable proposals quickly and efficiently, manage energy flows, and execute transactions with confidence. At its core, Energypro streamlines the allocation of energy across the grid, ensuring supply and demand are matched accurately and transparently, and offering full visibility into performance and settlement.

How does it work?

Consider a mining company weighing up two different offers, each with its own contract length, structure, and level of risk. On the surface, the numbers are hard to compare, and the risk in choosing the wrong option is high. Energypro simplifies this by standardising the proposals, running the numbers against the mine's actual consumption profile, and showing the true cost and risk implications – all done within minutes rather than weeks.

Why is it needed?

South Africa's energy market is steadily turning towards a clean energy mix, distributed energy resources, and a more open electricity market. Demand for energy has always been great, grid instability persists, and more private producers are entering the market at pace. Without the right systems in place to support their decisions, buyers risk signing unfavourable deals, and suppliers can face costly delays. By introducing transparency and trust, Energypro allows new projects to accelerate,

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Modernising power infrastructure for a leading fruit producer

Two a Day is one of Africa's largest fruit-growing, packing, and marketing companies. It produces over 185 000 tonnes of apples and pears annually from more than 50 farms, covering 3 300 hectares. Given the company's reliance on a stable and efficient energy supply – particularly for cold storage, processing, and export activities – modernising its power infrastructure has been critical to ensuring uninterrupted operations and achieving future sustainability targets.

Schneider Electric and its partner, Technoserve Medium Voltage, installed the advanced RM AirSeT SF_6-free medium voltage (MV) switchgear at Two-a-Day (TAD), which is located in Grabouw in the Overberg District of South Africa's Western Cape. The installation forms part of TAD's broader modernisation and decarbonisation drive.

A progressive step

In line with these objectives, TAD chose to work with Technoserve Medium Voltage and Schneider Electric to move forward in modernising its current power infrastructure.

For decades the company has relied on Schneider Electric's RM6 ring main unit (RMU) technology as the basis of its electrical network. Robust and reliable, RM6 supported business continuity across the group's operations. However, it was time to progress to the next generation of MV switchgear, the RM AirSet.

Andrés Diaz, VP Power Systems, Schneider Electric Anglophone Africa.

"The transition to RM AirSeT combines reliability with a safe, modern, and environmentally responsible solution," says Evans Coetzee, General Manager at Technoserve MV. "Working closely with Schneider Electric, we proposed this new switchgear, which incorporates advanced technology and takes TAD one step closer to its decarbonisation goals,"

Andrés Diaz, Vice President, Power Systems, English-speaking Africa at Schneider Electric, says, "RM AirSeT represents the future of sustainable power distribution. By eliminating SF_6 gas and using pure air instead, it delivers high performance with environmental responsibility. This facilitates grid decarbonisation and prepares operations for potential regulatory shifts."

Henk Ryke, Engineering Manager at Two-a-Day, comments: "We believe the newly installed RM Airset will be a great advantage to TAD's existing ring main, providing flexibility whenever we encounter any problems. As we modernise our infrastructure, the RM Airset fits in well, enabling us to be future-ready for growth in the fruit industry."

Henk Ryke and Raymond Bosch of TAD with the RM AirSet switchgear.

Key benefits

The RM AirSeT offers several key benefits to TAD.

- Zero SF_6 emissions.
- Enhanced mechanical endurance.
- Digital integration.
- Safety and reliability.

Towards sustainable growth

Schneider Electric and Technoserve see the deployment of RM AirSeT switchgear at TAD as a strategic move towards modernisation, resilience, and decarbonisation.

"Customers like Two-a-Day are leading by example. With the transition from RM6 to RM AirSeT, they are safeguarding business continuity, enabling smarter energy management, and reducing their carbon footprint. This is an example of sustainability and performance working hand in hand," says Diaz. "At Schneider Electric, we are committed to helping customers achieve performance and sustainability."

For more information visit: www.se.com

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it reduces risk, and expands access to affordable, reliable power.

Sellers need the tools to demonstrate value with speed and accuracy. Energypro is designed to make it easier for sellers to quantify and present the long-term value of their energy offers clearly and confidently. By simplifying proposals, improving the accuracy of comparisons, and streamlining transactions, it enables faster decisions and stronger relationships between sellers and buyers.

At Open Access Energy, we believe the industry doesn't need more complexity, it needs clarity, simplicity, and accuracy. Every deal should be transparent and based on correctly applied tariffs that reflect true costs and value. That's what we're working to deliver: a smarter, more reliable way to bring buyers and sellers together, one deal at a time.

Open Access Energy builds software to make electricity wheeling and energy trading in South Africa easier. The tools it designs support IPPs, traders, and municipalities in managing metering, tariff reconciliation, and wheeling transactions for decentralised energy systems.

For more information visit: https://openaccess.energy/

Springbok solar project scaled to serve multiple offtakers

Leading independent power producer, the SOLA Group, achieved Commercial Operations Date (COD) for its Springbok Solar Power Project in Virginia, in the Free State, ahead of schedule. This was celebrated with the official opening of the plant on 28 October 2025. The 195 megawatt peak (MWp) facility is a multi-buyer, flexible energy project and a significant development in large-scale private renewable energy procurement in Africa.

The Springbok project increases SOLA's operational portfolio to 464 MWp, establishing it as South Africa's largest operational provider of private power contracts. The project will deliver clean energy to anchor buyers Amazon and Sibanye-Stillwater, as well as other buyers operating across different industries.

A flexible energy model

The Springbok project is pioneering a flexible multi-buyer platform, enabling a cross-section of major South African corporate buyers to procure clean energy from a single source. The project engages multiple buyers on a flexible bilateral basis without the additional costs raised by a trading entity. This model contributes to accelerating the energy transition for the private sector and managing risk across the grid.

The power generated by the project will be wheeled across the Eskom transmission network to serve multiple offtakers under long-term and short-term rolling Power Purchase Agreements (PPAs). The clients include global and local industry leaders such as Amazon (the original anchor buyer), Sibanye Stillwater (anchor buyer and one of the largest offtakers on the project), Sasol, Afrimat, Redefine, Old Mutual, Vodacom, Rio Tinto, BRM Brands, and others.

The project also represents South Africa's first operational virtual wheeling PPA, with Vodacom leveraging the flexible model to source power for its operations, setting a precedent for municipal-level energy procurement.

In terms of scale, the 195 MWp facility will generate over 430 000 MWh of clean energy annually, enough to power around 50 000 South African households and offsetting an estimated 399 000 tonnes of CO_2 emissions per year (reportedly the equivalent of planting 6.5 million trees).

BESS integration

The SOLA Group is building on this development to advance its next phase of utility-scale projects, which will introduce substantial co-located Battery Energy Storage System (BESS) capacity.

The Naos 1 and Nyala solar and storage projects (located respectively in Viljoenskroon and Welkom in the Free State) are set to deliver 770 MW of generation capacity coupled with BESS configurations providing over 1.5 GWh of dispatchable power. These projects will be among the largest private solar and battery storage facilities in Africa, designed to provide flexible, firm, and dispatchable power, moving beyond solar energy on its own to address the needs for continuous, reliable power supply.

Community investment

The SOLA Group's commitment to sustainability and shared value is further reflected in the project's support for local communities. To date, more than R375 million has been invested in nearby communities, creating employment opportunities for around 500 permanent and part-time workers.

The community investment programmes are designed to create lasting impact in the host communities. For example, in the Sports Against Crime initiative, tournaments with local schools provide young people with safe, structured activities that encourage healthy living, build confidence, and strengthen resilience, steering them away from negative influences.

In addition, a successful sewing and fashion programme in Matjhabeng Municipality has assisted unemployed learners to build a livelihood. In 2024, 47 participants graduated with recognised qualifications, and each received their own sewing machine, so they are equipped with the skills and tools to start their own businesses or secure employment in the textile sector. SOLA intends to continue to support and fund local community initiatives in the area during the operational phase of the project.

Strategic value

The timely delivery of the Springbok project comes as South Africa's private generation sector is driving significant market activity. Current industry estimates show that private sector renewable energy capacity is expected to add some 6 GW of solar photovoltaic (PV) and 4 GW of wind power to national supply by 2030, strengthening the shift towards a diversified energy mix. The wheeling framework is central to this growth, allowing large-scale projects located in renewables resource-rich areas with grid connection availability to supply power to customers nationwide.

"The Springbok Solar Power Project provides a blueprint for the future of large-scale private energy in South Africa," said Jonathan Skeen, Managing Director, Commercial, at SOLA Group. "By successfully integrating multiple buyers with diverse contracting needs, we are demonstrating that renewable energy can be delivered reliably, flexibly, and at the necessary scale to support economic growth and decarbonisation goals."

For more information visit: https://solagroup.co.za/

SOLA Group's Springbok Solar Power Plant, brought online ahead of schedule, is a pioneering multi-offtaker project supplying clean electricity to buyers nationwide.

Damlaagte marks a step up for industrial decarbonisation

The Damlaagte solar plant near Parys, Free State, is part of Sasol and Air Liquide's 900 MW joint renewable energy procurement programme.

The Damlaagte PV Facility (Damlaagte), a 97.5-megawatt solar power plant built to supply renewable electricity to Sasol's Secunda operations, where Air Liquide operates its oxygen production site, was officially inaugurated at the end of October 2025. The project is the first renewable energy facility to come online under Sasol and Air Liquide's landmark 900 MW joint renewable energy procurement programme. This strategic initiative is a key enabler for both companies' ambitious decarbonisation plans, supporting Air Liquide's aim to reduce CO_2 emissions from its Secunda operations by 30 to 40% by 2031. It also plays a key role in enabling Sasol to achieve its 2030 target of securing up to 2 GW of renewable energy.

The inauguration, held at the solar plant outside Parys in the Free State, brought together stakeholders, funders, offtakers, contractors, and partners to celebrate the achievement.

The Damlaagte PV facility is owned by Mainstream Renewable Power, uBuzwe Energy (Pty) Ltd, and the Thembelihle Trust. It connects directly to the Eskom grid and is expected to generate around 270 million kilowatt-hours (kWh) of clean electricity annually.

"We feel privileged to provide Sasol and Air Liquide with a renewable energy solution that directly supports their decarbonisation goals," said Titania Stefanus-Zincke, Chief Operating Officer, South Africa, Mainstream Renewable Power. "This project allows us to support industrial decarbonisation and strengthen energy security. We extend our sincere thanks to our contractors and partners for delivering a world-class solar PV utility project, one that sets a new benchmark for collaboration and quality."

Damlaagte contributes directly to Sasol's broader renewable energy procurement programme. Bringing the plant into successful commercial operation marks an important step for Sasol towards achieving lower carbon intensity across its operations – and advancing the country's industrial decarbonisation goals.

"We're excited to have reached this milestone in our journey together with our partners Air Liquide and Mainstream Renewable Power, as we strengthen South Africa's energy security and expand the country's renewable energy capacity. As one of the country's largest procurers of renewable energy, Sasol's renewable energy programme is key in our strategy to grow and transform our business," said Sarushen Pillay, Executive Vice President: Business Building, Strategy and Technology.

At the inauguration, Deputy Minister of Electricity and Energy, Samantha Graham-Maré said, "I congratulate Sasol and Air Liquide on this momentous milestone. This is a significant achievement, particularly as it is their fourth renewable installation, which will contribute to the country's energy mix and to reducing carbon emissions. Sasol is demonstrating how critical it is for industry to play its role in energy security. It is pleasing to note that more than 1700 job opportunities were created through this project. My hope is that this initiative will bring greater success and create further opportunities."

Construction of the Damlaagte PV Facility began in November 2023 and the plant achieved commercial operation in August 2025. During this period, the project created employment opportunities for nearly 2 000 people, most of whom were recruited from the nearby communities of Tumahole, Schonkenville, and Vredefort. The project owners, In collaboration with the construction partners – Power China Maanda JV, LeadEPC, and Tractionel Holdings – placed strong emphasis on local procurement and enterprise development, to ensure participation by local businesses.

A dedicated skills development programme further enhanced the project's socio-economic contribution, providing training to over 150 community members and leaving a lasting impact of skills and opportunity, enabling participants to take up employment on other renewable energy construction sites in the region.

"We remain committed to driving impactful investment in South Africa's renewable energy sector," said Indiran Pillay, Director, uBuzwe Energy. "Our involvement in the Damlaagte PV Facility strengthens our growing portfolio of 17 renewable assets generating over 1 000 GWh annually and underscores our focus on sustainable growth and inclusive local development."

The operation and maintenance of the facility will be handled by Plus MAMSA (Mainstream Asset Management SA) and its O&M partner, Power China Maanda JV.

With the Damlaagte PV Facility online, Sasol's operational renewable energy portfolio comprises:

- 3 MW Sasolburg (solar)
- 69 MW Msenge Emoyeni (wind)
- 10 MW Springbok (solar)
- 98 MW Damlaagte (solar; Sasol has 40% of the offtake).

For more information visit: https://www.mainstreamrp.com/

Advancing wind energy in Mpumalanga

South African renewable energy company Seriti Green, announced in mid-October 2025 that it had achieved financial close and started construction on the third phase of its flagship Ummbila Emoyeni wind farm in Mpumalanga. Once complete the project will deliver over 900 megawatts (MW) of renewable energy capacity across seven phases. The company has already installed 25 wind turbines near Bethal, Davel and Morgenzon.

Most recently, on 26 November 2025, Seriti Green, together with Eskom and its subsidiary, the National Transmission Company South Africa (NTCSA), celebrated the formal handover of the Vunumoya Main Transmission Station (MTS) by Seriti Green to Eskom. With an investment value of more than R1 billion and delivered over 18 months, the MTS represents a major grid-enabling asset that will support one of South Africa's largest renewable energy developments.

The handover confirms that the Vunumoya MTS is fully energised, operational and integrated into the national grid. This will enable the first 155 MW of wind energy from Seriti Green's Ummbila Emoyeni One Wind Energy Facility to be fed into the system ahead of schedule (initially planned for early 2026) and marks a significant milestone in the rollout of the overall 900 MW programme, which will see new renewable energy capacity progressively added to the grid.

Ongoing construction

The start of construction on Phase 3 of Ummbila Emoyeni signals further progress in South Africa's Just Energy Transition (JET), with Seriti Green leading delivery at scale from the heart of the country's traditional coal mining region. With turbines in the ground and thousands of people gaining skills and employment, this is the Just Energy Transition in action.

[Photo: Electricity + Control]

Seriti Green, Eskom, NTCSA and representatives of the Gert Sibande District Municipality in November celebrated the handover of the newly built Vunumoya Main Transmission Station.

Seriti Green has successfully closed three phases, each 155 MW (a total of 465 MW) within two years: the first phase reached financial close in 2024 and the second in August 2025.

Peter Venn, CEO of Seriti Green, said: "Wind power in Mpumalanga was once thought impossible. Today, it is a reality. The Just Energy Transition must deliver – and we are playing our part."

Continued on page 19

[Photo: Electricity + Control]

Construction on Phase 1 of Ummbila Emoyeni is nearing completion. The project overall will deliver more than 900 MW of renewable energy capacity across seven phases including wind, solar and battery energy storage facilities.

Free State becomes a strategic hub for renewable energy

With financial close on the 157 MW Khauta West solar photovoltaic (PV) facility, building on the momentum of the 349 MW Khauta South financial close concluded previously, NOA sees the 506 MW Khauta Cluster, once completed, positioning the Free State as a strategic hub for utility-scale renewable energy projects.

The Khauta Cluster will deliver 1 073 GWh of clean electricity annually to a portfolio of private-sector customers across mining, manufacturing, data centres and commercial real estate. The cluster includes Battery Energy Storage System (BESS) infrastructure, to support dispatchable energy and enhanced grid stability.

"NOA continues to advance its technology offering to the commercial and industrial market through an active site pipeline and adding the latest BESS technology to its generation facilities, including the Khauta Cluster," says Karel Cornelissen, CEO of NOA Group. "With permitting well advanced, we expect financial close on our first BESS system in mid-2026, strengthening our ability to deliver predictable, renewable energy to our customers."

The 506 MW Khauta Cluster covers a 560-hectare site and will include a shared switching station and IPP substation.

Reaching financial close on Khauta West shortly after that on Khauta South was facilitated through the replication of financing, engineering, procurement and construction (EPC), and operations and maintenance (O&M) documentation. This streamlined approach allowed NOA to maintain project momentum and secure continuity across both developments, ensuring time and cost efficiency.

Cornelissen highlights that by smoothing out the supply-demand balance, BESS enables a greater proportion of renewable energy to be integrated into the grid without compromising stability or reliability. For NOA's private offtaker partners, BESS brings more consistent supply and the ability to meet peak-load demands. It also endorses the company's standing as a technology-forward IPP in South Africa's evolving energy landscape.

Situated outside REDZ 5, the Khauta Cluster will connect via an overhead transmission line to Eskom's existing substation, leveraging strong grid availability in the province, which is an especially favourable factor compared to capacity-constrained regions such as the Northern Cape. The project footprint covers 560 hectares, including a shared switching station and IPP substation.

Khauta West (157 MW) is expected to achieve commercial operations by Q4 2026, and Khauta South (349 MW) by Q1 2027.

"This development reinforces our position as a leading IPP in the private energy market, supported by a growing portfolio, a storage-ready pipeline, and market leading wheeling expertise to help our customers advance in achieving their decarbonisation and cost saving goals," says Cornelissen.

For more information visit: https://noagroup.africa/

Continued from page 18

Financial close on Phase 3 was achieved through securing long-term funding from Standard Bank, RMB and ABSA, enabling full-scale construction to proceed. Sim Tshabalala, CEO of Standard Bank, one of the project's lead financiers, commented: "We back Seriti Green because they are delivering real, bankable projects aligned with South Africa's energy and economic priorities. They are the real JET players."

The first phase of Ummbila Emoyeni (155 MW) is nearing completion and will begin delivering electricity in early 2026. The overall project development comprises five wind farms, one solar photovoltaic (PV) facility and one battery storage facility, making it one of South Africa's largest hybrid renewable energy clusters.

A third of the electricity generated will power Seriti Resources' mining operations, helping to decarbonise one of the country's most energy-intensive industries. The remaining two-thirds will be traded via the NOA Group and Energy Exchange of Southern Africa (EXSA), making clean energy accessible to businesses and households nationwide.

Beyond infrastructure

Beyond infrastructure, Seriti Green is building a new energy economy rooted in inclusion and impact. On-site employment has reached 1 200 and is expected to grow to 2 000 as construction continues. The company has prioritised diverse hiring, local enterprise development and infrastructure improvements including the construction of the new main transmission substation – the largest in Mpumalanga in over 20 years – and the upgrade of local roads to support logistics and long-term access in host communities.

Mike Teke, Chairman of Seriti Green, said: "More than producing energy, this is about restoring dignity, enabling development and ensuring that the communities who powered South Africa through coal are now building its clean energy future."

Mandla Ndlovu, Premier of Mpumalanga, added: "This province, once defined by coal, is now leading in clean energy. Seriti Green has turned vision into action."

With more than R15 billion invested, over 2 GW of renewable capacity in the Mpumalanga pipeline, and active partnerships with government, financiers, communities and all the professionals and contractors involved in the project, Seriti Green is demonstrating that South Africa's energy future can be inclusive, ambitious and deliverable.

For more information visit: www.seritigreen.com

Partnership project to generate more renewable energy for SA businesses

Energy Exchange of Southern Africa (EXSA) has partnered with Sustainable Power Solutions (SPS) on Slimun Too Solar IPP, a solar project set to deliver clean, affordable energy to South Africa's grid.

The 5 600 kWp solar farm will generate around 12 million kWh of clean energy annually. Spanning 10 hectares, the project forms part of the larger SlimSun Swartland Solar Park located near Malmesbury in the Swartland Municipality of the Western Cape. SPS serves as both the Independent Power Producer (IPP) and Engineering, Procurement, and Construction (EPC) contractor, with Investec providing financial backing for the R87 million project. EXSA has entered into a 10-year Power Purchase Agreement (PPA) with SPS.

By October 2025, Phase 1 of the project was in the final commissioning stage, following approval of the Eskom grid connection. RETEC testing[1] was in progress, and the plant is soon to begin supplying renewable power directly through EXSA, offering South African businesses greater access to clean energy.

An additional phase has been contracted by the parties to double the Slimsun Too capacity to 10 MW. With financial close achieved, construction is scheduled to get under way in the coming months.

Together, these phases mark a significant step towards meeting South Africa's growing demand for affordable, sustainable power.

"This project demonstrates our commitment to advancing South Africa's Just Energy Transition. Partnering with SPS, we are expanding our renewable energy capacity and contributing to the country's economic growth and sustainable development," says Wayne Cowie, CEO of EXSA.

The project reflects the growing importance of solar energy in South Africa's energy mix. As the country transitions towards cleaner energy sources, partnerships like this play an important role in driving progress.

"Collaborating with EXSA enables us to develop our solar projects in South Africa further. We're excited about the potential for growth and the positive impact this project will have on the environment and local economy," says François van Themaat, co-founder and Director of SPS.

As EXSA grows its renewable energy portfolio, this project is an example of how partnerships can unlock innovative, cost-effective solutions in an evolving energy market.

Note:

[1] In South Africa, RETEC testing is the process of verifying that a renewable power plant complies with the national grid code requirements before it can be connected and operate on the electricity grid. The testing is performed by or overseen by the Renewable Energy Technical Evaluation Committee (RETEC), a technical team within the System Operator (Eskom or the local municipality).

For more information visit EXSA: https://exsa.co.za
Or SPS (Sustainable Power Solutions): https://sps.africa

Namibia's first renewable energy wheeling project

[Photo: Sustainable Power Solutions]

The project reflects the combined efforts of diverse stakeholders including: B2Gold, SPS, the Oelofse family – owners of Maxwell Farm, and NamPower.

In another new development Sustainable Power Solutions (SPS), in partnership with B2Gold Namibia, the Oelofse family and Fortitude, in the last quarter of 2025 successfully commissioned Namibia's first solar wheeling project under NamPower's Modified Single Buyer (MSB) Programme. The Maxwell Solar Plant represents a groundbreaking step in Namibia's transition to renewable energy and serves as a model for future public-private power partnerships.

The 10 MW Maxwell Solar Plant, located on Maxwell Farm about 50 km North of Otjiwarongo, is the first project wheeling renewable energy that has been successfully commissioned under NamPower's MSB programme. Power from the Maxwell Solar Plant delivers clean renewable energy to B2Gold's Otjikoto Mine, some 20 km away.

NamPower's MSB programme allows private Independent Power Producers (IPPs) to sell electricity directly to large customers and supply it using the national grid. This supports energy security and independent power generation and opens up the potential of wheeling in driving the country's transition to clean renewable energy.

Francois van Themaat, co-founder and Director of SPS said: "The Maxwell Solar Plant is a big step forward in opening up access to Namibia's grid. It demonstrates that wheeling under the MSB Programme works and shows how private producers and corporate offtakers can collaborate with NamPower to accelerate renewable energy deployment."

The project reflects the combined efforts of several stakeholders. B2Gold, Namibia's largest gold producer, has steadily increased its use of renewable energy since 2015, when it relied entirely on heavy fuel oil.

"B2Gold aims to be Namibia's leader in renewable energy-powered mining. This also supports our global target to reduce greenhouse gas emissions by 30% by 2030," said John Roos, Country Manager for B2Gold Namibia.

The Oelofse family, owners of Maxwell Farm and co-investors in the project, brought a conservation-driven philosophy and the land to the initiative. Fortitude played a critical advisory role as property developer, coordinating stakeholder engagement, and providing strategic guidance through every stage of the project.

"Maxwell Solar is a milestone for SPS as well as for Namibia and Africa," said van Themaat. "It shows that bold ideas, strong partnerships, and trust can deliver real change."

For more information visit: https://sps.africa

Digital switchgear and smart grid technologies for distribution utilities

The Association of Municipal Electricity Utilities (AMEU) held its 71st annual convention in October 2025 at the East London International Convention Centre. The AMEU Convention is the premier gathering for municipal electricity distributors, utilities, engineers, policymakers and suppliers from across Southern Africa. The annual event provides a valuable platform for knowledge-sharing, policy development and the showcasing of innovations that support the modernisation of the region's power networks.

ABB Electrification Distribution Solutions was there – it showcased its latest medium-voltage (MV) switchgear and smart grid technologies, exhibiting fully functional demonstration equipment and ABB technology. The display included ABB's UniGear Digital ZS1 switchgear, LeanGear switchgear, SafePlus RMU, Smart Substation Control and Protection SSC600, SCADA software and technology, as well as a range of supporting components.

A customer-centric approach

"At ABB, our portfolio of technologies and solutions are customer focused, tailored to solving real-world challenges, supporting utilities and industries to modernise their grids and prepare for a more digital, decentralised and sustainable energy future," says Jan van Zyl, Product Line Manager Primary Switchgear at ABB South Africa.

The UniGear Digital ZS1 and SafePlus solutions make use of advanced sensor technology instead of conventional current and voltage transformers. Combined with the Substation Centralised Control and Protection SCC600, these solutions offer predictive AI software that proactively forecasts where and when faults may occur. By replacing conventional hardware with sensors, ABB equipment significantly reduces system footprint and associated civil costs, improves safety, shortens engineering and commissioning times, and lowers standing energy consumption. Importantly, ABB's digital technologies are designed to adapt to evolving grid requirements, reducing the need for hardware replacement.

Jan van Zyl, Manager Primary Switchgear at ABB South Africa.

Solutions-driven and innovation-led

ABB also supports utilities and municipalities with battery energy storage and smart MV solutions, housed in modular compact substations. Type-tested ABB UniPack-G compact substations provide environmentally robust and safe solutions that can be rapidly deployed and monitored remotely, offering operators real-time insight into system status.

For more information visit: go.abb/electrification

Powering municipal utilities

Municipalities throughout South Africa are facing rising energy demands and increasing costs – as well as opportunities to participate in a new market of energy independence and self-sufficiency. Modern power generation, storage, management, and transmission innovations bring the energy market closer to municipalities.

Together with many other electricity professionals and vendors, WEG Africa participated in the 71st convention of the Association of Municipal Electricity Utilities (AMEU) in October 2025.

"The AMEU Convention is the place where municipalities and energy companies come together to share knowledge, build on existing relationships, and form new partnerships, where we can understand what municipalities are looking for, and showcase what WEG offers in products, expertise, and local manufacturing," says Jan-Frederik Viljoen, Director of the WEG Transformer Division.

Gareth Stanford, Transformer & Generator Sales Specialist at WEG, says being present at the AMEU Convention gave WEG the chance to re-engage with municipal players and to understand their needs.

WEG Africa showcased a range of products such as its power transformers, generators, solar panels and inverters, battery energy storage systems, mobile substations, and e-houses. The WEG team also discussed technical and business services, ranging from finance, skills access, maintenance, and after sales support, to electricity wheeling, PV solutions, and energy efficiency. Events like the AMEU convention offer the opportunity to sit face-to-face and engage directly with prospective customers, showing what WEG can deliver and how it works.

WEG Africa showcased a range of products including its power transformers, generators, solar panels and inverters, battery energy storage systems, and more.

"Municipalities want to create energy efficiency and sustainable growth through service delivery. There is a real spirit of building and rebuilding. But they are contending with issues like ageing infrastructure and skills shortages. We want to assist them in reaching their goals," says Dillon Govender, Business Development for Public Sector at WEG.

For more information visit: www.weg,net

Food safety – a matter of weight

From Minebea Intec's perspective, food safety begins with accurate weight recording. In everyday practice, weighing systems play a key role in ensuring product quality in food production, compliance with legal requirements, and preventing product recalls. The Minebea Intec MiNexx® portfolio has been specially developed to meet these requirements: It includes bench and floor scales as well as powerful weight indicators that evaluate complete systems such as silo, hopper or truck scales.

MiNexx systems provide reliable weighing data for safe and traceable production.

Too high a salt content in ready-made soup, an incorrectly dosed allergen ingredient in a snack product or insufficiently filled packaging in the hands of the consumer, just a few grams variance can affect flavour, product quality, customer satisfaction and compliance with legal regulations. If errors occur here, there is a risk of costly product recalls and potentially a loss of trust that has a long-term impact on the brand.

Advanced weighing technology makes a clear contribution to minimising such risks. As well as ensuring accurate weight determination, it provides documented traceability, hygienic processing and reliable process control.

"Industries that maintain precision and control in their production create the basis for consistent product quality and protect consumers and companies at the same time," says Nils Hubrich, Product Manager at Minebea Intec.

Safe and traceable processes

In dosing raw materials, filling packaging, checking quantities or monitoring recipes – weighing processes are essential in almost all steps of food production. The MiNexx® C, M and L Weight indicators serve a central function here: they process the signals from the connected load cells and platforms, prepare the weight values and control specific functions such as manual batching, piece counting or checking fill levels.

With various connections, MiNexx® indicators can be integrated into stand-alone solutions such as bench and floor scales, as well as networked lines and automated systems with higher-level control. "Today, a modern weight indicator is more than a display instrument," says Hubrich. "It contributes to making processes reproducible and safe – and thus creates a basis for consistent product quality and traceability."

IT security is also key. The integrated user management system is based on a three-tier model with individually configurable passwords. This prevents unauthorised access – an important consideration in protecting sensitive production data and securing digitalised processes.

Used under hygiene-critical conditions, which are essential in the food industry to prevent cross-contamination and make cleaning processes easy, the models meet current standards requirements: MiNexx®M and MiNexx®L have a stainless steel housing with protection class IP69 and are therefore suitable for use in humid or cleaning-intensive environments. The MiNexx®C model is available for compact enclosed solutions and, with IP65 protection, also offers reliable protection against the ingress of dust or water jets from any direction.

Weighing of small and large containers

For portioning raw ingredients, final inspection of packaged products or weighing heavy units of goods – precise and hygienic weighing is fundamental for food safety. The MiNexx®3000 scale series offers two robust solutions for this: a compact bench scale and a powerful floor scale, both made of stainless steel and designed for use in hygiene-critical zones.

The MiNexx®3000 bench scale is ideal for applications such as manual filling, portioning or check-weighing – for example in delicatessen, dairy or convenience food production. Its smooth surfaces, open design and IP69 protection rating enable thorough cleaning under high pressure. With their high resolution, the bench scales ensure the smallest deviations can be detected at an early stage – a plus point for consistent quality and reliable batch management.

The MiNexx® 3000 floor scale is used when pallets, big bags or drums are being weighed: incoming goods, for instance, or in recipe production or dispatch control. Its anti-slip tare plate surface ensures stability, even in wet or oily conditions. The load plate can be folded open so that hard-to-reach areas can be cleaned quickly and reliably. With a load capacity of up to six tonnes and a standard resolution of 60 000 d, it offers the precision needed for demanding heavy-duty applications.

In hygiene-sensitive production areas, scales must weigh product reliably, they must be designed to facilitate cleaning and have no weak points. The MiNexx®3000 series meets these requirements.

Traceability and resource protection

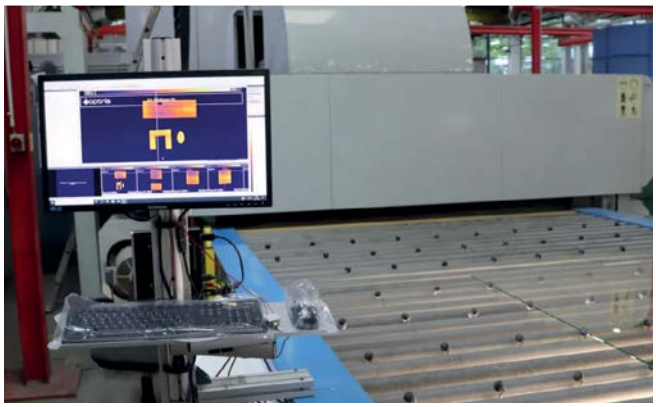
Minimising material losses and providing seamless documentation of batches, the MiNexx® systems provide reliable weighing data and can be integrated into existing ERP and quality management systems. This makes it much easier to comply with legal regulations such as EU Regulation 178/2002 on the traceability of food.

Combining precision, hygiene, cybersecurity and flexible integration, the MiNexx® series of scales assists safe, legally compliant and economical food production.

For more information visit: www.minebea-intec.com

The MiNexx bench scale from Minebea Intec.

Infrared temperature monitoring in the glass industry



Left: The reflective nature of molten glass complicates temperature readings as varying emissivity can lead to measurement inaccuracies. Right: Real-time monitoring provided by IR technology enables immediate adjustments to be made during the production process.

In the glass industry, infrared temperature monitoring is essential to maintaining product quality and process efficiency. Glass production involves extreme temperatures, from melting raw materials to forming and annealing, where precise temperature control is required. Instrotech, as a local representative for Optris, supplies infrared (IR) sensors and cameras that provide non-contact temperature measurements, making them ideal for such high-temperature environments.

The advantages

Accurate thermal monitoring ensures that the glass is processed within its optimal temperature range, preventing defects such as thermal stress, bubbles, and uneven surfaces. Using IR technology, manufacturers can detect temperature variations in real time, so they can make immediate adjustments and maintain consistency and quality throughout the production cycle.

Enhanced safety is another significant advantage. Non-contact IR sensors reduce the risks of handling extremely hot materials, improving safety for operators and reducing equipment wear and tear. Thus, they contribute to a safer working environment and reduce the maintenance needs and costs for temperature measurement systems exposed to harsh conditions.

Furthermore, IR temperature monitoring improves process efficiency. In melting furnaces, IR sensors allow for precise control of the molten glass temperature, in turn ensuring stable material properties and managing energy consumption.

In forming processes, IR cameras monitor temperature variations so mould heating and cooling can be optimised, enhancing product consistency and reducing defects.

During annealing, IR technology helps in managing the temperature profile of the glass as it cools, which is important to achieve the desired mechanical properties and minimise stresses in the product.

Overall, the use of infrared temperature monitoring in glass manufacturing processes supports the cost-effective production of high-quality products together with operational safety.

The challenges

However, IR non-contact temperature measurement does present specific challenges in the glass industry. High ambient temperatures in glass production environments, such as melting furnaces and forming stations, can impact the accuracy of IR sensors. The sensors require precise calibration to account for thermal interference and ensure measurement reliability. Additionally, the reflective nature of molten glass complicates temperature readings, as varying emissivity can lead to measurement inaccuracies. Adjusting the emissivity settings on IR devices is crucial but can be complex and time-consuming.

Additionally, dust and smoke generated during glass processing can obstruct IR measurements. The particulates can affect the clarity of thermal images and readings – hence the IR equipment needs to be frequently cleaned and consistently maintained.

Temperature gradients in the glass during processes like annealing can pose further challenges. IR cameras need to be configured to handle these variations effectively, so ensuring accurate monitoring across different zones of the production process.

The benefits

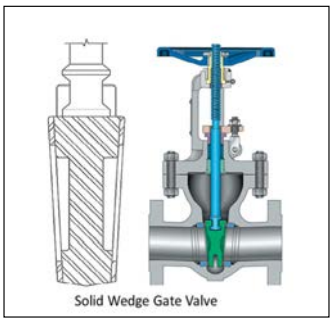
Despite the challenges, IR non-contact temperature measurement offers valuable benefits for the glass industry. Precision in high-temperature environments is a significant advantage. IR sensors can measure temperatures accurately without physical contact. This is crucial for monitoring molten glass and high-heat applications where traditional sensors are unsuitable. Precision in temperature measurement means the optimal thermal conditions needed to produce high-quality glass can be provided.

Glass industry applications

- In producing float glass – enhancing efficiency in float glass production
- Glass tempering – ensuring uniform heating and cooling in Low Emissivity glass toughening with precise temperature control
- Processing glass tube – optimising the process for forming glass tubes at temperatures above 1 000°C
- Enamel manufacturing – integrating real-time data for efficient temperature management in process control systems
- Processing single pane glass – boosting efficiency and product quality with under-line thermal measurement
- Producing glass gobs – accurate temperature control and real-time position tracking in industrial production of glass gobs
- Producing safety glass – accurate line scanning infrared technology improves safety glass manufacturing.

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

Choosing the best gate valves for water/wastewater management



The traditional wedge gate valve (top) and the RSV gate valve (above), preferred today for most water and wastewater applications.

Ultra Control Valves was among the exhibitors at the IMESA Conference held 29 to 31 October 2025 at the East London International Convention Centre. Peter Telle of Ultra Control Valves here explains the difference between wedge gate valves and RSV gate valves, highlighting the benefits gained through product developments.

Gate valves are widely used in water and wastewater systems, but not all gate valves are the same. Understanding the differences between wedge and resilient seated (RSV) gate valves helps users choose the right option for reliability, cost, and long-term performance.

Wedge gate valves

Traditionally, the term 'gate valve' referred to wedge gate valves, which have a metal-to-metal seating. The gate is shaped like a wedge so that it can be forced tightly onto the body seats.

The valves are designed to be strong and long-lasting, but they do have some drawbacks.

- They are often over-tightened to achieve a tight seal, and this can make them hard to open again. Forcing them with leverage poles can cause damage.
- The groove at the bottom of the valve traps dirt, which prevents the valve closing properly.
- Corrosion protection is difficult because the coating is easily damaged in areas next to the seating surfaces.

Resilient seated gate valves

To overcome these problems, resilient seated gate valves were developed. They use a rubber-coated gate that seals directly against the valve body. With this design, no separate body seat is needed. A fusion bonded epoxy (FBE) coating on the body and bonnet saw this type of valve quickly become popular.

Product improvements

In early RSV gate valves, there were problems with poor manufacturing quality and the rubber lining coming loose. Many users switched back to wedge gate valves at that time. However, subsequent improvements fixed the problems. The rubber is now moulded to the gate under high temperature and pressure, creating a strong bond that covers both the inside and outside surfaces, including the area where the spindle moves. Most manufacturers follow this process today, and some offer up to 20-year replacement guarantees.

RSV gate valves are now widely used for scour applications, where high water speeds once tore the rubber from the valve. The only caution in scour use is that rats might chew the rubber to reach water, but this can be prevented by installing a guard mesh over the outlet.

RSV gate valves deliver several benefits.

- Current designs provide better sealing performance.
- The valves require lower operating torque because friction is reduced between the gate and valve body.
- Particles are easily flushed out because there is no groove at the bottom of the valve.
- RSV gate valves reduce water hammer as the rubber absorbs pressure spikes.
- Because they need less machining and are produced in high volumes, RSV gate valves are usually less expensive and more readily available than wedge gate valves.

Resilient seated gate valves offer a more modern, corrosion-resistant and low-maintenance alternative to traditional wedge gate valves. For most water and wastewater applications, they provide dependable operation and good long-term value.

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

Advancing digital plant management

Specialist in valve, measurement and control systems, the GEMÜ Group, has introduced CONEXO 2025, the next generation of its digital solution for cross-manufacturer plant lifecycle management. This latest version sets standards in the digital identification and management of components and creates end-to-end transparency across the entire lifecycle – from commissioning to disposal.

Using modern technologies such as RFID, QR codes and DataMatrix, CONEXO 2025 enables components to be clearly identified directly in the plant and links them to digital product data, maintenance information and obsolescence status.

A simple scan is all that is needed to give service technicians immediate access to relevant documents, certificates, maintenance histories and upcoming tasks.

Open, standards-based future-ready

CONEXO 2025 is based on international standards and already meets the requirements of upcoming regulations such as the Digital Product Passport (DPP). Clear identification is achieved using QR codes, DataMatrix and UHF RFID (860-960 MHz), ensuring cross-manufacturer interoperability in accordance with ISO/IEC standards. The new EU ESPR regulation will make DPP mandatory for the first product groups from 2027 onwards. CONEXO 2025 is set up to process all relevant data and link it to the Asset Administration Shell (AAS). Machine-readable identifiers in accordance with IEC 61406 serve as URL-based references directly on the physical object and enable access to digital information, for example via 2D codes or NFC tags. Furthermore, CONEXO uses AAS as a non-proprietary standard for digital twins in Industry 4.0 and relies on the AASX open file format to facilitate exchange between operators, manufacturers, and service partners.

New functions

CONEXO 2025 offers a range of new features that make digital asset management more efficient and future-ready. In the area of obsolescence management, the solution allows critical situations, such as recalls or product discontinuations, to be detected at an early stage and automatically creates appropriate replacement tasks. Component management has been significantly expanded: Alias

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Reaffirming real-world quality

During World Quality Month (November 2025), condition monitoring specialist company, WearCheck, reaffirmed its commitment to verifiable quality – from the scientific laboratory methods it uses to the professional customer service it delivers.

This focus on authenticity is underpinned by the recent re-award of ISO 9001:2015 certification for WearCheck's laboratories by the South African Bureau of Standards (SABS). The Cape Town laboratory is the latest to receive this certification, following the Johannesburg, Middelburg and Durban laboratories, which have been ISO certified for many years. WearCheck was first awarded ISO 9001 certification in 1996. Its ISO 14001 certification has been in place since 2005. To maintain this international standard, the company undergoes regular, annual surveillance audits and a comprehensive re-certification every three years.

WearCheck's quality administrator Prinda Narasi says, "Our customers rely on us for results they can trust. ISO 9001:2015 provides independent confirmation that our systems are robust, our processes are repeatable, and our culture is one of continual improvement. These days, where manipulated content can cloud judgement, being able to offer verifiable, third-party certification helps customers distinguish between marketing claims and proven capability."

Narasi adds, "Quality at WearCheck is not just a certificate on the wall – it is our way of working. From sample reception and chain-of-custody monitoring to instrument calibration, method validation and clear reporting, each stage is governed by documented procedures and handled by skilled employees. Our laboratory technicians are highly trained specialists who know what they are doing, and our diagnosticians are equipped to interpret results and advise on the next steps."

What ISO 9001:2015 means for customers

ISO 9001:2015 sets out the requirements for a quality management system that consistently meets customer and regulatory expectations. In practice, WearCheck's certification translates into dependable turnaround times, a right-first-time approach, clear and accessible reports, and corrective-action cycles that drive continuous improvement. For maintenance teams, fleet operators and asset owners, that means faster, more confident decision-making and reduced life-cycle costs.

WearCheck quality administrator, Prinda Narasi.

As World Quality Month highlights the importance of doing things the right way, WearCheck urges customers to check that any supplier's certificates are legitimate.

Verification is simple: confirm the details with the issuing certification body or via the relevant public directory. There are instances across industries where non-genuine certificates are used. Narasi welcomes scrutiny of the WearCheck's certifications and accreditations. "Customers are encouraged to verify our credentials directly with the certification authority. Transparency forms part of trust."

WearCheck's quality framework is designed to be lived daily. Internal audits, management reviews, risk-based thinking and staff development programmes keep the system active and relevant between external audits. The result is a consistently high standard of laboratory practice backed by responsive, knowledgeable customer support.

The company has demonstrated a long-term commitment to quality – for many years, WearCheck has been the only company on the African continent that has earned a spectrum of quality confirmation certificates. These include ISO 9001:2015 and ISO 14001:2015 certification, as well as ISO/IEC 17025:2017 accreditation. The company is audited regularly and has never failed to have an accreditation or certification renewed.

Narasi emphasises, "Quality is everyone's job at WearCheck. Our promise is straightforward: real laboratories, real people, real results – independently verified. That is how we earn and keep our customers' confidence."

For more information visit www.wearcheck.co.za

Continued from page 24

names allow individual designations; location paths show the exact installation situation; complete subassemblies can now be removed *en masse*; all associated documents can be downloaded as ZIP files; and identification on packaging labels has been improved.

The management of functional locations has also been optimised. A QR code can be generated for each space, and robust import/export with an 'Identification Alias' ensures seamless data transfer. Maintenance tasks can be supplemented with subtasks, a calendar view makes planning easier, and internal and external notes provide additional space for information. In product management, CONEXO 2025 supports Excel imports and allows custom manufacturer attributes to be added. A new mobile device overview displays all connected devices, including their information and synchronisation status – for maximum transparency and verification.

Added value

With CONEXO 2025, users benefit from improved security and compliance: The clear identification of components and the complete documentation of all measures reduce risks and facilitate audits – including recalls and certification requirements. At the same time, the solution increases productivity in service and maintenance by minimising search times, avoiding media discontinuity and enabling a higher 'right first time' rate. Due to the scalable connection of physical identification methods such as QR codes, RFID and IEC 61406 with digital twins (AAS/AASX) and the Digital Product Passport (DPP), CONEXO 2025 is well equipped to meet future requirements – across manufacturers and open to all systems.

CONEXO 2025 is the next generation digital solution for cross-manufacturer plant lifecycle management from GEMÜ.

With CONEXO 2025, GEMÜ presents a powerful and future-ready solution for digital plant management that meets growing requirements for transparency, efficiency and standards compliance, paving the way for a new era of industrial digitalisation.

For more information visit: gemu-group.com

Electrical enclosures designed to protect infrastructure

At its facilities, PPS combines design, precision manufacturing, and advanced material engineering to produce solutions that safeguard electrical infrastructure.

On a recent visit to Power Process Systems' manufacturing facility in Aeroton south of Johannesburg, *Electricity + Control* had the chance to gain an inside view of the work this South African original equipment manufacturer does.

Established in 1993, as a small family-owned business, Power Process Systems (PPS) produces electrical enclosure solutions to safeguard infrastructure and help utilities strengthen revenue collection. Through over 30 years of continuing innovation, the company has established a reputation for transforming everyday engineering challenges into purpose-designed solutions that are used locally and internationally. It has grown to meet market demand and at its facilities in Johannesburg and Cape Town it combines design, precision manufacturing, and advanced material engineering to produce robust, secure, and intelligent enclosures that meet the needs of municipalities and utilities.

Innovation born from necessity

The PPS story began when Eskom recognised the widespread risk presented by damaged and unsafe street-level kiosks in Alexandra, Johannesburg, where exposed electrical wiring was a hazard, especially for children, and for the equipment. At the time, replacing all the kiosks was not feasible and PPS was tasked with finding a creative, cost-effective alternative.

"We developed a solution in the form of a 'shroud' which could be placed over the entire kiosk and locked to the existing structure. Eskom then used these to cover all unsafe street boxes," says Nhlanhla Zondo, Director at PPS.

That practical innovation laid the foundation for what would evolve into PPS's flagship product, the smart I-Kiosk, a fully fitted meter and distribution kiosk that became a world-first solution in intelligent, anti-vandal infrastructure protection.

Evolving to serve South Africa's utilities

From its early fibreglass enclosures to today's advanced steel and composite solutions, PPS has consistently aligned its products with the needs of the industry. "As the industry matured, we recognised the need to produce safer, stronger, and more cost-effective products. We have adapted accordingly and always maintained the quality of our solutions," says Zondo.

He notes further that as the rise of electricity theft and vandalism became a national concern, it had a crippling effect on revenue collection and protection – and it extended into vandalism and theft of infrastructure more broadly in an environment of corruption and collusion within some municipal structures.

That was when PPS developed the I-Kiosk, an intelligent, anti-vandal meter and distribution kiosk that provides structural protection with integrated access to real-time data and secure access control. It provides for the environment and access to the kiosk to be monitored and managed and for staff to be audited. "This innovation has transformed how utilities safeguard their assets," Zondo highlights.

Local manufacturing, international impact

Today, PPS solutions are used to protect infrastructure owned by municipalities, utilities, and public entities across South Africa and beyond. Its product range, including pole boxes for overhead reticulation and slam-lock kiosk designs, is redefining how infrastructure safety and operational efficiency are approached.

"As a local OEM, we are proud to offer real value for electrical distribution operators," says Zondo. He adds that every PPS product is manufactured locally, using South African materials and labour. "This means PPS is playing a role in developing key technical skills and building local manufacturing capacity."

The company's workforce of nearly 200 direct employees and over 300 indirect employees, together with its skills development programme, helps to address the country's high level of unemployment, particularly among the youth.

With the energy sector in transition, PPS is positioning itself for the next phase of growth. The company is exploring diversification in areas such as renewables, decentralised energy generation, and advanced metering infrastructure.

"The electricity distribution industry is undergoing major changes," Zondo notes. "We are excited about the opportunities ahead for new technologies, new markets, and new partnerships." Even as it expands its horizons, PPS remains grounded in the values that have sustained it for more than three decades: innovation, quality, empowerment, and a deep commitment to South Africa's development.

"Electricity plays a critical role in driving economic development and improving people's livelihoods. Our products play a critical role in ensuring that electricity is delivered safely to users, and in turn Eskom and municipalities can enhance their revenue protection mechanisms," Zondo concludes.

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

PPS supplies a range of robust and fully fitted electrical enclosures to meet the needs of electrical distribution utilities.

Alarm annunciators – keeping the best of what works

Omniflex continues to supply hardwired alarm annunciators aligned with IEC and EEMUA standards.

In the 1970s and '80s, the hardwired alarm annunciator was essential to industrial control rooms, particularly in high-risk sectors such as the nuclear, petrochemical and oil and gas industries. The wall-mounted panels, with flashing lights and hardwired inputs, served as the front line of safety monitoring, giving operators clear visibility of the alarm through pattern recognition. However, the 1990s brought a shift. The rise of the digital age, PC-based systems and graphical interfaces led many to see the traditional annunciator market as obsolete. Omniflex saw the market differently. Director Gary Bradshaw here outlines how it reshaped the industry.

While some major players in the sector either scaled back investment or consolidated – as happened with the 1989 merger of Highland and Rochester – and the market seemed in decline, Omniflex acknowledged that the technology was evolving but recognised that the fundamental need for reliable, unambiguous alarm systems in critical environments wasn't going away. It was becoming more important.

As some companies exited the space or shifted focus, Omniflex chose to remain active. The company adapted to emerging technologies like SCADA, DCS, and HMI, positioning itself not just as a hardware provider, but as a solution partner in providing integrated alarm systems.

A pivotal moment came in 1994 with the Milford Haven explosion. This catastrophic event at the Texaco Refinery in Milford Haven in Pembrokeshire, Wales in the United Kingdom, exposed serious flaws in alarm management. During the incident, operators were overwhelmed by an avalanche of screen-based alarms, unable to distinguish urgent threats from routine warnings.

This tragedy accelerated the development and adoption of the IEC61508 SIL and the EEMUA191 Alarm Standard, which called for clear prioritisation of alarms, including colour coding, and reinforced the importance of the hardwired alarm annunciator due to its clear display format providing for pattern recognition and concise operator guidance. Recognising the implications of this shift, Omniflex worked closely with a member of the committee involved in drafting the EEMUA191 standard.

As the regulations evolved, Omniflex continued to develop its already successful OMNI range of Alarm Annunciators ensuring that they aligned with IEC61508 and EEMUA191. The modern annunciators in this range feature a compact design, flexible configuration, and can integrate seamlessly with SCADA and PLC systems.

The OMNI range filled a critical gap in the market just as demand for high-integrity alarm systems resurged. It gave Omniflex a strong competitive advantage as others had exited the space.

A key lesson here is that changing regulations can breathe new life into technologies once considered outdated. By anticipating the impact of safety standards like IEC61508 and EEMUA191 and investing accordingly, Omniflex helped shape what the alarm annunciator sector looks like today.

For more information visit: www.omniflex.com

Building on three generations of innovation

A global leader in adhesives, electrical, and mineral solutions, Pratley is celebrating a legacy of innovation and industry leadership spanning three generations. Established in 1948 by George 'Monty' Pratley, the company has remained true to its heritage of research and development (R&D), while continually adapting to new technologies and market demands.

Andrew and Charles Pratley.

"The company was built on a foundation of R&D, and that remains fundamental. We like to think of ourselves as an R&D company first and foremost, and we do plenty of it. We have always liked developing products with unique features and attributes that set them apart from others in the market. These principles remain at the core of what we do," says CEO Andrew Pratley.

Its unwavering commitment to R&D has positioned Pratley at the forefront of high-performance adhesives, electrical termination products, and eco-mineral product development. The company operates some of the most advanced laboratories in the southern hemisphere, to ensure that its products outperform those of competitors and comply with strict quality and policy standards.

Active membership in leading industry organisations such as the South African Flameproof Association (SAFA), the Green Building Council of South Africa (GBCSA), and the Electrical Contractors Association (ECASA) underscores Pratley's role in shaping best practices and guiding industry development.

Heritage is a central part of the company's success. With 77 years in business, it continues to draw valuable lessons from its history while remaining agile in a fast-changing world. "Heritage is important; many lessons can be learned from the company's long history," notes COO Charles Pratley.

"However, one must guard against blindly following tradition. The world is changing faster than ever with new technologies constantly emerging. Adaptability and agility are paramount. We continue to keep our independence, and this enables us to respond rapidly to change and seize opportunities and innovation quickly," says Charles.

Pratley's dedication to its clients and partners is reinforced by its sales team, which maintains strong, face-to-face connections in an era where personal interaction is increasingly rare. The team is known for offering expert advice on Pratley's products and providing broader technical solutions when appropriate, strengthening trust and loyalty across its customer base.

As a company deeply rooted in innovation, Pratley fosters a culture that empowers employees to share ideas directly with senior management, ensuring that promising concepts can be rapidly developed and implemented. This collaborative approach adds to the company's ability to anticipate and quickly respond to emerging trends.

Over the decades, Pratley has built a reputation for reliability, sound advice, and pioneering solutions that inspire confidence across industries. "We have built a loyal customer base over the years, but loyalty should never be taken for granted. Therefore, we continue to develop products and services that focus on reliability and can be trusted to get the job done. I believe many people view Pratley as a pillar of South African innovation, and we aim to keep that legacy for many years to come," adds Andrew.

For Pratley, the greatest lesson from its 77-year history is clear: people are at the heart of its success. "A company is gauged by the company it keeps, and in that aspect, we keep very good people. Without people in a company, it ceases to exist," says Charles.

With its heritage, adaptability, and forward-thinking innovation, Pratley continues to drive industry standards, inspire confidence, and strengthen its reputation as a leader in high-performance adhesives, electrical termination products, and eco-mineral solutions, in South Africa and around the world.

For more information visit: www.pratley.com

Safe use of gas fire suppression equipment

ASP Fire, a leading provider of fire protection solutions, offers some guidance on the proper use of gas fire suppression systems, emphasising critical safety measures for businesses and industrial facilities.

Gas-based fire suppression systems, which use inert gases or chemical agents to extinguish fires without damaging sensitive equipment, are widely used in data centres, server rooms, and manufacturing environments. However, improper operation or maintenance can compromise their effectiveness and endanger personnel.

"Gas fire suppression systems are highly effective when installed and managed correctly," says Michael van Niekerk, CEO of ASP Fire. "However, these systems are not set-and-forget solutions. Understanding the operational parameters, the need for regular scheduled maintenance, and following safety precautions are essential to ensure protection of property and human safety."

Recommended dos

- Do ensure that the system is designed and installed according to the latest industry standards, such as NFPA 2001.
- Do conduct regular inspections and maintenance to guarantee system reliability and compliance with safety regulations.
- Do provide thorough training for staff on evacuation procedures and system activation protocols.
- Do integrate detection and suppression systems with building management systems for real-time monitoring.

Advisory don'ts

- Don't enter a protected space during or immediately after gas discharge without proper breathing apparatus, as some agents can displace oxygen.
- Don't bypass safety interlocks or alarms, which are critical for preventing accidental release.
- Don't attempt DIY modifications or repairs. Only certified technicians should service the systems.
- Don't rely solely on suppression systems. Comprehensive fire safety plans, including early detection and evacuation, remain essential.

"A gas suppression system is a powerful tool, but it is only part of a comprehensive fire safety strategy. Businesses need to combine technology, training, and adherence to regulations to protect lives and assets," says van Niekerk.

ASP Fire supports organisations across South Africa in designing, installing, and maintaining advanced fire suppression systems, to ensure their optimal performance in line with international best practices.

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

Ergonomic design in digital microscopy

The global digital microscope market valued at almost $6 billion in 2024, is expected to double to over $12 billion by 2034. Much of this growth is being driven by the electronics sector, where components from the tiny chips inside smartphones, digital equipment and automated systems to those that ensure medical implants are defect-free, continue to increase in complexity but shrink in size to levels once thought impossible.

Magnification technology has kept pace with demand, but the wellbeing of the people behind the microscopes is often overlooked. Aiming for flawless inspection and assembly, technicians spend long hours in intense focus, which can lead to chronic strain, fatigue, and costly mistakes.

"Traditional microscopes force people into awkward positions, hunched over and straining their eyes, necks, and backs for hours at a time. This can take a toll on their health and affect the quality of their work. In electronics manufacturing the risks extend beyond physical health. Strained staff are more prone to errors, which can compromise product integrity and In turn business reputation. Even the smallest error can result in recalls," says Arno van der Walt, Business Development Engineer at TANDM, the South African distributor of TAGARNO digital microscopes.

Ergonomics, the science of designing tools and workplaces to fit the user and support users' wellbeing, is proving especially valuable in digital microscopy. The link between ergonomics and sustained productivity, accuracy, and long-term business success is well-established.

In a study of inspectors using illuminated magnifiers called Luxolamps, operators reported high rates of eyestrain, headaches, and fatigue. After introducing simple ergonomic interventions, eyestrain dropped by 36%, headaches by 45%, and extreme fatigue by 28%.

Research shows that 78% of conventional microscope users experience neck strain from holding a slight head incline for prolonged periods. Over time, these awkward postures can lead to musculoskeletal pain, fatigue, and sometimes lasting injury.

Optical microscopes, although familiar and relatively affordable, are generally not ergonomically designed. Their fixed design forces users into static, forward-leaning positions, preventing neutral spine alignment and limiting accessibility to controls. The resulting strain can lead to lower productivity, higher absenteeism, and compromised work quality.

Ergonomically designed digital microscopes offer adjustable setups to support healthy working conditions.

By contrast, digital microscopes like those from TAGARNO are designed with people in mind. Adjustable setups promote neutral posture, and the ability to capture, share, and document images in real time reduces workload and enhances collaboration, an advantage in precision-focused industries. The systems also allow users to inspect components on a large 50-inch 4K monitor, reducing eye and back strain and supporting focus and precision.

This semi-automated process lowers the risk of human error by up to 50%, and increases throughput, making it useful in electronics, food production, production of medical devices, and in forensics.

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

Fire-fighting equipment you can count on

When a fire breaks out, there is no time for hesitation. You need equipment you can trust and a company you can depend on. For more than three decades, SafeQuip has been a leading manufacturer and distributor of SABS-approved firefighting equipment across the African continent.

SafeQuip offers a range of fire safety solutions and maintains an uncompromising approach to quality. It provides fire-fighting equipment including extinguishers, hose reels, hydrants, pumps, nozzles, signage, suppression systems, and lay-flat hoses, as well as tools specifically designed for forestry and farming applications. The range is designed to cover the requirements of heavy industry and commercial complexes, as well as smaller private properties. Every product, whether produced internally or sourced through established partners, is supplied in accordance with strict safety standards and inspected before it leaves the warehouse.

SafeQuip has a presence across South Africa with branches in Cape Town, Gauteng, Durban and Gqeberha. Through this network, support is consistently available to clients wherever they are located. The company's SABS accreditation and BSI Kitemark approval as well as its links with industry organisations underline its commitment to recognised standards.

In recent years, SafeQuip has also turned its attention to addressing the risks increasingly presented by lithium-ion battery fires. Lithium-ion batteries are widely used today because of their high energy density, small size, and rechargeable design, but lithium-ion batteries introduce particular fire challenges, quite different from those raised by familiar flammable materials. Once a lithium-ion battery overheats, it can trigger a 'thermal runaway', where heat and pressure rapidly escalate. Traditional fire extinguishers are often ineffective in these cases, which is why SafeQuip introduced its Lith-Ex range, the only certified lithium-ion battery fire extinguishers in South Africa. Lith-Ex extinguishers are designed to smother the heart of a lithium-ion battery fire. They use a specialised extinguishing agent that cools the cells rapidly, absorbs the heat, and prevents re-ignition. This focus on cooling is crucial, because once the runaway reaction stops, the fire can be brought under control safely.

SafeQuip offers a range of SABS-approved fire-fighting equipment.

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

Building an AI factory to transform intelligent manufacturing

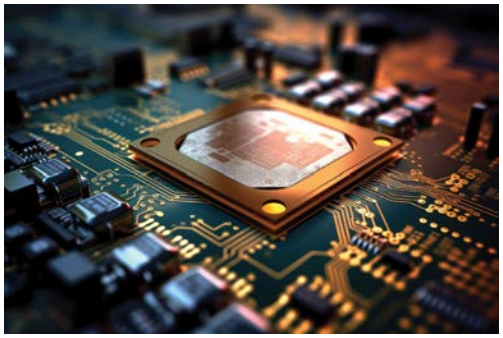
At the Apec Summit [1] held in Gyeongju, South Korea in October 2025, NVIDIA announced plans with Samsung Electronics to build a new AI factory, representing a new era where intelligent computing and chip manufacturing converge. The state-of-the-art AI factory will combine Samsung's semiconductor technologies with NVIDIA platforms to establish the foundation of next-generation AI-driven production.

Powered by more than 50 000 NVIDIA GPUs, Samsung's semiconductor AI factory will be a centrepiece of the company's digital transformation, integrating accelerated computing directly into advanced chip manufacturing.

Through this collaboration, Samsung and NVIDIA are setting a global benchmark for AI-driven semiconductor manufacturing at scale, integrating data from physical equipment and production workflows to achieve predictive maintenance, process improvements and increased operational efficiency in autonomous fab[2] environments.

"We are at the dawn of the AI industrial revolution – a new era that will redefine how the world designs, builds and manufactures," said Jensen Huang, founder and CEO of NVIDIA. "As Korea's and one of the world's foremost technology and industrial leaders, Samsung is forging its AI foundation with NVIDIA to lead the future of intelligent and autonomous manufacturing – transforming Samsung itself and the many industries around the world built on Samsung technologies."

Jay Y Lee, Executive Chairman of Samsung Electronics said: "NVIDIA has been a visionary in this new AI era, and its technologies have empowered innovators to reinvent industries. From Samsung's DRAM for NVIDIA's game-changing graphics card in 1995 to our new AI factory, we are thrilled to continue our longstanding journey with NVIDIA in leading this transformation as we create new standards for the future and accelerate breakthroughs for the world."



Through this collaboration, Samsung and NVIDIA are setting a global benchmark for AI-driven semiconductor manufacturing at scale.

From their first collaboration on NVIDIA's first graphics card NV1 with Samsung's DRAM (Dynamic Random Access Memory) to introducing the industry's first commercial HBM (High Bandwidth Memory)(or Synchronous DRAM), and a key supply collaboration for HBM3E and HBM4 today, the companies celebrate a strong alliance spanning more than 25 years that has helped create the foundation for today's AI transformation. The companies will continue their semiconductor collaboration beyond HBM, GDDR, high-density memory modules, SOCAMM and custom solutions as well as foundry services to support the broader ecosystem.

Samsung is harnessing NVIDIA GPUs, NVIDIA CUDA-X™ libraries and solutions from Synopsys, Cadence and Siemens to accelerate circuit simulation, verification and manufacturing analysis. The companies are collaborating with these electronic design automation partners to innovate chip design and will continue to reshape GPU-accelerated EDA (Electronic Design Automation) tools and design technologies for the AI era.

Samsung uses the NVIDIA Omniverse™ platform as the foundation for its digital twins, which provide physically accurate simulation environments. This virtual environment allows global fabs to shorten the time from design to operations and achieve AI-driven predictive maintenance, real-time decision-making and factory automation.

To speed intelligent logistics with a unified platform, Samsung is deploying NVIDIA RTX PRO™ Servers with NVIDIA RTX PRO 6000 Blackwell Server Edition GPUs. The real-time digital twin of the Samsung fab will enable operational planning, anomaly detection and logistics optimisation – a significant step towards a fully autonomous fab.

To accelerate computational lithography – the most computationally intensive workload in the semiconductor manufacturing process – the companies are integrating the NVIDIA cuLitho library into Samsung's advanced lithography platform, OPC. The collaboration has led to 20x greater performance and scalable deployment across semiconductor manufacturing.

Smart manufacturing

Samsung has been building its proprietary AI models powering more than 400 million Samsung devices with access to advanced reasoning capabilities, delivering breakthrough performance in real-time translation, multilingual interactions and intelligent summarisation.

The company is charting the future of intelligent robotics across manufacturing automation and humanoid robot applications using NVIDIA robotics technologies on NVIDIA RTX PRO Servers.

To accelerate intelligent robot deployment, Samsung is using the NVIDIA Isaac Sim™ reference application, built on NVIDIA Omniverse and NVIDIA Cosmos™ world foundation models, to connect synthetic and real data, middleware and teleoperation, as well as the NVIDIA Jetson Thor™ high-performance edge AI platform optimised for humanoid robotics. Combined, these technologies enable the deployment of robots that can understand and interact with the physical world in real time.

NVIDIA and Samsung also worked with Korean telco operators and academic institutions to develop AI-RAN (Radio Access Network) technology, bringing together AI and mobile network workloads, which will be necessary for the adoption of physical AI.

Notes

[1] The APEC Summit is the annual meeting of the Asia-Pacific Economic Cooperation (APEC), a regional economic forum of 21 member economies that aims to promote free trade, sustainable growth, and economic prosperity in the Asia-Pacific region.

[2] A fab (also called a foundry) is a highly specialised semiconductor fabrication plant, where integrated circuits are manufactured on silicon wafers in an ultra-clean environment.

For more information visit: www.nvidia.com

The value of TVET colleges

South Africa's Energy and Water Sector Education and Training Authority – EWSETA – recognises the value of the country's TVET (Technical and Vocational Education and Training) colleges as the places where a future-fit energy and water sector workforce can be built.

With the energy transition accelerating, the growing digitalisation of industries, and new industries emerging in hydrogen and water resilience, the next few years will determine how well the country equips its people to participate in this changing working world. EWSETA believes the country's TVET colleges need to be repositioned and recognised as pathways to opportunity, capable of producing the skills that will power the transition to clean energy and secure the nation's water systems.

Skills for a new economy

In its 2025 to 2030 strategic plan EWSETA sets out its key priorities. Over the next five years, these include:

- Accelerating artisan training, particularly in renewable energy
- Integrating digital and artificial intelligence skills into curricula
- Expanding national and international partnerships
- Widening access to learning programmes
- Embedding new green technologies into TVET programmes.

"We want young people to see TVET colleges as institutions of first choice. By choosing a TVET college for their studies, they are joining an education and training system that EWSETA is deliberately strengthening to become industry-relevant high-performing and future-focused. It is a system designed to equip students with the skills to thrive in the energy and water sectors and to drive essential change," says EWSETA Acting CEO, Robyn Vilakazi.

This repositioning is deliberate. For too long, TVETs have been seen as a secondary option. EWSETA aims to revise this perspective by demonstrating that TVET colleges stand alongside universities as credible, competitive institutions producing job-ready graduates. This is being done by capacitating TVET colleges with infrastructure support, lecturer development and curriculum innovation that respond directly to the demands of the energy and water sectors.

The objective is already being realised through EWSETA-led flagship initiatives.

For example. Power Up is building a new generation of professionals to meet the country's renewable energy demand, directly linking PSET (Post-school Education and Training) institutions to industries in the sector.

PoVE, Africa's first Platform of Vocational Excellence, is connecting South African TVET colleges with global partners and industry leaders, embedding international standards in local training and positioning colleges as drivers of innovation.

Renewable Energy Training Centres and Re-Skilling Labs driven in collaboration with international partners like RES4Africa and the Chinese Culture International Exchange Centre, are equipping TVET colleges with new technologies to ensure global best practice and industry-aligned practical training for learners.

At Vhembe TVET, the Renewable Energy Training Centre and Microgrid will supply clean power to the campus and give students practical exposure to renewable technologies. It is a model of how public colleges can combine infrastructure upgrades with applied learning to prepare graduates for growth industries.

EWSETA is championing TVET colleges to train an employable workforce – delivering the skills the country needs.

These actions make it clear that TVET colleges are central to South Africa's growth ambitions, aligned with the National Development Plan 2030, the Integrated Resource Plan 2025 and the African Union's Agenda 2063.

Changing lives

Between 2020 and 2025, EWSETA invested R454 million to strengthen the TVET and CET (Community Education and Training) system. This included:

- R107 million for artisan development with nearly ten thousand learners enrolled in occupations in high demand, surpassing targets by 42%
- R32.6 million for workplace learning, supporting more than nine thousand workers
- R25.2 million for infrastructure upgrades, including renewable energy labs and ICT equipment.

The outcomes are visible in individual journeys too. Nthabiseng Makoto, supported through the UniVenda biogas programme, now runs vegetable gardens, poultry and piggery projects that provide food security and employment in her community. "Before this opportunity, I struggled to see a future. Today I provide food and jobs for others, and I know these skills will carry me and my family forward," she says.

Building resilience into the system

These results illustrate how EWSETA is strengthening public colleges. "We have never been about quick wins. Every rand we invest is about building capacity in the system so that TVET colleges stand strong as premier institutions for technical training and career opportunities," says Vilakazi.

"By equipping lecturers, upgrading infrastructure and creating global exposure opportunities, we are embedding resilience into the post-school education system. This is what the Just Energy Transition requires, a workforce pipeline that is technically skilled, adaptable and future-ready."

Scaling up the response

EWSETA has shown that Sector Education and Training Authorities can be engines of transformation. The next step is scale. Companies need to invest in training pipelines, open workplaces for experiential learning and collaborate on curriculum design. For government, the task is to treat skills development as essential infrastructure, sustain policy certainty and support innovation in the college system.

"South Africa's young people are ready. They want to learn, they want to innovate, and they want to lead in new industries. Our job is to make sure the pathways are there, and we need all stakeholders, international and national, public and private, to walk this journey with us," Vilakzi says.

For more information visit: www.ewseta.org.za

Spotlighting company plans to reduce emissions

Ten years on from the signing of the Paris Agreement, the 30th Conference of Parties of the United Nations Framework Convention on Climate Change (UNFCCC), held in Belém in Brazil, has recently concluded.

COP30 focused particularly on the new Nationally Determined Contributions (NDCs), which present the climate action plans of each country to meet the terms of the Paris Agreement. Under the Belém Political Package, the 'Global *Mutirão*' is intended to drive global implementation and acceleration to support countries in delivering their NDCs and national adaptation plans.

Vis Reddy, Chairman, SRK Consulting South Africa.

Philippa Burmeister, Partner and Principal Environmental Scientist at SRK Consulting SA.

In 2025 South Africa took an important step towards meeting its carbon reduction commitments under the Paris Agreement, with the release of draft carbon budget regulations which will demand measurable action from the country's large emitters.

Published for public comment in early August – with a closing date of 30 September 2025 – the draft National Greenhouse Gas Carbon Budget and Mitigation Plan Regulations are yet to be finalised, but they set the stage for companies to plan exactly how they will cut their carbon emissions – against real targets they will be legally obliged to meet. Philippa Burmeister, Partner and Principal Environmental Scientist at SRK Consulting South Africa, notes that the regulations are aimed at companies that emit over 300 000 tonnes a year of carbon dioxide equivalent.

"These identified companies will need to provide their greenhouse gas (GHG) emission inventories as a baseline, and that will need to be rigorously verified," Burmeister says. "From this basis, they will be required to draft time-bound plans to reduce their emissions – plans which will need to be submitted to the Department of Forestry, Fisheries and the Environment for review and approval."

Potential risk

In assessing these plans and targets, the department is not bound to accept the proposals and can set its own benchmarks for each applicant. Burmeister notes that this could pose a significant risk to companies that may be required to meet more demanding targets for carbon reduction.

The regulations are aligned with South Africa's commitments to reduce emissions, as set out in its Nationally Determined Contributions. In its NDCs submitted in 2021, South Africa stated its aims to achieve annual GHG emissions reductions of 398 to 510 mega-tonnes (Mt) of carbon dioxide equivalent in 2025, and 350 to 420 Mt in 2030. (In its latest NDCs, as submitted at COP30, government has set a new mitigation target for 2035 of between 320 and 380 Mt of carbon dioxide equivalent.)

"When compared to the GHG emissions generated by South Africa between 2000 and 2022, its NDC commitments equate to a 0 to 22% reduction by 2025 and a reduction of 18 to 32% by 2030," Burmeister says. "It is worth noting, though, that sector-specific reduction targets have not yet been issued and could require reductions above the country average for high emitters."

Reporting on actions

While the carbon tax system is already in place and requires emitters to report GHG emissions for tax purposes, the latest regulations go beyond companies' tax obligations. Companies that do not achieve the legally required reductions could face fines, jail time or both.

"Once a company is issued with a final carbon budget, it will have six months to report on the action it plans to take to meet the given targets," Burmeister says. "The regulations will work on five-year cycles, during which a company is required to monitor and demonstrate its progress towards achieving the set targets."

SRK Consulting SA Chairman Vis Reddy highlights that the regulations help give life to the Climate Change Act of 2024, by driving the country towards reducing carbon emissions in realistic ways.

"The country's citizens – corporate and individual – need to appreciate that the regulatory process is advancing and that we take our global commitments seriously," Reddy says. "It is also important that stakeholders engage with the draft regulations constructively so that they are prepared for their implementation."

He notes that the regulations, once finalised, will allow companies to plan ahead – as many will have to make considerable financial commitments to upgrade systems or improve infrastructure related to emissions. "However, the regulations' five-year horizon of initial expectations is not long, given the investments and technological advances that will need to be made by companies to improve their environmental performance," he says. "Understanding what your carbon budget will be is a key benchmark in this process, but companies should be ready to act decisively on their plans sooner rather than later."

Burmeister says that most of those affected by the regulations would be aware of how to report emissions, but companies still getting to grips with quantifying their emissions may face significant challenges in identifying reduction opportunities.

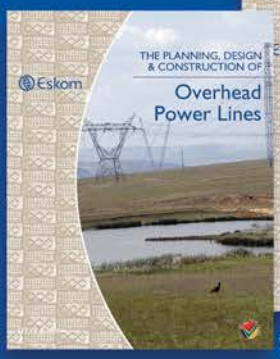
"It is not clear yet how the budget determinations will be calculated and applied, and whether these will be on a case-by-case basis for each company – or whether certain minimum reduction requirements will be applied on each industry or sector," she says.

Like the Minimum Emission Standards under the National Environmental Management: Air Quality Act, these regulations therefore require effective planning and action to pre-empt risks to business.

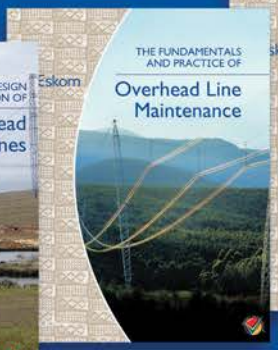
For more information visit: www.srk.co.za

Eskom

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 acrued by Eskom over the years, as a guide and legacy and to serve as a source of reliable, reputable and highly technical information.



Volume I: The Planning, Design and Construction of Overhead Power Lines



Volume 2: The Fundamentals and Practice of Overhead Line Maintenance

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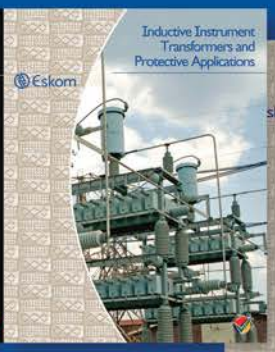

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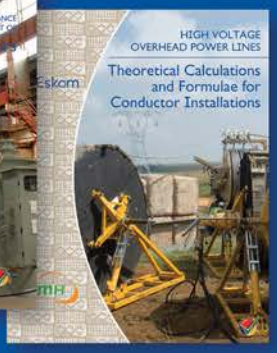
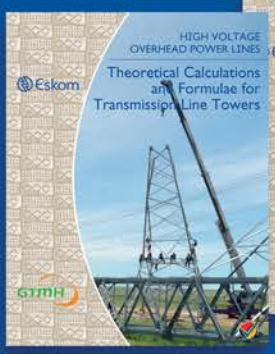


Volume 6 (Part 1): High Voltage Overhead Power Lines: Theoretical Calculations and Formulae for Conductor Installations



Volume 6 (Part 2): High Voltage Overhead Power Lines: Theoretical Calculations and Formulae for Transmission Line Towers

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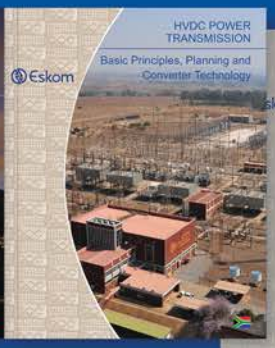

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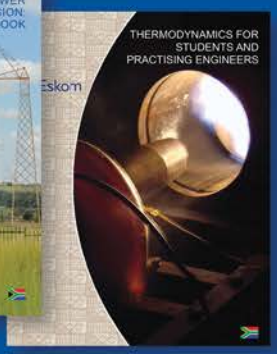

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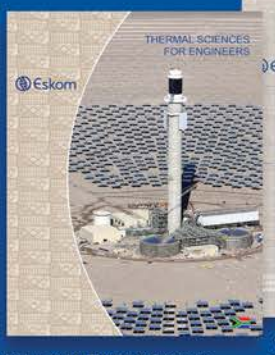

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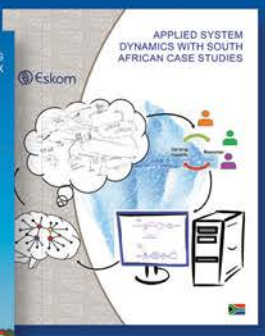
Volume 12: Basic Engineering Toolbox



Volume 13: Applied System Dynamics with South African Case Studies

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.

Volume 1: Mentorship and Coaching

Volume 2: Winning with People ... Insights for Leaders and Organisations

Volume 1: Procurement Management Key Concepts and Practices

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.

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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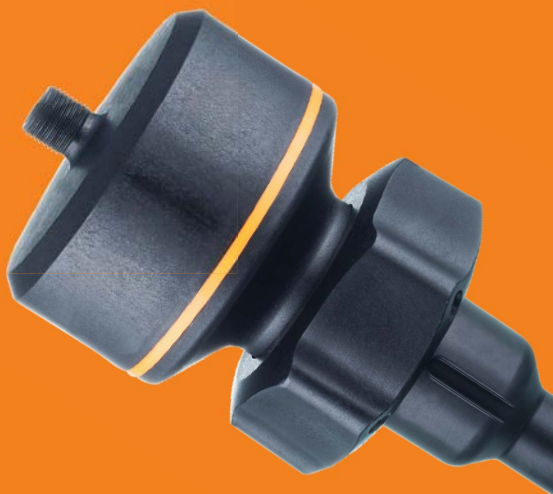

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