in motion

FEATURES:
Industry 4.0 + IIoT
Drives, motors + switchgear
Sensors + switches
Plant maintenance, test + measurement

05/2026

ELECTRICITY+CONTROL

CROWN PUBLICATIONS

WELCOME TO THE FUTURE **OF SERVICE AND REPAIR**

OPENING SOON!

This 17 000m² state-of-the-art service and repair facility will allow for an expansion of our service and repair capabilities encompassing product repairs, fabrication, light engineering and motor rewinding and repairs.

This R380-million investment into the economy will also house our expanded training centre, the DriveAcademy®, providing crucial skills and training to the South African workforce.

INNOVATIVE CAPABILITIES

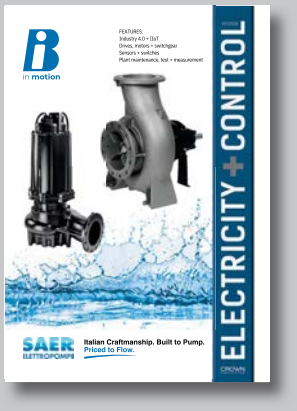
SEW-EURODRIVE's service and repair centre's capabilities includes sandblasting, spray painting, oil recycling, product stripping and load-testing.

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

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

DRIVING SERVICE AND REPAIR. DRIVING AFRICA. DRIVING THE WORLD

energy + information in industry



Bearings International supplies premium pump solutions designed to enhance efficiency and performance in industrial operations.

Editor: *Leigh Darroll*
Business Development Manager: *Angela Devenish*
Design & Layout: *Katlego Montsho*
Circulation: *Karen Smith*
Technical Editorial Consultant: *Ian Jandrell*
Publisher: *Wilhelm du Plessis*
Managing Director: *Karen Grant*

Total audited circulation
Quarter 4 (October-December) 2025: 7 176

Published monthly by:
Crown Publications (Pty) Ltd
Cnr Theunis and Sovereign Sts,
Bedford Gardens, PO Box 140,
Bedfordview 2008
Printed by: *Tandym Print*
Telephone: *+27 (0) 11 622 4770*
E-mail: *ec@crown.co.za; admin@crown.co.za*
Website: *www.crown.co.za/electricity-control*

CROSS PLATFORM CONTENT INTEGRATION:
* Electricity+Control Magazine * Online Edition
* Weekly e-Newsletter * Website* LinkedIn

Electricity+Control is supported by

CESA saee CONFEDERATION
Copper Development Association Africa
SAAEs

The value of digitalisation in operational efficiency

Over the next couple of months, I need to travel from the far west of this planet, and then to the far east of this planet.

Naturally, I assume that the pilots are alive to the state of the planet and, in particular, that they are aware of what goes on in the 'middle' of the planet… This does get one thinking of auto pilots – and of brilliant old movie scenes. But enough of that.

One of the topics in this month's edition of *Electricity + Control* speaks to the evolution and digital transformation of industry. Of course, much of this has been ongoing over decades, and it reminds me again that it is helpful to distinguish between what some folk still insist on calling a revolution and what it seems most folk recognise as a transformative process.

Industry 4.0, for instance, is not a revolution! It's a process – slowly and steadily becoming more pervasive as we have witnessed over the past few decades. It can be thought of in much the same way as we used to think about energy efficiency.

I recall when in this magazine we first highlighted the growing importance of energy efficiency, few in the industry then had the insight to appreciate the various pressures that were building – from the true cost of energy to why it was important to use less simply as a principle aligned to the survival of the species.

One day you wake up and everything has changed! The plant's processes no longer rely on analogue signals, and the processing power for the plant is distributed all over the place – it is no longer in one humming box with a heat haze surrounding it.

Intelligence has become distributed to the point where even sensors have significant computing power, and the transmission of data has almost been replaced with the transmission of information. Information is processed data and needs far less central processing for it to be useful in optimising, controlling and monitoring actual plant performance.

I am aware that not all industry has been digitally transformed. But as you prepare for the journey, make sure you do not think of the process as any kind of a revolution!

Revolutions are generally surprising, and generally people get hurt during them. I accept that some folk may well have been surprised by the transition from analogue to digital – and now to even more exciting intelligence-based systems – but the fear of getting hurt can be somewhat off-putting.

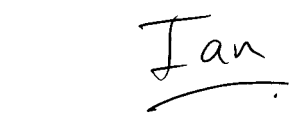
As a heads up: many industries only realised the importance of focusing on energy efficiency when the cost of energy began to escalate. That is, frankly, too late. But it is true that increased costs of production are a very strong motivation to rethink the way you operate.

Simply, the need for digital transformation in all operations is critical when you consider the costs of production – and the costs of having useful information on which you can base decisions to optimise your processes.

Now is the time to consider what you might be missing by not looking at the next key steps to optimise your business and your plant.

It is worth noting that progressive digital transformation can link every process in your business together – allowing for seamless sharing of information across the various activities.

Later we will consider the impact of artificial intelligence…

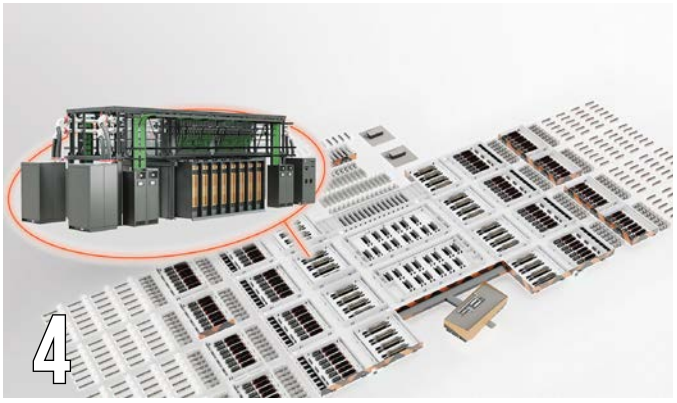


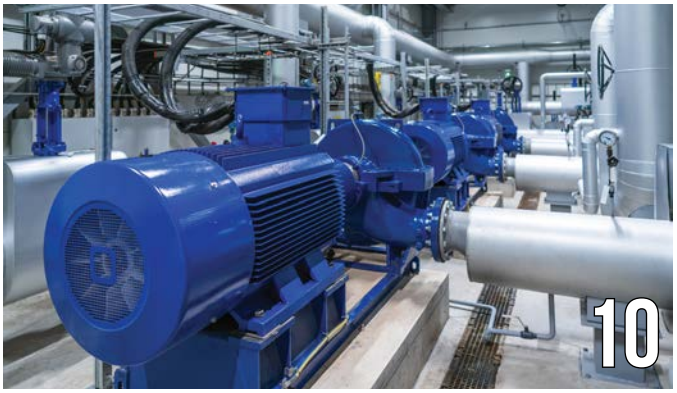
Ian Jandrell

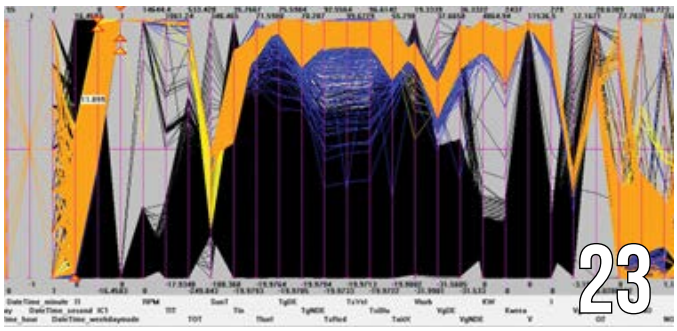
PrEng IntPE(SA), BSc(Eng) GDE PhD,
FSAAE FSAIEE SMIEEE

CONTENTS

FEATURES







REGULARS

Partnerships to scale next generation AI infrastructure

As AI drives unprecedented demand for data centre capacity, the industry faces a growing challenge in aligning rapidly expanding compute infrastructure with available power. To address this, Siemens Smart Infrastructure is expanding its data centre ecosystem through strategic investment in and partnership with Emerald AI, alongside the integration of Fluence battery energy storage solutions, and collaborative physics-based AI modelling with PhysicsX.

Together, these capabilities create flexibility across compute, energy, and infrastructure systems, helping data centre operators connect to the grid faster, scale efficiently, and operate reliably in a power-constrained world.

"Scaling AI infrastructure is as much a computing challenge as it is an energy and infrastructure challenge," said Ruth Gratzke, President of Siemens Smart Infrastructure US. "As demand for AI processing accelerates, data centre growth is increasingly constrained by grid capacity and interconnection timelines. Addressing this requires complex coordination across the digital and energy domains. Siemens is investing in key technologies and partnerships to expand the ecosystem required to scale AI responsibly and support the next generation of data centre infrastructure."

Managing AI workloads dynamically

Emerald AI enables AI workloads to shift in time and location to align with grid conditions, allowing data centre demand to respond dynamically to available power. By coordinating when and where AI workloads run and dispatching on-site energy resources, this approach helps smooth peak demand, achieves faster and larger grid connections for data centres, and reduces pressure on constrained power infrastructure. Siemens' strategic investment in Emerald AI strengthens its ability to introduce flexibility at the compute layer. Combined with Siemens' expertise in power infrastructure and operational technology, this creates true IT/OT convergence between AI workloads and power systems.

Energy storage solutions on-site

A further key element of this expanded ecosystem is the addition of Fluence's grid-scale energy storage solutions, designed to support the next generation of high-performance AI data centres. As compute clusters grow in size and density, Fluence energy storage solutions enable data centres to accelerate grid connection by shaping load and coordinating ramp rates, making large AI-scale demand more predictable and easier for utilities to approve. This can turn power-constrained locations into viable data centre sites and accelerate time to power, which can enable deployment of energy storage in months, rather than years of grid upgrades. Fluence's energy storage solutions can also provide dispatchable, on-site power which can enable data centres to operate during grid build-outs, capacity shortfalls, or outages. By supporting consistent power quality and flexible scaling, Fluence can help data centre operators bring capacity online faster while maintaining the reliability required for mission-critical AI workloads.

Physics AI enables faster design, optimised infrastructure

Strengthening this ecosystem further, Siemens is collaborating with PhysicsX to apply physics AI to the design and operation of data centre power distribution systems. Using AI models trained on Siemens' multi-physics simulation data, engineers can predict thermal behaviour in complex busway systems in real time. With PhysicsX, simulations that once took days can run in under a second, enabling faster design iteration, optimised infrastructure for dynamic AI workloads, and providing a foundation for predictive monitoring across facilities.

The rapid growth of AI will continue to place new and often highly dynamic demands on power systems, with large training and inference clusters creating rapidly shifting loads that challenge traditional grid planning and data centre design. As a result, operators must find new ways to manage these demands while maintaining the performance and reliability required for AI infrastructure. Siemens' expanded ecosystem is designed to help address this challenge by bringing together AI workload orchestration, grid-integrated energy systems, and AI-optimised physical infrastructure to support the next generation of AI infrastructure.

For more information visit: www.siemens.com

Building an ecosystem for next-generation AI infrastructure.

Converged physical infrastructure for NVIDIA AI factories

In March, Vertiv announced (alongside other leading industry players) that it is participating in advancing converged physical infrastructure designs for the NVIDIA Vera Rubin DSX AI factory reference design[1] and the NVIDIA Omniverse DSX Blueprint.

As AI factories scale in density, complexity, and power demand, operators are under pressure to compress time to deployment, improve infrastructure use, and reduce integration risk. A new infrastructure design approach that reduces complexity, improves confidence before build-out, and accelerates time to capacity is now available to meet these evolving needs. Through its work with NVIDIA, Vertiv is contributing simulation-ready, or DSX SimReady digital power and cooling assets, validated interfaces, and repeatable infrastructure building blocks designed to help customers deploy AI factories faster and with greater operational assurance.

This work reflects an expansion of Vertiv's established approach to converged physical infrastructure – a system-level model that integrates power, cooling, controls, and services into interdependent designs optimised across the full power train and thermal chain. This approach is enabled through five foundational elements: repeatable building blocks, defined interfaces, system orchestration, digital continuity, and lifecycle support. Together, these elements support more scalable AI factory execution by helping reduce design complexity, strengthen coordination across infrastructure domains, and improve confidence from initial design through deployment and operation.

At the core is a scalable building block architecture designed around the standardised 12.5 MW infrastructure blocks of Vertiv™ OneCore[2] integrated modular solutions that can be combined, configured, and extended to support deployments ranging from smaller AI clusters to gigawatt-scale AI factories. By establishing repeatable block-level designs with validated interfaces, Vertiv aims to simplify scaling and, in parallel, improve deployment consistency, system coordination, and operational performance.

"AI factories are forcing a fundamental change in how digital infrastructure is designed, validated, and deployed," said Scott Armul, Chief Product and Technology Officer at Vertiv. "Vertiv's role is to help turn complex AI infrastructure from a collection of separate products into converged, simulation-ready physical systems. Working with NVIDIA, we are helping customers move faster from design to deployment. By combining our power and cooling portfolio with validated interfaces and digital models, we can help customers accelerate development."

Vertiv's collaboration supports the development of digitally validated AI factory infrastructure using real-time simulation and system-level modelling before physical deployment begins. This approach is designed to help customers:

- reduce deployment complexity and field integration risk
- accelerate time to operational readiness
- improve infrastructure coordination across power, cooling, and controls
- and optimise performance from grid connection through chip-level thermal management and heat-reuse pathways.

Vertiv's contribution is grounded in its ability to bring together one of the industry's most comprehensive portfolios of critical power, thermal management, integrated controls, and lifecycle services into a cohesive, converged physical infrastructure. In contrast to conventional modular or prefabricated approaches that primarily compress schedule, converged physical infrastructure is intended to deliver fast deployment and compounding system-level gains. By standardising interfaces and creating repeatable building blocks, Vertiv aims to support more scalable AI factory execution, and enable improved performance, efficiency, and reliability.

"As AI factories scale to unprecedented levels of power and density, enterprises require a converged approach to physical infrastructure that unifies power, cooling, and digital twin simulation to reduce deployment risk," said Vladimir Troy, Vice President of AI Infrastructure at NVIDIA. "By integrating simulation-ready infrastructure models into the NVIDIA Vera Rubin DSX design, Vertiv is providing the repeatable building blocks and validated interfaces necessary to accelerate the path from design to operational readiness."

This collaborative output, Vertiv™ OneCore Rubin DSX, is a design outcome grounded in converged physical infrastructure that Vertiv will continue to iterate for multiple compute generations ahead. It is intended to support AI factory builders with parameterised infrastructure models and deployment-ready building blocks that span power, cooling, controls, and lifecycle services.

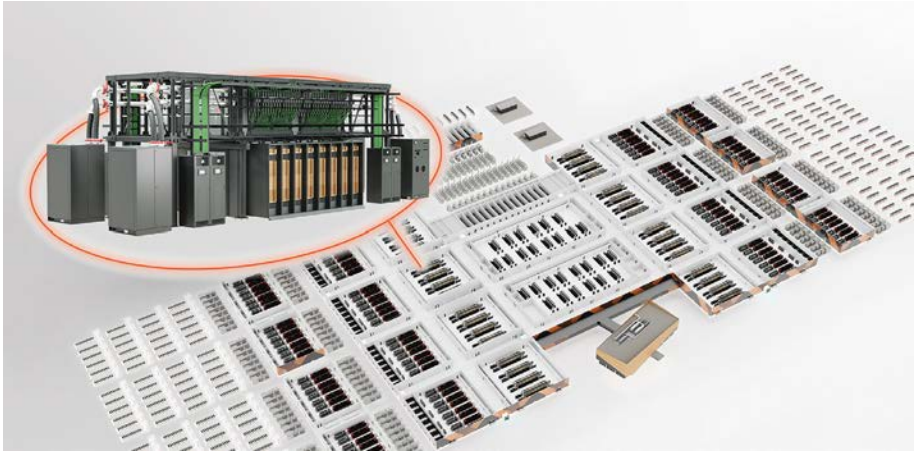
Vertiv expects this work to inform future converged infrastructure offerings across hyperscale, colocation, enterprise, and emerging AI deployment environments.

References

[1] https://nvidianews.nvidia.com/news/nvidia-releases-vera-rubin-dsx-ai-factory-reference-design-and-omniverse-dsx-digital-twin-blueprint-with-broad-industry-support

[2] https://www.vertiv.com/en-emea/products-catalog/facilities-enclosures-and-racks/integrated-solutions/vertiv-onecore-prefabricated-hybrid-built-data-center/

For more information visit: www.vertiv.com



Through its work with NVIDIA, Vertiv is contributing simulation-ready digital power and cooling infrastructure models to help customers deploy AI factories faster and with more assurance.

Processing data at the Edge

Edge computing offers speed, efficiency and resilience in today's industrial automation solutions.

Hennie Smith, Solution Architect, Industry Automation at Schneider Electric, sees industrial automation as one of the most exciting solution frameworks in industry today.

With data volumes growing exponentially, developers are working to deliver technology that can keep pace with industry requirements. A key element of today's solutions is Edge I/O NTS (input/output Network Terminal Slice) which represents an evolution of computing from centralised servers to localised, device-level input/output processing, offering improved speed, efficiency and resilience.

However, Smith says Edge I/O NTS is based on years of industry development, with its roots going back to the 1980s when personal computers and local area networks (LANs) allowed some distributed processing. Fast-forward to the 2010s and billions of devices started generating data. Sending all of it to the cloud became impractical, and this led to edge computing architectures where processing happens locally.

Today, Edge I/O NTS manages sensors, machines and IoT; moving intelligence closer to where value is created: on the shopfloor and at the machine level.

Rather than sending vast amounts of raw data to distant control rooms or cloud platforms, computation can happen at the source. This offers the key benefit of enabling immediate, context-aware decisions without the latency associated with centralised systems.

From centralised control to decentralised resilience

The rapid growth of connected devices has exposed the weaknesses of monolithic control systems. Centralised systems create single points of failure, while decentralised architectures distribute intelligence and risk.

Edge-enabled systems can continue operating even when connectivity to higher-level platforms is disrupted, ensuring continuity and stability.

Furthermore, Edge I/O NTS allows for improved cybersecurity, as distributed intelligence means threats can be isolated and managed locally rather than compromising entire operations.

With Edge I/O, intelligence is not embedded directly into the I/O modules, but these modules enable faster decision-making by ensuring reliable data flow to PLCs and controllers. In practice, local processing allows operators and systems to respond to anomalies instantly. Autonomous fault detection and self-correcting mechanisms improve uptime, and dynamic optimisation of energy use, throughput and quality enhances overall performance.

Importantly, these capabilities are not dependent on constant connectivity to the cloud or central control rooms. Even in remote or challenging environments, edge-enabled devices maintain core functionality, ensuring safe and efficient operations irrespective of external conditions.

While products may differ, Schneider Electric's Modicon Edge I/O NTS solutions share a common set of characteristics:

- Interoperability allows for seamless integration with legacy operational technology and modern IT platforms, which ensures continuity and enables innovation
- Scalable architecture allows systems to grow in line with operational needs, avoiding future constraints
- AI-ready frameworks support predictive analytics and machine learning
- Remote management capabilities reduce the need for on-site interventions and support more agile maintenance strategies.

The IT/OT convergence

An important development in the evolution of Edge I/O NTS is the convergence of IT and OT. For example, today, unified data models enable operational insights to flow seamlessly into enterprise systems, improving visibility across the entire value chain.

Standardised protocols also reduce complexity and support plug-and-play integration, and aligned cybersecurity strategies ensure consistent protection across both domains.

Looking ahead, edge-enabled systems will continue to reshape industrial performance. Plants will become more agile, adapting dynamically to operational and market changes and autonomous operations will handle routine decisions. Embedded cybersecurity and transparent data governance will set new standards for digital trust, and real-time optimisation of energy and resources will support sustainability and decarbonisation goals.

Edge I/O NTS with its built-in intelligence supports industry advances where human creativity and machine autonomy co-exist to deliver resilient, efficient, and sustainable operations.

For more information visit: www.se.com

Extending IXP access to underserved areas

Prenesh Padayechee, Group Chief Technology & Operations Officer, Digital Infrastructure at Seacom.

Seacom has launched *PeeringReach*, a cost-effective Layer 2 connectivity solution designed to extend South Africa's Internet Exchange (IXP) fabric into local municipalities and regional hubs, addressing the high costs and complexity traditionally associated with accessing national exchange connectivity.

Delivered over Seacom's national long-distance fibre backbone, Seacom *PeeringReach* provides reliable, SLA-backed access to South Africa's leading Internet Exchanges, including JINX, CINX, DINX and NAPAfrica. The service offers a simpler, more affordable alternative to indirect routing via upstream providers or large-scale infrastructure investments, helping customers connect directly to the IXP ecosystem.

Broader exchange access at a lower cost

Historically, gaining access to South Africa's peering ecosystem often required indirect connectivity paths or significant investment in national infrastructure, creating cost and operational barriers for networks operating in smaller towns and municipalities. Seacom *PeeringReach* removes these barriers by extending exchange access into local and regional areas through a single, integrated Layer 2 service.

By making exchange connectivity more accessible and affordable, the solution enables ISPs, regional carriers, enterprises and content providers to improve network efficiency and performance, regardless of geographic location.

"This launch is about fundamentally rebalancing access to South Africa's digital infrastructure," said Prenesh Padayechee, Group Chief Technology & Operations Officer, Digital Infrastructure at Seacom. "Seacom *PeeringReach* gives networks in local municipalities a more cost-effective way to connect into the national peering ecosystem, helping them improve performance and, at the same time, keep connectivity costs under control."

Improving efficiency, simplifying network operations

A key benefit of Seacom *PeeringReach* is its dedicated Layer 2 design, which eliminates the inefficiencies associated with indirect, multi-hop routing paths. By enabling more direct access to Internet Exchanges, the service improves traffic efficiency, predictability and overall network performance. It enables growth through simple provisioning rather than construction, significantly reducing cost and time to market.

"*PeeringReach* is about connectivity via an affordable enablement platform," said Padayechee. "We are helping regional networks scale faster, operate more efficiently, and participate more affordably in the digital economy. By levelling the playing field for regional networks, Seacom *PeeringReach* improves national traffic efficiency, resilience and digital inclusion," he said.

The service supports bandwidth options from 1 Gbps to 10 Gbps without requiring major infrastructure investment.

The introduction of Seacom *PeeringReach* reinforces the company's role as a national interconnection enabler, extending exchange access to areas that historically have been underserved.

For more information visit: seacom.com

Cloud complexity is suffocating growth

Helen Kruger, Managing Director of IT solutions and services provider Troye, says South African businesses are reaching a breaking point as AI adoption, cloud native development and distributed workloads are accelerating faster than traditional infrastructure can cope. Gartner last year[1] outlined key trends expected to shape the future of cloud computing indicating that it would consolidate its role as the primary driver of AI enablement, drive multi cloud expansion and digital sovereignty strategies.

Troye Managing Director, Helen Kruger.

Yet, Kruger says, many organisations remain weighed down by fragmented tools and operational silos that inflate costs and stall innovation. For businesses looking ahead, the issue is no longer whether to move to the cloud, but whether their current environment is agile enough to compete.

Troye's cloud solutions are designed to unlock new possibilities by simplifying infrastructure and expanding what businesses can achieve. Through Private Cloud, Hybrid Multi Cloud, and strategic consultation, Troye helps organisations move beyond simply hosting data towards platforms that actively enable transformation.

Private Cloud provides a secure and controlled foundation for critical workloads, delivering predictable performance and governance without sacrificing agility. Hybrid Multi Cloud extends that foundation, allowing workloads to move seamlessly across environments to meet performance, cost, and compliance needs.

Some industry reports[2] show 87% of organisations now operate multi-cloud environments, and 72% embrace hybrid cloud strategies that blend private and public clouds. Through its strategic consultation services, Troye ensures these environments are aligned with business outcomes, so technology decisions support long term growth rather than short term fixes.

Kruger emphasises that modern applications demand flexibility and consistency. Enterprises are expected to support traditional virtual machines as well as cloud native containerised workloads. Nutanix addresses this challenge with a unified platform that runs applications consistently across private and public clouds.

Independent evaluations[3] highlight Nutanix as a leader in multi-cloud container platform capabilities, noting unified management, hybrid deployment options, and governance – critical for modern distributed workloads.

Continued on page 8

40 years of PC-based control – today a global standard

At Hannover Messe this year, Beckhoff highlighted the value that PC-based control has brought to the manufacturing industry, how it has evolved, and the advantages it continues to deliver.

When Beckhoff elevated the industrial computer to the status of a central control system four decades ago, a paradigm shift occurred. For 40 years, PC-based control has been putting the power of IT standards and Moore's Law directly into the hands of machine and system engineers. With the bundling of PLC, motion control, and technologies such as measurement technology, robotics, and vision on a single integrated platform, users today benefit from outstanding performance combined with significant cost and space savings.

In the 1980s, industrial production was characterised by the classic, hardware-based PLC. The PLC was considered reliable, but on the downside, it was inflexible and expensive, with limited computing power. In 1986, Beckhoff responded to these limitations by delivering the first PC-based machine control system, which gave the target application – a double mitre saw – a significant boost in productivity.

Separation of PLC and hardware

The decisive technological step was the abstraction of the PLC function from proprietary hardware to a highly flexible solution based on industrial IT components. Beckhoff ensured deterministic behaviour by developing its own real-time extensions for standard operating systems – mainly Windows initially, but also others since then, including TwinCAT/BSD and Linux®. Machine builders were thus able to benefit directly from the rapid innovation cycles in IT and increasing processor performance. In the 1980s, for example, PC-based control brought floppy disk drives directly to the machine. Later, Ethernet communication opened up new possibilities in production and for integrating production into databases, ERP systems, and IoT solutions. Today, PC-based control forms the basis for physical AI in the factory.

High-speed communication

Appropriate I/O systems were required in order to use the ever-increasing computing power of industrial PCs up to field level. Beckhoff therefore flanked PC-based control with its own communication systems. Initially, data transmission took place via Lightbus. Introduced in 2003, EtherCAT has since become a global standard that is today deployed by users across all industries and markets. In parallel, the TwinCAT automation environment – which marks its 30th anniversary this year – provided the basis for the software. Since its market launch, TwinCAT has developed into a holistic solution: it combines all automation functions in a single integrated software platform. In addition to classic logic and motion control, the spectrum includes safety and measurement technology, HMI, and IoT connectivity, as well as image processing, robotics, and industrial AI tools. The optimum synchronisation of all processes via the PC-based controller gives users significant advantages, in terms of dynamics and precision, for example.

More scalability, fewer interfaces

In applications today, PC-based control provides exceptional scalability and a reduction in interfaces. Company founder and Managing Director, Hans Beckhoff sums it up: "A high-performance industrial PC, an equally powerful fieldbus interface with peripheral devices such as sensors and actuators connected to it, and control software with real-time capabilities for motion and logic control – that's all it takes." This approach provides the capability to consolidate all machine functions – from a simple PLC to highly complex robotics – into a single controller. As well as saving space, time, and money, this eliminates latency between distributed controllers.

In line with the Beckhoff philosophy, the company has been developing and manufacturing all electronic assemblies and motherboards itself in Westphalia since the 1980s, to the highest quality 'made in Germany' standards.

This offers users security and long-term availability and enables them to continue implementing the latest IT standards and processor generations in machine building.

Basis for physical AI

Four decades after the launch of PC-based control, the industry is increasingly turning away from proprietary black box solutions and focusing on the future viability of open, standardised systems. PC-based control technology provides an ideal basis for the required IT/OT convergence as well as for leading technologies such as machine learning and physical AI. As it reaches its 40th anniversary, PC-based control provides a future-ready and high-performance foundation for the manufacturing industry.

For more information visit: www.beckhoff.com

For 40 years, PC-based control technology has laid the technological foundation for all Beckhoff automation components and solutions.

ABB's latest DCS release supports modernisation without disruption

ABB has introduced SPR2025, the latest Symphony® Plus distributed control system (DCS) package to enable modernisation and efficient performance in the process and power industries. This release supports upgrades for existing installations and new deployments.

SPR2025 helps modernise industrial operations quickly and efficiently, upgrading existing Harmony Rack-based systems without disruption, or deploying the latest automation innovations for new projects. Online upgrades, enhanced OS and virtualisation support, powerful conversion tools, and a clear evolution path allow customers in industries such as power, water, oil & gas, pharmaceuticals and pulp & paper, to implement improvements at their own pace, ensuring continual reliability and minimal risk.

Symphony Plus delivers stronger communications performance and strengthens data integration across distributed operations. With system-wide OPC UA, ethernet backbone, and support for smart field devices using the latest FDI (Field Device Integration) technology, operators benefit from secure, standardised, and interoperable connectivity, enabling connection of different devices and platforms.

The inclusion of ABB's Automation Extended functionality enables Symphony Plus customers to adopt advanced automation and digital technologies without disruption.
By separating control and digital environments, customers can deploy system performance monitoring, advanced analytics, and AI-based decision support applications progressively, while maintaining the reliability and security of core control processes.

"SPR2025 advances our commitment to help customers modernise without disruption, at their own pace and protecting their existing investments," said Stefan Basenach, Senior Vice President, Process Automation Technology, ABB. "With online upgrades and enhanced digital connectivity, this secure, scalable and future-ready release empowers customers to operate more efficiently today and prepare for the next wave of industrial innovation."

Key enhancements introduced in the SPR2025 release strengthen system performance, improve lifecycle efficiency, and enable secure, future-ready operational environments. Major updates are outlined below.

- Version synchronisation and online upgrades for a more streamlined and predictable system-wide upgrade experience, reducing engineering effort and minimising operational disruption.
- Support for the latest Microsoft operating systems and multiple virtualisation platforms enables multi OS deployment, simplifying lifecycle management across modern IT/OT environments and enhancing long-term sustainability.
- Enhanced OPC UA connectivity provides secure, standards based interoperability, ensuring seamless data exchange and readiness for evolving digital architectures.
- Advanced device management with Field Information Manager (FIM) accelerates device onboarding, improves diagnostics, and streamlines maintenance of instruments.
- Expanded system-wide connectivity enables the use of additional Virtual Plant Network Interfaces to optimise communications and reduce system footprint.
- Seamless evolution from Harmony Rack to SDe Series, supported by automated conversion tools, allows customers to preserve prior intellectual investment.

With these upgrades, SPR2025 delivers a more flexible, interoperable and secure control environment engineered to help industrial operators modernise their systems to meet the demands of tomorrow's automation.

For more information visit: new.abb.com/process-automation

The latest release of ABB's Symphony® Plus Distributed Control System includes Automation Extended functionality, enabling innovation while maintaining core system reliability.

Continued from page 6

Cloud innovation has moved beyond chasing trends to building an adaptable foundation that absorbs change without disruption. Troye partners with organisations to design and implement cloud strategies that replace fragmentation with clarity, and limitation with opportunity.

Combining modern platforms like Nutanix with deep expertise in Private Cloud, Hybrid Multi Cloud, and strategic consultation, it enables businesses to run applications anywhere without chaos, and to grow with confidence in an increasingly demanding digital landscape.

References

[1] https://www.gartner.com/en/newsroom/press-releases/2025-05-13-gartner-identifies-top-trends-shaping-the-future-of-cloud
[2] https://www.cdwg.com/content/cdwg/en/articles/cloud/why-you-need-unified-approach-hybrid-multicloud-management.html
[3] https://virtualizationreview.com/articles/2025/07/30/red-hat-suse-and-nutanix-lead-multicloud-container-platform-research-report.aspx

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

Multi-touch panels for all applications

The Beckhoff multi-touch Panel portfolio offers the right device for every application and performance requirement. Different display diagonals and protection classes can be combined with different connection types, from the slim CP-Link 4 control panel to the panel PC with an Intel® Core™ i7 CPU at the heart of the central control system. If the scalability of the standard portfolio is not sufficient, Beckhoff multi-touch Panels can have a custom logo or customized push button extension added to them from a minimum order quantity of 1. Beckhoff multi-touch Panels also provide the ideal basis for creating an entirely customer-specific design.

- 9 different diagonals from 7 to 24 inches
- classic and contemporary aspect ratios: 4:3, 5:4, and 16:9
- push button extensions and various mechanical extensions can be combined
- available as a passive control panel or panel PC
- highest power density – for example, with an 11th generation Intel® Core™ i7
- available as built-in devices or for integration directly on the mounting arm with a wide range of mounting options

Beckhoff Automation (Pty) Ltd
Randburg 2169, South Africa
Phone: + 27 (0)11 795 2898
info@beckhoff.co.za

Scan here to find out more about the multi-touch application spectrum

New Automation Technology **BECKHOFF**

The Vyeboom pump station upgrade

Vyeboom Irrigation Board operates one of the region's largest pump stations, drawing from the Theewaterskloof Dam, near Villiersdorp in the Western Cape, a key source for regional, agricultural irrigation. A planned upgrade of the pump station raised a difficult question: how to modernise while safeguarding ongoing supply. In this case study, ElectroMechanica (EM) sets out the approach adopted and the success achieved.

It was clear that the Vyeboom pump station needed an upgrade, but it needed to be completed within a narrow shutdown window to ensure farmers would have reliable water when the season opened.

The decision was not simply about equipment. The upgrade was about ensuring farmers would have water when the season opened. The irrigation board faced a narrow shutdown window, a station operating under demanding conditions, and two very different options.

Soft starters were the familiar choice in medium-voltage systems, and drives carried the perception of added complexity. On paper, the drives promised smoother starts, lower energy use, and generator compatibility, but the board needed more than a specification sheet. They needed confidence that the upgrade would deliver reliably when it mattered most.

The challenge

The upgrade had to be completed within the short seasonal shutdown. Missing that window would have delayed the project by a year and extended the risks to infrastructure and supply.

Equipment wear and downtime

Traditional starting methods placed a significant load on the pumps, as is common in long-serving stations. Bearings and seals wore out faster, increasing the need for more frequent maintenance. Breakdowns raised the risk of interrupting water deliveries during critical periods. Water hammer also damaged valves, reducing their service life by half and driving up replacement costs.

Limited backup options

Pumps of this scale draw high current on start-up, even when fitted with soft starters. This made the use of generators impractical without significantly oversizing the sets, an approach that adds cost in most irrigation systems. The result was limited resilience during grid outages.

Inefficient pumping

Operating a mix of pump sizes on a shared line made flow optimisation challenging. Instead of maximising flow, energy was lost in turbulence, meaning more power was used without delivering more water.

The solution

What turned a complex upgrade into a workable plan was not a single specification but a coalition that knew where its responsibilities overlapped. The irrigation board carried the pressure of keeping crops watered on time, supported by a consulting engineer who carefully evaluated technical and financial factors. On-site support was provided by system integrator WJ Cotter, who was responsible for installation and PLC/SCADA integration.

Bridging disciplines

To support them, partners stepped in with complementary expertise. EM's engineers in Cape Town and Johannesburg tested electrical assumptions against the hydraulic redesign commissioned from a leading pump manufacturer. At the same time, WJ Cotter handled site integration and controls, ensuring the upgrade meshed with day-to-day board operations. That study confirmed that larger, more efficient pumps could be matched with medium voltage drives to work in step rather than at odds with each other. When scheduling challenges arose near the end of the shutdown window, EM helped keep the project on track by holding the equipment.

Closing efficiency gaps

Delta's role was equally critical. Its MVF2000 drives, each rated for 800 kW and configured to take 11 kV input while delivering 6.6 kV output, replaced the station's step-down transformers and closed a long-standing efficiency gap. With more than 96% efficiency, low harmonic distortion, and tolerance for the voltage disturbances common in South Africa, the upgrade delivered technical assurance and operational resilience. The integration ensured the drives were embedded into the control environment seamlessly, giving the board confidence in everyday operation.

"The MVF2000 drives are proven worldwide, but at Vyeboom, it was EM's local support and expertise that made sure they delivered real results for the board," said Sergey Zubov, IABG Country Manager (CIS), Delta Electronics.

Moving forward with confidence

A site visit to a previous EM project allowed the board and the consulting engineer to see medium-voltage drives in operation – and that progressed the discussion from specifications to practical outcomes. They observed smooth starts and stops, spoke directly with operators, and confirmed how the technology

performed under real conditions. The visit helped strengthen confidence in the decision to proceed with the upgrade. By the time the drives were commissioned for the Vyeboom pump station, the project was no longer seen as a risk but as a proven, long-term solution.

As well as delivering new hardware, the project reinforced confidence in modernisation, built step by step through independent expertise, shared accountability, and operational proof.

The outcome

When the new drives finally started the pumps, the first difference was obvious. Starts and stops were smooth, water hammer was gone, and farmers could count on water without interruption. But the bigger change unfolded in some unexpected ways.

At Vyeboom, the board gained renewed confidence in modernisation. Seeing the system work in practice gave them the confidence to plan similar upgrades across their other stations – decisions that, only months earlier, had seemed out of reach.

Looking ahead

The Vyeboom project demonstrated that lasting progress in infrastructure depends on collaboration as much as on hardware. It's about building the confidence to change what already works, to make it work better, and that confidence comes from collaboration. Boards, consultants, suppliers, and engineers each brought their own perspective, and connecting those perspectives turned risk into momentum.

For farmers, the outcome was reliable water when it was needed. For the irrigation board, it was confirmation that modernisation can be approached with confidence. And for the partners involved, it was evidence that independent expertise, when combined, can deliver outcomes greater than the sum of the parts.

For the Vyeboom Irrigation Board, this modernisation has become a reference point.

Acknowledgements to ElectroMechanica for permission to republish this article in Electricity + Control.

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

Refurbishing a 15 MW wound rotor induction motor

This challenging 15 MW stator and rotor rewind project for a platinum mine represents a significant achievement in motor refurbishment and demonstrates Marthinusen & Coutts' capabilities in adhering to industry standards and ensuring meticulous attention to detail.

The project was awarded to Marthinusen & Coutts (M&C), a division of ACTOM, in late November 2024. It involved a comprehensive overhaul of a motor that had been in service for over 18 years and the contract was awarded to M&C due to the company's proven, successful repairs and its intricate knowledge of the design of these 15 MW motors.

The primary objective of the rewind project was to restore the motor to its original high standards – as when it was initially manufactured. This goal required a thorough scope of work, including:

- Rewinding the stator and rotor, incorporating steel binders into the rotor windings – a complex and difficult task to execute
- Overhauling the brush gear compartment and installing new brushes
- Re-insulating the slip rings with new insulation material
- Installing new heat exchangers
- Conducting shaft repairs and fully refurbishing the white metal bearing assemblies
- Dynamically balancing the rotor
- Skimming the stator feet and pedestal bearings
- The complete assembly of the motor
- Finally, a no-load test run was performed, and the motor was repainted to complete its restoration.

Technical challenges and solutions

The rewind process proved challenging, especially concerning the use of steel binders on the rotor. M&C engaged an expert craftsman with 35 years of experience in fitting these complex components. The project's complexity required precautionary

Marthinusen & Coutts restored the 15 MW motor to its original high standards.

measures during critical stages, including the burnout, coil manufacturing, VPI (Vacuum Pressure Impregnation), and curing cycles, as well as balancing to ensure the rotor met a tolerance of G 0.4.

In selecting materials for the rewind, M&C, in consultation with its international insulation experts, chose a comprehensive insulation solution.

Project management and compliance

To keep the project on schedule, M&C adopted a proactive approach, although some delays occurred due to the complexities of the VPI processes. The project management methodology included clearly defined hold points, as requested by the customer. M&C's Quality Control department communicated regularly with the customer, providing updates when hold points were ready for inspection.

Safety was a top priority throughout the rewind process.

Continued on page 12

One drive, ten motors: rethinking medium-voltage motor control

For South African industries facing rising energy costs, constrained capital budgets and increasing pressure to improve uptime – a review of how they start, control and protect large motors in their plants can make a difference. Adrian van Wyk, CEO of Referro Systems, says a new approach to medium-voltage motor control allows several high-power motors to be managed using a single medium-voltage variable speed drive. This delivers significant reductions in capital expenditure, footprint and system complexity, without compromising reliability.

Referro Systems, as a local distribution partner for Rockwell Automation, has introduced the PowerFlex® 6000 medium-voltage ac drive with Synchronous Transfer Bypass (STB) for use in mining, water, utilities and heavy-processing operations across South Africa. According to van Wyk, the solution represents a step change in medium-voltage motor control design, particularly for sites that have a number of large motors operating in unison.

Conventional medium-voltage motor control systems typically rely on individual drives or starters for each motor. Although effective, this approach can be capital intensive, space consuming and complex to maintain – especially in applications such as pumps and fans, where motors are often started one at a time rather than simultaneously.

The PowerFlex 6000T with Synchronous Transfer Bypass addresses this challenge by enabling up to 10 motors to be started and synchronised across the supply line using a single medium-voltage drive. The system supports combined currents of up to 3 000 A, with a maximum of 680 A per motor, across voltage ranges from 2.3 kV to 11 kV.

Once any motor in the system reaches operating speed it is synchronised to the fixed-frequency bus, and the drive is automatically freed to start the next motor in sequence, should the process require this. This architecture reduces the number of variable speed drives required across a site yet still delivers all the benefits of variable speed control during continuous speed requirements – smooth start-up, acceleration and deceleration control delivered by one variable speed drive.

Smoother starts, longer equipment life

The Synchronous Transfer Bypass technology is core to the solution. It ensures that voltage, frequency and phase are precisely matched during the transfer from variable-frequency operation to fixed-speed operation and vice-versa.

The synchronous transfer enables a smooth, bumpless transfer. It eliminates the inrush current spikes, voltage dips and mechanical stress that typically plague traditional motor starting methods.

In practical terms, the benefits are substantial, says van Wyk. Softer acceleration reduces torsional stress on shafts, couplings and driven equipment, in turn extending asset life and reducing maintenance costs. Pressure surges are avoided in continuous processes such as pipeline compression and fans and pumps experience fewer process upsets and less unplanned downtime. Overall, this contributes to significant energy savings for equipment driven by the variable speed drive.

Fewer assets, lower lifecycle costs

By consolidating motor starts into a single drive system, industrial organisations can reduce capital and operating expenditure significantly. In some applications, customers have reported up to 80% fewer drives required compared to traditional systems.

As well as lowering upfront costs, reducing the number of drives simplifies maintenance and spares management. It creates a cleaner, more manageable automation environment with intelligence built in.

Additionally, the PowerFlex 6000T with Synchronous Transfer Bypass integrates into various modern digital architectures through networked connectivity, enabling direct communication with control systems. This connectivity supports predictive maintenance, enhanced diagnostics and improved visibility into motor and process performance.

Operational resilience and flexibility

The PowerFlex 6000T with Synchronous Transfer Bypass features dedicated variable-frequency drive input and output cabinets, individual per-motor bypass sections (which also serve as emergency direct online starters should they be required), line reactors and controls, all coordinated through a centralised control system.

This design enables secure, seamless handover between variable-speed and fixed-frequency operation via dedicated buses. It supports a highly resilient motor control system that protects the process and the equipment.

Well suited to mining, water, wastewater, oil and gas, concentrated solar plants and utility infrastructure industries, the PowerFlex 6000T with Synchronous Transfer Bypass is designed to perform in the most demanding industrial environments.

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

Continued from page 11

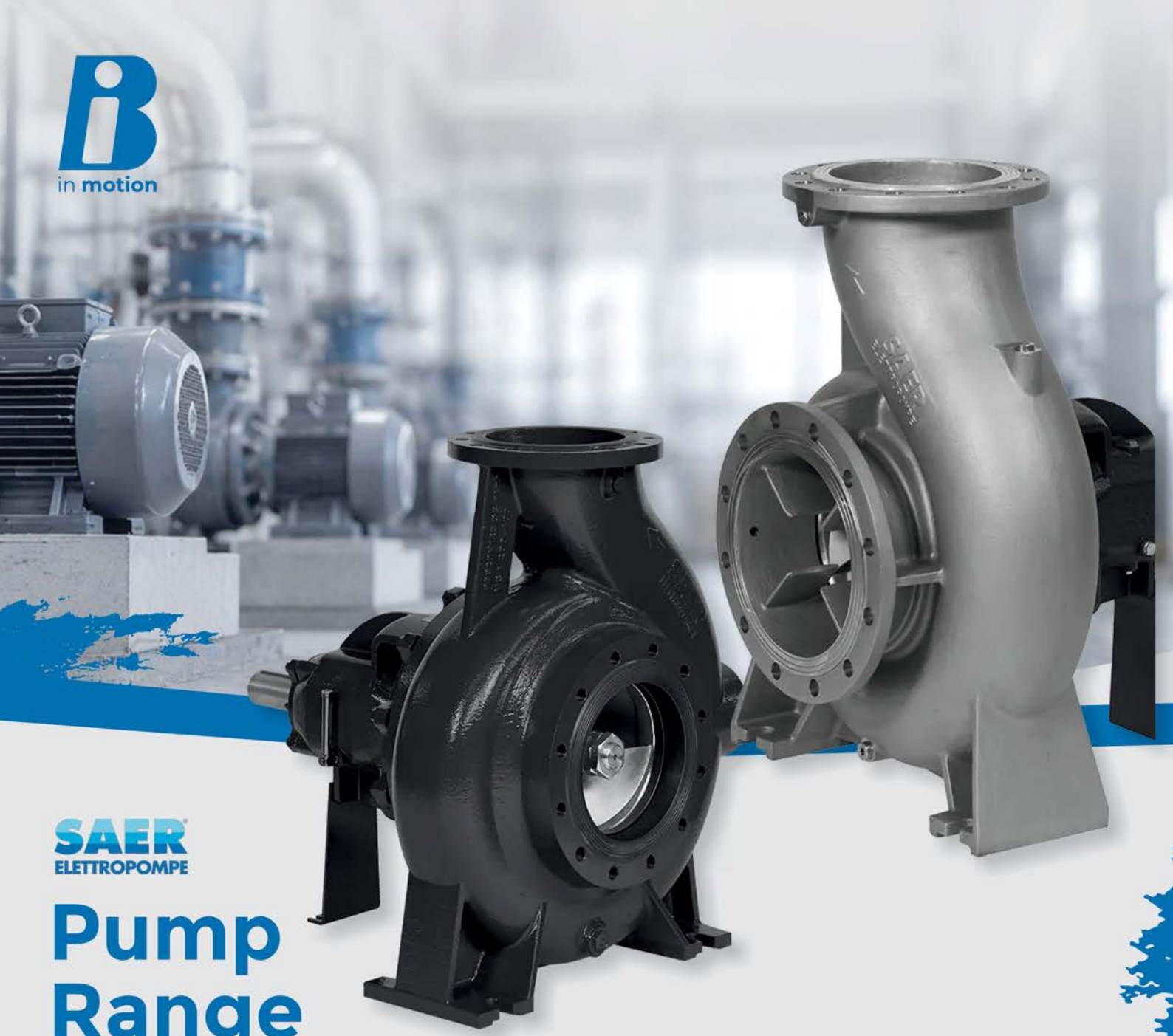
Senior operators and technicians carefully supervised testing and lifting procedures, ensuring compliance with industry standards and regulations. Compliance with various testing standards – established by the International Electrotechnical Commission (IEC) and M&C's internal standards – was maintained throughout the project.

Effective coordination with the customer was maintained by compiling weekly progress reports and holding regular meetings that adhered to the outlined project timeline. Notably, the customer engaged an independent third-party specialist to verify and sign off on all hold points, further enhancing the project's transparency and credibility.

M&C's dedication to quality workmanship and customer satisfaction is unwavering. It extends the lifespan of these 15 MW machines successfully and, as an expert in this field, it offers repair solutions for customers.

For more information visit: www.mandc.co.za/

in motion



SAER ELETTROPOMPE

Pump Range

Engineered in Italy and trusted globally, Bearings International delivers premium pump solutions designed to enhance efficiency and performance across your operation.

Applications

- Mining & dewatering
- Agriculture & irrigation
- Industrial processing
- Water supply & transfer
- General fluid handling

Pump types

- Centrifugal pumps
- Multi-stage pumps
- Submersible pumps
- Electric motor-driven units

Italian Craftsmanship.

Built to pump. Priced to flow.

SCAN ME

Contact us today!
011 899 0000

www.bearings.co.za
info@bearings.co.za

Find your nearest Bi Branch

Reliable switching for safety-critical applications

The VEGASWING series of vibrating level switches provides reliable point level detection in a wide range of liquid applications within the energy sector.

Continuous level measurement provides valuable process insight in the energy sector and point level measurement delivers decisive action. Whether preventing overfill, protecting pumps from dry running, or safeguarding critical equipment, reliable point level detection is essential to safe and efficient operations.

Across sub-Saharan Africa's energy landscape, from coal-fired power stations and hydropower facilities to renewable energy infrastructure and emerging hydrogen applications, point level switches need to perform consistently under demanding process conditions.

Vibrating level technology has proven itself as a robust, product-independent solution for liquid and bulk solid applications, delivering millimetre-precise switching with minimal maintenance requirements.

VEGA's range of vibrating point level instruments is engineered specifically for these challenges, offering dependable performance across the energy value chain.

Providing protection and process reliability

The VEGASWING 63 vibrating level switch is engineered to provide accurate and reliable point level detection in a wide range of liquid applications within the energy sector. It is suitable for use with liquids possessing densities between 0.5 and 2.5 g/cm^3, ensuring consistent switching performance regardless of the mounting position or the characteristics of the medium.

A key feature of the VEGASWING 63 is its tube extension, which enables the switching point to be positioned up to six metres away from the installation site. This design offers a high level of flexibility for placement in tanks, vessels, and sumps, making it possible to achieve optimal switching points even in situations where a compact sensor would be insufficient.

The VEGASWING 63 is commonly used in applications such as overfill protection for fuel, oil, and chemical storage tanks, dry-run protection for pumps, and empty or full vessel detection in auxiliary systems. With its product-independent switching point the need for calibration with the process medium is eliminated, streamlining commissioning and simplifying maintenance tasks. These advantages are particularly significant in remote or resource-constrained energy installations, where efficiency and reliability are paramount.

Reliable switching

For liquid applications that involve elevated temperatures and pressures, the VEGASWING 66 provides reliable and accurate point level detection where standard instruments might not serve effectively. The high-performance vibrating level switch is engineered for use with liquids with densities from 0.42 to 2.5 g/cm^3, making it suitable for demanding and variable process environments.

The VEGASWING 66 is available in a compact form and with a tube extension of up to three metres, offering flexibility for installation in various locations. It is commonly used in critical applications such as steam generators and boiler systems, condensate and feedwater tanks, and high-temperature auxiliary vessels in thermal power plants.

Its robust construction ensures continuous and dependable

Continued on page 15

Ultrasonic wind sensor wins iF Design Award

Vaisala's WM80 Ultrasonic Wind Sensor has been honoured with an iF Design Award in the Product Design discipline, Industry category. This is the first iF Design Award for a Vaisala product, and a distinction for a weather measurement device. The award recognises that the sensor's performance-driven design stands among the best in the world.

Accurate, continuous wind data is critical in demanding environments. WM80 is designed to withstand harsh conditions and to keep measuring precisely through them. Its measurement technology is built for the conditions where reliable wind data matters, such as in renewable energy and maritime operations, where a lack of data or inaccurate data have significant consequences.

The WM80 ultrasonic wind sensor earned the iF Design Award in recognition of a clear design philosophy: every feature is there for a reason. Each element of the sensor's form is engineered to withstand the demands of real-world operating environments. The award confirms that outstanding design happens when technology, user needs and visual design come together.

Cross-functional expertise

Achieving this level of functional design required cross-functional collaboration. Teams across the organisation, including designers, engineers, scientists and product management, worked closely together, ensuring that performance and reliability remained at the core of every decision. Equally important was the role of customers throughout the development process. WM80 was co-created with users, with their experiences and needs directly shaping the product's form, usability, and resilience.

One example of cross-functional expertise is the design of the signal-focusing reflectors. This patent-pending reflector design strengthens the ultrasonic signal by focusing it towards the transducers and maintains optimal focus even as the wind speed changes, under all weather conditions. It demonstrates how close

Continued on page 15

Continued from page 14
operation across a wide spectrum of process conditions. Additionally, integrated sensor self-monitoring enhances operational safety by providing ongoing assurance of the instrument's functionality.

As with all VEGASWING instruments, the switching point is independent of product characteristics, ensuring reliable performance and requiring minimal maintenance.

Reliable detection

Bulk solids handling in the energy sector is an essential operation in coal-fired power generation and biomass-based energy production. The VEGAVIB 63 vibrating rod level switch is designed to meet the demands of granular and coarse-grained bulk solids, accommodating materials with densities as low as 20 g/l.

The instrument features a tube extension, which allows for flexible positioning of the switching point up to six metres away from the mounting location. This capability enables precise level detection in various settings, including silos, bunkers, and at conveyor transfer points, to optimise operational efficiency and safety.

The smooth and seamless vibrating rod construction is engineered to prevent material build-up and bridging, which can often compromise the reliability of level detection. This feature also facilitates cleaning and maintenance, supporting uninterrupted operation even in challenging environments.

The VEGAVIB 63 is suitable for use in a range of critical applications in energy facilities, including high and low level detection in coal bunkers, overfill protection for storage silos, and monitoring at conveyor transfer points. With its medium-independent setup and minimal maintenance requirements, the instrument serves well in the harsh, dust-laden conditions typical of such energy applications. Its design ensures reliable performance and operational efficiency in the most demanding environments.

Fine-grained and powdered bulk solids

Handling powdered and fine-grained bulk solids, such as fly ash and fine coal dust, the VEGAWAVE 63 vibrating fork level switch offers reliable and consistent point level detection. It is engineered to handle materials with densities as low as 8 g/l and particle sizes up to 10 mm, challenging applications in the energy sector.

The VEGAWAVE 63 features a robust tuning fork design that ensures stable switching performance, even in the presence of adhesive or abrasive materials. The tube extension, which can reach up to six metres, provides flexibility for precise placement of the switching point according to specific process requirements.

This vibrating fork level switch offers several key advantages: it reliably detects minimum and maximum fill levels, delivers a product-independent switching point, and does not require calibration with the process medium. Additionally, its low maintenance demands and long service life make it a dependable choice for demanding process environments.

Point level technology

Point level switches have become a mainstay in the energy sector, due to their reliability and straightforward operation. The instruments offer advantages that include millimetre-precise switching accuracy and consistent performance, unaffected by the properties of the measured medium. They are designed for minimal maintenance and rapid commissioning, and their robust construction guarantees durability in the harshest industrial environments.

For more information: www/.vega.com

VEGAVIB 61-62-63 vibrating rod level switches are designed to provide precise level detection in handling granular and coarse-grained bulk solids, in silos, bunkers, and at conveyor transfer points, for example.

Continued from page 14
collaboration between disciplines can elevate performance.

"We are very proud that WM80 has been recognised with an iF Design Award. This reflects the core philosophy behind the product: that great design is not about appearances. Every feature in the WM80 serves a purpose, and that is the result of genuine teamwork and building the product around what our customers encounter in the field," says Aino Oikari, Product Manager at Vaisala.

About the iF Design Award

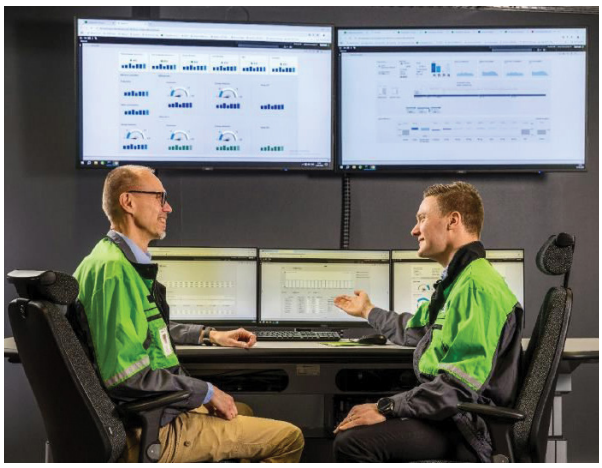
Founded in 1954, the iF Design Award is one of the world's most recognised benchmarks of design excellence: an internationally established symbol of outstanding design achievement. It honours design achievements in all disciplines: product, packaging, branding & communication, service design, architecture and interior architecture, user experience (UX), user interface (UI) and concepts. All award-winning entries are presented on the if design website.

In South Africa, Vaisala is represented by its authorised partner, Johannesburg-based Cicero Tech.

For more information visit: www.vaisala.com/en/

The WM80 ultrasonic wind sensor is designed to withstand harsh conditions and to keep measuring precisely through them, providing reliable wind data where it matters.

Real-time visibility supporting quality in paper and board production



Valmet IQ Virtual Sensor gives paper and board producers real-time visibility of critical end-product strength properties.

Valmet has introduced the IQ Virtual Sensor, a software-based solution that gives paper and board producers real-time visibility of critical end-product strength properties that traditionally have been measured only in the laboratory. Providing continuous quality predictions, the solution enables mills to maintain consistent quality, reduce fibre and starch costs, decrease energy consumption, and increase overall production efficiency.

With minute-by-minute predictions of key paper properties, such as tensile and tear strength, burst and short-span compression test (SCT), using the mill's existing data, the system provides operators with real-time visibility into product quality. Continuously learning from laboratory feedback, it enables proactive process optimisation, reduces waste, helps prevent quality deviations, and improves mill profitability.

"To avoid rejected batches, operators often build in large safety margins, which results in increased use of costly raw materials and higher production costs," says Timo Aro, Business Manager, Quality Management System, Automation Solutions, Valmet. "With Valmet IQ Virtual Sensor, operators no longer need to wait for laboratory results to understand how their actions will affect end-product quality. In addition, its built-in 'what if' simulator lets operators test adjustments and see predicted impacts before applying changes to real production. By reducing uncertainty and enabling lower safety margins, the solution demonstrates how optimised process control helps unlock resource efficiency," Aro notes.

Valmet IQ Virtual Sensor delivers real-time quality predictions during processing without the need for additional sensors or production downtime. All calculations run locally, without cloud dependency, ensuring secure data handling and enabling fast response times.

Seamlessly integrated with Valmet DNA and Valmet DNAe, the solution is intuitive, allowing operators to view predicted strength properties alongside other quality data from scanners. With this insight, operators can make faster decisions and improve production efficiency.

Valmet IQ Virtual Sensor is part of the Valmet IQ Quality Management Systems family, backed by more than 30 years of industry-leading expertise and continual innovation in quality control for paper and board production.

Although it is available as a standalone solution, Valmet IQ Virtual Sensor delivers optimum quality management when combined with the Valmet IQ Quality Control System (QCS). Together, they provide mills with a holistic quality overview across the entire machine and tighter control of essential quality parameters – all in one unified interface.

For more information visit: www.valmet.com

Bulk solids level measurement with R80 radar technology

AMETEK Level Measurement Solutions (LMS), a business of AMETEK, Inc, has expanded its Magnetrol® branded Pulsar Model R80 with the introduction of a newly developed solids-measurement antenna. This update enables the existing 80 GHz FMCW (frequency-modulated continuous-wave) radar platform to perform reliably in demanding bulk solids applications.

The Pulsar Model R80 is the first radar transmitter for bulk solids developed by AMETEK LMS offering a new option for industrial solids level measurement.

The new Pulsar Model R80 solids antenna provides improved measurement capability with its high-frequency signal, narrow beam angle, and advanced configuration software. It measures low-dielectric materials and maintains stable performance in environments where dust, vapour, or uneven surface profiles are created during filling or emptying.

"Customers working with those often difficult solids applications require a stable, accurate measurement technology," said Bob Botwinski, Sr. Global Product Manager, GWR/Radar. "The Pulsar Model R80 transmitter is designed to make commissioning straightforward and provide consistent performance across a range of industrial environments."

Key features

- 80 GHz FMCW signal with narrow beam angles
- 3"/150# and 4"/150# process connections
- Swivel-mount flange for accurate radar alignment
- Purge connection for in-situ lens cleaning
- Measuring range up to 60 metres
- Software-guided commissioning wizards
- Proactive diagnostics with actionable troubleshooting insights
- Replaceable transmitter head that maintains the process seal
- SIL 2 suitable with 92.3% SFF.

AMETEK Level Measurement Solutions, with its headquarters in Aurora, Illinois in the USA, serves the South African market via authorised product distributors such as Blanes Instruments and TVH South Africa.

For more information visit: www.ametek-measurement.com/

Sustainable energy generation?
We are powering a greener future.

The energy sector needs smart solutions. For a future with fewer emissions and greater efficiency, precise measurement technologies make renewable energy more sustainable and economically viable. Our advanced level and pressure instrumentation optimises your processes, boosts profitability, and conserves resources.

Everything is possible. With VEGA.

vega.com

VEGA HOME OF VALUES

Maintenance training boosts uptime

In workshops, plants and pits across Southern Africa, the craft of machinery maintenance is changing faster than many teams can keep up with. Ever-tightening production targets, increasingly complex asset fleets, and the rising cost of getting maintenance wrong all contribute to industrial inefficiency.

Often, the people charged with keeping mission-critical machinery running safely and efficiently have had limited access to structured, modern training. This results in skills gaps in maintenance disciplines – the skills that determine whether a gearbox lasts through another overhaul cycle, whether a transformer runs cool through summer, or whether a vehicle is parked idle to avoid component failure.

Condition monitoring specialist company, WearCheck, which this year celebrates 50 years of service to industry, addresses the skills need with a wide range of practical, hands-on courses covering various topics related to condition monitoring and maintenance. Technical Manager for WearCheck, Steven Lumley, who oversees the company's extensive training programme, emphasises that the courses are designed to be practical, current and immediately useful.

Steven Lumley, Technical Manager, WearCheck.

"For customers, our goal is that their newly trained employees add measurable operational gains, ensuring positive returns on investment in upskilling their maintenance crew."

Heavy industry in the Southern African region, including mining, manufacturing, power generation, transport and logistics, relies on rotating machinery and electrical assets that fail in predictable ways.

Shesby Chabaya, Head of operations at WearCheck Zimbabwe, conducts training for customers' teams there.

Translating analysis into action

Many crews excel at corrective tasks and heroic breakdown response but are less confident in the 'prevention toolkit': condition-based lubrication, oil sampling and interpretation, precision alignment and balancing, basic vibration screening, thermographic inspection, and the ability to translate instrument readings into action. Add to that a generation shift – with experienced artisans retiring and younger technicians stepping into responsibility quickly – and the skills gap widens. When basic skills are uneven, plants lean more heavily on OEM callouts and run-to-failure habits, driving cost and risk.

WearCheck has trained thousands of technicians, artisans and engineers across Africa in the fundamentals that keep assets healthy. Courses are built around real plant scenarios, live demonstrations and hands-on exercises. Delegates graduate with real know-how they can apply on the next shift.

Lumley makes the point that continual advances in condition monitoring and reliability practice mean teams need structured, ongoing training. And she adds that WearCheck's programme design is anchored in practical, applied material that is constantly revised and updated in line with the latest developments in technology.

To ensure delegates gain maximum value from completing the training, many of WearCheck's courses finish with a competency-based assessment, which must be completed before a certificate is issued. Many of the courses also carry CPD (continuing professional development) points, giving those who complete the training successfully, and their employer, external recognition.

WearCheck's courses range from general oil analysis to transformer maintenance, thermography and many other reliability solutions services. Courses are presented by WearCheck experts who are skilled in each field.

The company has run oil analysis courses for more than 20 years and since 2015, it has been accredited to run Mobius courses. (The Mobius Institute is a global organisation that provides training and certification in reliability improvement, condition monitoring, and precision maintenance.)

Critical maintenance programmes

Oil analysis

Oil analysis is the gateway condition monitoring discipline for many plants because it touches lubrication, contamination control and wear detection in one system. Courses start with fundamentals – tribology basics, lubricant types and functions – and move through sampling technique (the most common source of error), contamination control, and the interpretation of lab reports.

Vibration analysis and precision maintance (Mobius courses)

Mechanical reliability is won or lost at installation. Precision alignment, balancing and basic vibration know-how reduce destructive forces before they start. WearCheck delivers Mobius-aligned training from Categories I to III, plus short, focused modules in precision shaft alignment and balancing.

Infra-red thermography

Heat is a universal language. Thermographic inspection helps maintenance teams find overloaded electrical connections, failing bearings, fluid blockages and insulation breakdown, without having to dismantle equipment.

Transformer oil testing and electrical asset health

For plants with their own substations or distributed generation, transformer reliability is essential. WearCheck's transformer oil training demystifies dissolved gas analysis (DGA), furan testing and moisture control.

Good habits increase uptime

Across multiple industries, the pattern is consistent: when crews adopt a few good habits, equipment uptime improves and costs stabilise. Lumley outlines below some typical improvements that customers attribute to training and follow-through.

- Cleaner oil, longer life. After sampling and contamination-control training, a mining customer tightened decanting practice and added simple breathers to

critical gearboxes. Within months, particle counts dropped a grade and water ingress events all but disappeared. Drain intervals returned to planned targets; and the need for a gearset replacement (which had persisted over some time) could be deferred to the next major shutdown.

- Fewer premature bearing failures. A cement plant sent its fitters to precision alignment and balancing training modules. The team changed its set-up routine (checking base flatness, correcting soft foot, measuring thermal growth, aligning to published tolerances). Over the next quarters, unplanned bearing replacements on several fans and conveyors fell sharply, and vibration alarms reduced to manageable levels.
- Better use of lab data. The operations team at a manufacturing plant wanted to move beyond 'red/green' oil reports. Maintenance personnel attended an interpretation course focused on trend analysis and common failure signatures. The maintenance team now reviews exceptions weekly, opens targeted work orders, and feeds findings back to the lubrication team. Where recurring wear metals on a set of gearboxes were noted, simple sealing and venting changes eliminated dirt ingestion.
- Reduced electrical risk. After the electrical team of a utilities company attended training, the customer introduced routine thermography. Early inspections found multiple hot connections in a switchboard feeding a high-criticality line. Repairs were scheduled in a short, planned outage – and the risk of an extended trip during peak demand was averted.
- Transformers monitored, not guessed. After training, the team from a plant with ageing transformers built a DGA (dissolved gas analysis) baseline and moisture-control plan. One unit showed rising acetylene and ethylene – a sign of potential arcing – and was taken out for investigation before catastrophic failure. In another unit a flagged moisture trend was managed with online drying, avoiding a costly replacement.

Lumley notes that these are not isolated 'hero' stories; they reflect the results obtained when technicians learn, through focused training, to see and measure the things that actually cause failures, and when supervisors build simple routines that make those measurements part of the working week.

The bottom line

There is nothing abstract about the skills gap in heavy industry; you can hear it in the rattle of a misaligned drive, see it in a milky sight glass, and count it in lost production hours. Closing that gap does not require expensive new technology. It requires disciplined, current, practical training that gives technicians the confidence to do the simple things right, consistently.

WearCheck's training offering is designed to do that. It empowers crews to prevent avoidable failures, extend asset life and make better decisions sooner. Plants that commit to this journey report cleaner systems, fewer urgent callouts, steadier uptime and a maintenance culture that values evidence over guesswork.

In conclusion, Lumley reiterates the words of Henry Ford, the engineering pioneer behind the automotive super brand: 'The only thing worse than training your employees and having them leave, is not training them, and having them stay.'

WearCheck runs training courses in different centres around South Africa and for customers across Southern Africa, in person or online, throughout the year, according to a scheduled calendar.

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

Staff from the Eurasian Resources Group (ERG), based in the DRC, attended training on lubrication, oil analysis and results interpretation, with WearCheck consultant Daan Burger.

Mohamed Hosseiny, Hitachi Energy Africa.

Protecting Africa's power systems

Electricity has become central to modern society. From water systems to telecommunications, finance, and transport, nearly every essential service now depends on reliable electrical power. Yet, as power systems become increasingly digitalised, decentralised, and interconnected, they are also becoming more exposed to climate-driven hazards, cyber threats, and physical sabotage. Looking at electricity security challenges globally, Hitachi Energy's view is that in Africa, where electricity systems are expanding and modernising, resilience is a necessity.

"We are entering a more complex risk environment," says Mohamed Hosseiny, Oversight Country Managing Director for Africa at Hitachi Energy. "Climate volatility, digitalisation and geopolitical instability are converging. Electricity security needs to evolve accordingly."

Climate volatility and infrastructure stress

Over the past five decades, weather-related disasters have increased in frequency and severity. Extreme heatwaves, floods, wildfires, and droughts are placing unprecedented strain on electricity infrastructure worldwide.

Africa is particularly vulnerable to climate variability. Prolonged droughts can constrain hydroelectric output. Extreme heat reduces thermal plant efficiency – and at the same time, increases electricity demand. Flooding can damage substations and transmission corridors.

Infrastructure built for historical climate conditions is increasingly exposed to new extremes. Electricity security in this context requires forward-looking planning. Climate-amplified hazard scenarios need to be integrated into investment decisions across generation, transmission and distribution networks.

"Resilience begins at the planning stage," says Hosseiny. "We cannot design tomorrow's grid based on yesterday's climate assumptions. Forward-looking hazard modelling should inform every major investment." Hardening infrastructure against extreme weather, reinforcing critical assets and diversifying generation portfolios are essential aspects of a resilience-driven strategy.

Increasing cyber-physical threats

As climate risks intensify, digitalisation introduces a parallel challenge. Modern electricity systems rely on advanced automation, remote monitoring, cloud platforms, and interconnected operational technology. These innovations enhance efficiency and visibility, but they also expand the attack surface.

Cyber sabotage can involve malware, data manipulation, or intrusion into IT systems. More concerning is cyber-physical exploitation, where digital access is used to cause real-world damage by manipulating control systems or switchgear.

Globally, cyberattacks on electricity utilities have risen sharply in recent years. Physical attacks and insider threats remain an additional concern. For Africa, strengthening cyber and physical security requires moving beyond compliance-driven approaches towards risk-based security postures.

"Security cannot be reduced to a checklist," Hosseiny emphasises. "We must align cyber and physical risk management with system-level priorities. That means defining acceptable risk, investing accordingly, and collaborating across the entire ecosystem." Such collaboration, including information sharing between utilities, regulators, technology providers and law enforcement, has become essential to prevent and respond to evolving threats.

Decentralisation as an advantage

Some of the same factors that expand risk also offer resilience benefits. Distributed generation, including rooftop solar, community-scale renewables and battery systems, can reduce reliance on large, centralised power plants.

In times of disruption, decentralised assets can maintain critical services even if parts of the grid are compromised. For Africa, where off-grid and mini-grid solutions are already part of the electrification landscape, decentralisation provides a powerful resilience lever.

However, distributed systems need to be integrated into broader grid operations carefully, to avoid instability and ensure coordinated response during disturbances. System flexibility, spanning demand optimisation, storage, interconnectors, and active grid management, is therefore central to modern electricity security.

Rapid recovery and institutional capacity

Resilience is not only about preventing disruption; it is also about recovering quickly when disruptions occur. Strategic reserves of critical components such as large transformers and mobile substations can shorten restoration times significantly.

Modern energy systems rely on advanced automation and interconnected operational technology.

Harmonised designs and mutual assistance frameworks between countries can further strengthen response capabilities. Equally critical is a skilled workforce, which requires ongoing development. Crisis response, restoration, and advanced grid management call for specialised expertise.

"Technology alone cannot guarantee resilience," says Hosseiny. "We need trained operators, clear procedures and strong institutional coordination. Investing in human capital is fundamental to electricity security." In many African markets, expanding technical training pipelines and strengthening institutional frameworks will be key enablers of long-term resilience.

Electricity security as national security

The convergence of climate hazards, cyber risk and physical vulnerability underscores a broader reality: electricity security is now a national security concern. As economies digitise and electrify, disruptions carry far-reaching economic and social consequences. Investor confidence, industrial productivity and public safety all depend on resilient power systems.

In Africa, countries have the opportunity to embed resilience, flexibility and risk-based security into grid expansion strategies today, to leapfrog legacy vulnerabilities and build modern, secure infrastructure. "Africa is building much of its future grid now," Hosseiny notes. "This gives us an opportunity to create systems that are secure and resilient by design. The decisions taken today will determine economic stability for decades."

The pace and sophistication of external threats are accelerating. Conventional energy policy approaches are no longer sufficient. Electricity should be recognised as a strategic asset and planned, governed, and protected accordingly.

Resilient infrastructure, diversified generation, advanced digital situational awareness and skilled human capital form the foundation of secure power systems. "In the 'Age of Electricity', resilience is key to sustainable growth," Hosseiny says.

For more information visit: www.HitachiEnergy.com

A new standard in portable DGA testing

When transformer health is in question, utilities need quick answers. Dissolved gas analysis (DGA) remains one of the most powerful tools for detecting early warning signs, but results are only valuable if they are accurate, delivered fast, and accessible in the field.

For years, the Doble Myrkos has set the standard for on-site DGA. With the launch of Myrkos 2, Doble has set the benchmark higher.

Steve Brauer, in Multi-Gas DGA, Condition Monitoring Division at Doble, says Myrkos 2 continues to deliver what utilities value most: lab-quality results in just minutes, and on the transformer site. Central to this accuracy is the Myrkos 2 ShakeTest™ method, a technique that extracts gas directly in the oil sampling vessel. By eliminating the transfer step required by other analysers, ShakeTest prevents gas loss and contamination, ensuring more reliable results.

Unlike infrared-based systems that can be skewed by alcohols, acids, or heavy hydrocarbons in the oil, Myrkos provides a portable gas chromatograph, the same trusted technology used by DGA laboratories worldwide. Each gas species is separated and measured individually, giving utilities confidence in the data even for older transformers with complex oil chemistry. And it works with all types of transformer liquid: mineral oils, silicone, and both natural and synthetic esters. Accuracy is ensured through daily calibration with NIST-traceable gas, a standard practice in leading labs. And with up to nine hours of autonomous battery life, Myrkos 2 is designed for a full day of testing in the field without interruption.

On top of its trusted accuracy, Myrkos 2 introduces several improvements that make it easier and more efficient to use in the field. A redesigned aluminium-alloy calibration gas cylinder extends shelf life from 18 months to 30 months (2.5 years), reducing replacement needs and lowering maintenance costs. The portable controller has been upgraded with a larger 14-inch display, making results easier to view and analyse on site.

Myrkos 2 is also more easily portable and durable. All tools, cables, and accessories fit into a weatherproof rollable case, facilitating transport across substations or between job sites. Improved cable management, a more accessible power switch, and clearly marked stowage for each accessory make set-up and take-down simpler and more intuitive. A reinforced mechanical design reduces the risk of damage in transport.

Ease of use extends into the software as well. The updated PPMreport4 platform introduces expanded acceptance criteria that simplify daily calibration while continuing to guide users through every step, from oil sampling to report generation. Together, these updates enable field teams to focus on making decisions, rather than troubleshooting equipment.

Myrkos 2 is claimed to be the most accurate portable dissolved gas analyser on the market.

Key features

The gas chromatography method used in Myrkos 2 provides laboratory-grade sensitivity and accuracy in the field, which infrared-based systems cannot easily match. Results are available in as little as two minutes, enabling quick, confident decisions without the delays of sending samples to a lab. For added diagnostic power, Myrkos 2 can also measure oxygen and nitrogen levels with a second ShakeTest sample.

Software support further enhances the user experience. PPMreport4 offers guided workflows and customisable reports. Included with Myrkos 2, MyrkosView and InsideView provide intuitive diagnostic tools that help engineers move from data to action. The test kit thus provides an integrated solution that, as well as producing accurate on-site DGA results, also makes them easy to interpret and share across teams.

With Myrkos 2, utilities have the accuracy and sensitivity they've come to expect together with enhanced portability, durability, and usability.

For more information visit: www.doble.com

Smart ICCP monitoring for safer tank storage

Cathodic protection (CP) is critical to combatting corrosion in oil and gas infrastructure. But how do you know if your impressed current cathodic protection (ICCP) system is performing when you don't have oversight of your bulk storage tanks? Ian Loudon, International Sales and Marketing Manager at remote monitoring specialist Omniflex, takes a closer look at CP systems in hazardous and hard-to-reach areas.

Remote monitoring can transform performance and safety in bulk fuel storage tanks.

Market research indicates that the fuel tank storage market is set to reach over USD 28 billion by 2032[1], driven by an increased need for storing fuel reserves locally in a volatile global oil and gas market. As world conflicts continue to put pressure on fuel supply chains, threats of corrosion to critical bulk tank storage facilities must be mitigated to improve efficiency, maintain environmental compliance and prioritise safety.

Traditionally, CP engineers have relied on physical inspections to assess tank corrosion – an inefficient, costly and unsafe practice. Where modern tank farms often span several kilometres and require frequent checks to satisfy reporting regulations, engineers face significant limitations to the oversight they can achieve.

Intrinsically safe CP

Bulk tank infrastructure benefits from impressed current cathodic protection (ICCP) because it prevents the tank base from corroding, which can't be seen or inspected easily. Often, tanks will be stored underground or submerged in water, and engineers only find out a system isn't working when there is a leak.

For tanks storing explosive fuels, the importance of having intrinsically safe CP systems cannot be overstated. A small leak is enough to create an ignition source for a catastrophic explosion, with huge safety and environmental ramifications.

In a best-case scenario, bulk tanks might deteriorate due to corrosion, causing a loss of critical assets in an already volatile oil and gas market. With the right technology in place to manage the CP system remotely, these risks can be mitigated, and productivity restored to the tank farm.

A solution for large-scale projects

ICCP systems are used to manage corrosion in bulk tanks, which is better for large scale projects. Unlike galvanic CP, which uses sacrificial anodes and is better for small, low-resistive environments, an ICCP system uses a forced current to maintain a bulk tank at -0.85 V.

The ability to control ICCP remotely has significant benefits for tank farms. Firstly, ICCP systems can be adjusted dynamically to account for changes in the conditions around the tank – factors such as soil dampness, acidity and resistivity. Secondly, remote monitoring using Omniflex's PowerView CP range reduces ongoing maintenance costs as it means tank farm operators don't need to inspect difficult-to-access systems physically.

Providing energy security

An ICCP solution was implemented in one of Africa's largest open-access Liquefied Petroleum Gas (LPG) import terminals. The facility, which allows vast amounts of LPG to be stored locally, boosting the region's energy security, benefits from automatic testing and results logging, and long-term cloud-based data storage.

Omniflex's PowerView CP also offers integrated regular status reports, remote testing like instant off, depolarisation and more. This makes it ideal for tank farm operators where they are facing tighter reporting regulations to ensure compliance.

Loudon emphasises that regardless of the CP system employed, it needs to be intrinsically safe. This is why alarm condition alerts are one of the most important aspects of remote monitoring. Where before engineers were relying on manual inspections to pick up faults, they can now receive alarm condition alerts via SMS or email 24/7. This provides them with reassurance and allows time-critical issues to be resolved quickly and safely.

Omniflex can assist customers with ICCP systems for bulk tanks and advise on remote monitoring of CP systems.

Reference

[1] https://www.zionmarketresearch.com/report/fuel-tank-market#:~:text=Description-,Description,the%20Fuel%20Tank%20Market%20industry

For more information visit: www.omniflex.com

Managing data and eliminating alarm overload

In most process plants the Distributed Control System (DCS), SCADA (Supervisory Control and Data Acquisition system), and Programmable Logic Controller (PLC) generate continuous process data. Alongside that, there is the Laboratory Information Management System (LIMS) data, quality records, maintenance logs, production figures, safety incidents, and layers of business metrics.

Individually, it all makes sense. Together, it becomes overwhelming.

Different systems. Different timelines. Different priorities.

Operators react to alarms. Engineers analyse trends. Management reviews KPIs. But no one sees everything at once.

PPCL (Process Plant Computing Limited), based in the UK and operating internationally, offers an alternative platform providing complete visibility of the entire operation in one graph.

From raw feed… through every stage of the process… to the final product, lab measurements and KPI targets. The figure below shows time variables on the left, process variables (PVs) in middle and quality measurements on the right (and more variables can be added if required). Not separated by systems. Not fragmented by departments. But connected – visually and operationally.

This view enables plant operators to:

- See how a small shift in process conditions impacts quality hours later
- Link maintenance issues directly to production losses
- Align operating decisions with business outcomes – in real time.

It means process engineers can stop chasing data and start understanding the whole system.

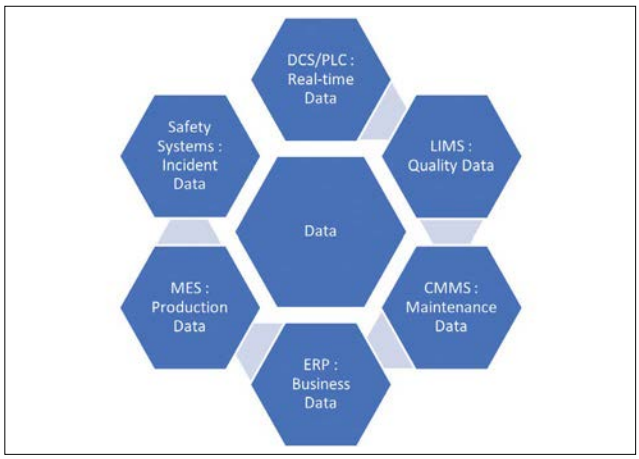
And it's not only for process engineers. When everything is connected:

- Finance can see the real drivers behind cost and margin
- Operations can optimise performance with clarity
- Maintenance can act before failures escalate
- HR can understand how people and performance interact.

This means the entire organisation is working from the same picture. That's the shift.

In a world full of data, the advantage is not always in having more; it is rather in bringing it all the together in a way that makes sense – and drives action.

As a process technology company with more than 30 years' experience in various industries like oil refining, LNG, petrochemicals, pharmaceuticals, FMCG, power generation (gas & coal), pulp & paper and more, PPCL has the technology to help customers manage their processes and understand the data they generate.



PPCL's CVE, or C Visual Explorer, is a visual multi-variable process analysis and modelling platform that offers a host of benefits.

With Geometric Process Control (GPC), customers stop guessing and start seeing the whole picture.

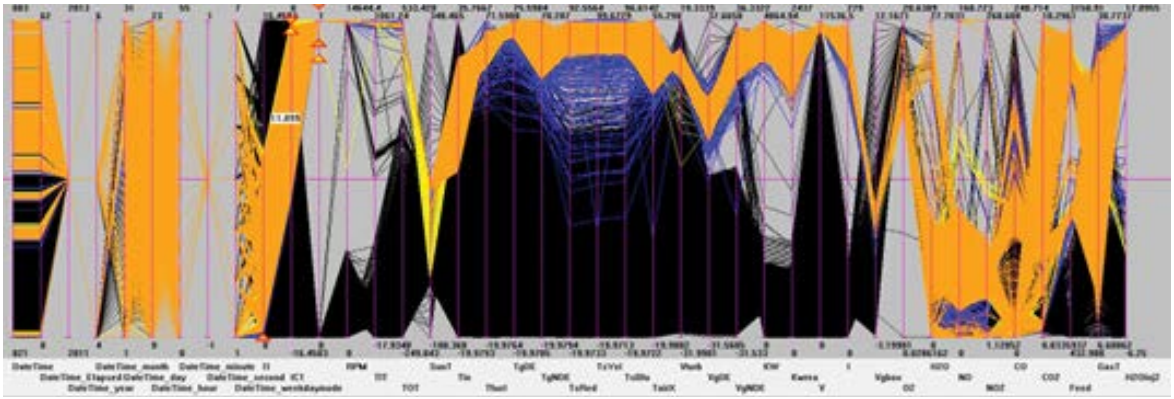
In CVE (C- Visual Explorer), users can visualise, analyse and improve more than 1 000 variables at a time. This provides the flexibility to skip the part of deciding the 'Key variables' and instead add the whole process data into one graph. CPM (C- Process Modeller) monitors a process 24/7 and visually updates all operating variables within the visualisation tool to keep the process in-line and trigger real-time alerts. Combining CVE and CPM, customers can manage the plant's ongoing performance with full operational insights, maximise performance output, meet KPIs and minimise safety risks.

With PPCL's patented and proven technology, customers have:

- Early warning fault detection
- Condition monitoring
- Multiphase and multi-batch control
- Process data optimisation
- Predictive alarming
- Problem solving
- Production reporting
- Alarm rationalisation
- Digital twin for operations
- Exploration of response surface formed from the results of DoE
- Faster formulation.

So, what would change in your organisation – if you could see everything?

For more information visit: ppcl.com



PPCL offers a single platform that provides complete visibility of the entire process in one graph.

Managing resources: Results-focused industrial water treatment

The onus is on businesses to manage their industrial water ecosystems carefully. In South Africa currently, water restrictions and unreliable supply are daily risks. Companies need to reassess their water sources: municipal, rainwater, borehole or river, to ensure that the incoming supply is suitable for its intended use and that it is being used efficiently. They also need to consider when water leaves the plant, should it be recycled for further use or treated prior to discharge?

Shaun Golding, CEO of G-Chem Aquacare.

CEO Shaun Golding and his team at industrial water treatment specialist G-Chem Aquacare highlight these as critical considerations in today's context of national water scarcity, ageing infrastructure and increasing regulatory pressure. "At G-Chem Aquacare, we help industries do more with less water, protect critical assets and support environmental compliance," Golding explains.

Dealing with industrial water

Collectively, the founders and shareholders of G-Chem Aquacare represent decades of hands-on experience in industrial water treatment, providing deep insight into the shifts and challenges within the current water treatment landscape.

Golding notes that many water treatment organisations have reduced investment in technical training, research and development. This has contributed to a broader industry shift to transactional chemical and equipment supply models – rather than integrated, results-driven water management partnerships.

In contrast G-Chem Aquacare offers a highly skilled, results-driven approach, prioritising long-term relationships built on technical accountability, operational understanding and trust.

This approach also enables effective client education, encouraging clients to play a part in the water treatment process, as success depends on commitment from both parties.

"Our founders recognised a growing gap in the provision of results-driven, technically accountable water treatment solutions which specifically meet our clients' needs. Too often, clients are sold products rather than client-driven solutions, with limited technical understanding of their processes, risks and long-term objectives.

"We invest in strong, committed and technically well-trained water technologists who understand our clients' operational needs, and are accountable for their water quality, efficiency and risk reduction," Golding says.

G-Chem Aquacare handles industrial water treatment across diverse applications.

Client-driven solutions

Since it was established in 2016, G-Chem Aquacare has evolved into a multi-regional industrial water treatment business servicing complex operations across South Africa.

Managing Director Kevin Naidoo outlines the company's key achievements, including long-term service partnerships with major industrial, manufacturing and processing clients, successful implementation of boiler, cooling, effluent and HVAC water-treatment programmes in high-risk environments and consistent performance in operations where uptime, compliance and reliability are critical.

"G-Chem Aquacare embraces practical, field-proven innovation which improves control, reduces risk, and delivers measurable outcomes. At G-Chem Aquacare, technology is implemented where it adds operational value, not for novelty.

"This includes the increased use of online monitoring and automation, adoption of modern treatment chemistries and the continuous refinement of technical standards across boiler, cooling and effluent systems," says Naidoo.

The company works closely with international technology partners and original equipment manufacturers (OEMs) aligning its solutions with global best practice, and using performance data to optimise water, energy and chemical efficiency.

It is also a member of the Association of Water Technologies (AWT), a leading international body representing water treatment professionals and companies. Golding emphasises the importance of staying aligned with global developments in industrial water treatment and maintaining connections with leading innovation markets such as the United States, China and India.

Across different sectors

G-Chem Aquacare focuses on four critical operational areas of water treatment where performance, risk and impact are highest: boiler water treatment, cooling water treatment, effluent water treatment and clarification water treatment.

"This focused approach enables deeper technical training, targeted innovation and disciplined service delivery, resulting in more reliable and sustainable outcomes for clients," Naidoo notes.

Within this framework, the company supports multiple industries, including food and beverage, dairy, poultry and fisheries, packaging and plastics, timber and wood processing, general manufacturing, automotive, pharmaceutical, sugar and agri-processing as well as commercial buildings and data centres, HVAC and refrigeration, steel, mining and mineral processing.

"Specialising in defined water treatment services across these industries, G-Chem Aquacare develops a deeper understanding of process-specific risks, regulatory requirements and operational priorities. This enables us to deliver practical, results-driven industrial programmes that protect assets, optimise water use, reduce downtime and support compliance," he adds.

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

Monitoring groundwater levels using LoRaWan technology

Left: Keller Data Logger ADT1.Right: Keller groundwater measuring installation.

Monitoring groundwater levels across large industrial sites is critical – but for German company *Salzgitter Flachstahl GmbH*, it became increasingly difficult to manage.

With an extensive works area and surrounding landfill sites requiring constant observation, groundwater levels were traditionally measured manually. This process was time-consuming and labour-intensive, and limited in scalability. As the number of required measuring points grew, the existing approach could no longer be sustained. This presented a clear need for a more efficient, reliable, and future-ready solution.

A smarter, scalable solution

To address this challenge, Salzgitter Digital Solutions GmbH was tasked with developing a fully automated and digital monitoring system using LoRaWAN technology. LoRaWAN (Long Range Wide Area Network) is a wireless communication protocol designed for long-distance, low-power data transmission, which makes it ideal for industrial monitoring.

In collaboration with KELLER Pressure, a solution was implemented using high-precision water level probes and the ADT1 LoRa transmission unit, which sends measurement data wirelessly over the LoRaWAN network. This setup enabled continuous, wireless groundwater monitoring across multiple sites.

The system delivers:

- Accurate, validated measurement data through high-quality sensors
- Seamless integration into the existing LoRaWAN network
- Real-time visibility of groundwater levels across all monitoring points.

Beyond basic measurements, the solution also captures critical diagnostic data, including battery voltage (amount of electrical energy remaining), temperature (internal system heat), humidity (moisture in the air around the system), and signal quality (strength and clarity of data transmission). This information provides early warnings for maintenance and helps ensure long-term reliability.

Built for reliability and efficiency

The ADT1 LoRa unit was designed with practicality in mind. Using standard AA batteries with a lifespan of up to five years, the system minimises maintenance requirements and supports continuous operation.

Data security was another key consideration. With encrypted LoRa (Long Range) communication, which transmits data wirelessly over long distances, and an integrated data logger, the system ensures that no critical data is lost, even during transmission interruptions.

Proven performance

Since its implementation, the automated groundwater monitoring system has been running reliably for over three years. What was once a labour-intensive and limiting process is now managed with a smart, scalable, and efficient solution, supporting better decision-making and long-term environmental compliance.

KELLER's equipment manufacturing team develops solutions tailored to its production department's requirements and meets its high internal standards of quality and precision. This has enabled the company to improve its products, process stability and efficiency continually over the past 50 years.

KELLER is represented in South Africa by Instrotech.

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

Measuring sites of the groundwater level on the extensive works premises and surrounding landfills.

Safety in NDT, asset inspection and testing

The Raysonics Industrial safety team celebrating their 2025 NOSCAR award.

Raysonics Industrial has recorded 6.5 million lost-time injury-free hours across its national operations, a significant safety achievement. This builds on the company's long-standing track record of health, safety and environmental (HSE) excellence which was most recently recognised in its 11th consecutive NOSCAR Award in September 2025, with over 6.4 million lost-time injury-free hours worked at that point.

For Raysonics Industrial – formerly DEKRA Industrial – achieving 6.5 million lost-time injury-free hours reflects continuity through a period of organisational transition and the strength of an embedded, measurable and independently-verified safety culture – which continues to evolve under the company's new brand identity.

Measurable, verifiable and sustained safety performance

The 6.5 million lost-time injury-free hours were recorded to January 2026, following a focused drive to maintain safety vigilance during traditionally high-risk periods in November, December and early January.

Lost-time injury-free performance is tracked internally through detailed monthly reporting, including hours worked, incidents, near-misses and root-cause investigations. All incidents are formally investigated, with findings consolidated into management reports.

Importantly, these internal metrics are subject to external verification through regular NOSA audits and ISO 45001:2018 surveillance audits. Auditors review incident registers, investigation records and hours worked – ensuring that performance claims are independently validated and aligned with international best practice.

"Nothing has changed in the way we manage safety," says Carina Kleinhans, Health Safety and Environment (HSE) Manager at Raysonics Industrial. "Our systems, our audits and our daily discipline remain the same. Our company name has changed, but our commitment has not. What we are doing is working, and this achievement proves it!"

A safety culture

Central to this consistent safety performance is the understanding that safety has no job description, and no hierarchy: "Safety does not recognise job titles," says Kleinhans. "It does not matter whether you are a managing director, an administrator or a technician on site. Safety does not differentiate. It is about people and their well-being."

Raysonics Industrial's national safety structure comprises five, dedicated safety practitioners nationwide, supported by SHE representatives in each of its branches. Weekly safety meetings, quarterly SHE committee forums and monthly reporting cycles ensure visibility and accountability at every level.

Beyond its operational safety framework, the company has developed a broad safety ecosystem. Employees can submit near misses and concerns via Microsoft Forms on their mobile phones, access digital inspection checklists through QR codes, and participate in safety campaigns which reinforce occupational and environmental ownership and accountability.

Initiatives such as quarterly safety campaigns, interactive workshops and a monthly Safety Ambassador recognition programme all encourage peer accountability and shared safety ownership.

"It is highly rewarding when employees begin to take personal ownership of their safety and that of their team members," says Paul Caswell, HSE Practitioner for Raysonics Industrial in the Western Cape. "For example, when someone rolls up a power cable because they recognise the risk – without being told to do so – that is when you know that the safety culture is real and has been adopted by your team. Our goal is to build a safety culture where people act because they believe in safety – not because someone is watching."

Strengthening client confidence

For Raysonics Industrial's clients, the significance of 6.5 million lost-time injury-free hours extends beyond a statistical target.

In high-risk sectors such as power generation, petrochemicals, oil and gas and heavy industry, contractor safety performance directly affects operational continuity, regulatory compliance and corporate reputation.

"If a subcontractor is unsafe, it impacts the client's records and their risk profile," Kleinhans notes. "Clients cannot afford additional risk. Our safety performance reassures them that we will not introduce hazards onto their sites. We are there to add value, not to create incidents."

Caswell adds that clients have increasingly shown interest in the company's digital safety tools and reporting mechanisms, recognising the value of its systems: "Strong safety processes and structures build trust," he says. "This in turn strengthens credibility and long-term relationships."

A platform for the future

For the Raysonics Industrial HSE team, the milestone is significant. "We are so proud to be part of this passionate and committed family," Kleinhans says, and Caswell adds: "When we see employees embracing safety as part of their daily behaviour – and when it becomes part of their DNA - that is when we know the effort is worthwhile."

The focus remains on continuous improvement. With 2026 themed 'Back to Basics', Raysonics Industrial is reinforcing its foundational safety principles and exploring new ways to streamline processes and deepen employee communications and engagement.

For the company, safety is a daily discipline, a way of life, a shared responsibility and a legacy – which continues to protect lives across every site and every sector it serves.

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

Reliable communication solutions for safety underground

Becker Mining SA – specialist in safety, energy distribution and communication solutions for the mining sector – continues to consolidate its position as a leading supplier of underground communication technologies. The company's technologically advanced Smartcom® VHF leaky feeder system is engineered for dependable performance in harsh mining environments.

"Designed to deliver multiple simultaneous voice and data radio channels with minimal intermodulation noise, the Smartcom system has proven its value in mining operations where safety and continuous communication are important," says Rick Jacobs, Senior General Manager: Mechanical, Becker Mining SA. "Mines are usually remote from major cities and established infrastructure, which makes access to communication specialists and services difficult. The robust Smartcom VHF leaky feeder system, which has been installed in mines globally and throughout Africa, is known for dependable performance and requires little maintenance.

"In the mining sector, reliable and clear communication systems are critical – especially in hazardous underground conditions. The Becker Smartcom VHF leaky feeder system incorporates advanced technological features that ensure reliability, flexibility and low maintenance needs, enhancing safety in a challenging industry. Seamless integration during system upgrades and replacements, as well as a low total cost of ownership, are also important factors.

"We understand that one standard system does not meet the specifications of every installation, which is why we design our leaky feeder systems to suit size of mine and customers' respective requirements and budgets constraints. The Smartcom VHF system's modular design allows easy tailoring to site-specific requirements. Amplifiers are available with manual and automatic gain control, and local or remote diagnostic functionality can be incorporated.

"The forward-pilot-based automatic gain mode eliminates the need for a return pilot signal, reducing system noise and the chance of communication failures, especially in the event of cable damage or pilot loss. This intelligent gain adjustment improves reliability and reduces operational overheads.

"Customers have conveyed their satisfaction with the system and this is attributed to ease of installation, minimal maintenance and low operating costs," says Jacobs. "For us these are key objectives when we design our products."

Smartcom VHF leaky feeders are designed to provide for a technology upgrade path – from low-cost basic installations to advanced configurations using various trunking technologies. The system supports various voice and data channels over extended distances. High RF gain amplifiers facilitate wider spacing between units – typically up to 500 metres – helping to reduce the number of components and installation costs.

The system's support for both analogue and digital radio repeaters ensures compatibility with existing infrastructure, while offering a migration path to more advanced digital systems. To enhance safety underground, a missing-person location system can be integrated via two-way radio, Bluetooth, LTE and Wi-Fi systems. Integration with SCADA and HMI systems further extends functionality into process control and automation, enabling remote control of ventilation fans, pump motors and cavitation systems.

Becker Mining's Smartcom VHF leaky feeder system provides reliable and clear communication, critical to safety and continuity in underground mining.

Remote diagnostics

Becker's RNG-AMP and BSC-AMP amplifiers can transmit system data, such as dc line voltage, downstream RF power and gain control settings, via a web interface to surface-based operators. This capability simplifies fault identification and reduces downtime by enabling technicians to locate and diagnose issues before physically entering the mine.

The system's in-line data capabilities, which form part of the upgrade path, include a 150 In-Line Data Module (UIDM) that connects to the leaky feeder network. This module ensures low mainline loss and provides a serial connection to an onboard serial (UART) device. The connected serial device is powered through the IDM, and one external antenna port is provided for tag reader functionality. The Smartcom 150 UIDM works in conjunction with the Surface Data Module VSDM-150WW# to provide an Ethernet connection at the head end.

Fit-for-purpose solutions

The availability of upgrade kits means Smartcom installations can be adapted to meet changing operational demands. The kits can be deployed on site without the need to return equipment for modification. Optional telemetry and tag reader modules can be added, offering extended capabilities such as resource tracking and environmental monitoring.

Becker Mining South Africa also offers a full range of power supplies to withstand challenging underground mining conditions. The entire system carries a two-year warranty covering components and workmanship.

The company's broader, comprehensive product portfolio complies with stringent government mining regulations and mining house specifications. Additionally, Becker Mining's highly skilled engineering and installation teams offer technical advisory, installation, repair and on-site maintenance services throughout Africa.

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

Skills and sustainability – enabling a cleaner petrochemical industry

In the petrochemical industry, sustainability has become a defining business priority. As the shift towards cleaner energy advances, companies are rethinking how they operate, from production processes to workforce planning. Environmental responsibility now defines compliance and influences competitiveness. Here, Pierre Bekker, Director, and Jacques Maritz, National Sales & Service Manager at Quyn International Outsourcing, outline how TES providers can help petrochemical companies meet changing demands

In the changing industry context, Temporary Employment Services (TES) providers have become valuable partners in supplying skilled, compliance-aware professionals who help companies meet new regulatory and technological requirements, as they maintain productivity.

Reshaping operational priorities

For petrochemical companies, stricter environmental standards, safety requirements, and operational controls have made compliance a core part of business performance. Preventing emissions breaches, spills, and environmental incidents is now as important as maintaining output.


Pierre Bekker and Jacques Maritz, Quyn International Outsourcing.

These changes have also impacted on the skills companies need. General trade experience alone is no longer enough. Organisations require qualified personnel who understand how to operate within sustainability-focused frameworks. Technical competence, regulatory awareness, and a strong safety culture have become essential.

As environmental regulations tighten and cleaner fuels become the norm, the demand for workers who understand the industry and the environmental risks associated with it continues to grow. Modern petrochemical plants rely on employees who can integrate emissions control, energy efficiency, and sustainable plant management into their daily work.

Specialised and cross-disciplinary roles

Modern petrochemical facilities are increasingly digitised and data-driven. Workers need to keep pace with advances in automation, energy management, and efficiency systems. Sustainability has become an integral aspect of every job description, and continuous learning is essential for career growth.

A boilermaker or technician without experience in new environmental and automation standards cannot easily move from a small workshop to a large production site. The pace of change in technology and regulation has widened the gap between traditional experience and the specialised expertise now required.

Understanding carbon capture, emissions monitoring, renewable energy integration, sustainable process design – and having the skills that support these processes – these are the attributes increasingly in demand. Companies are also hiring more health, safety, and environmental officers, and new roles such as sustainability officers are emerging to connect environmental strategy with daily operations.

Bridge the skills gaps

These new demands call for collaboration across engineering, operations, and compliance teams. Employees need to combine technical knowledge with an understanding of environmental impact and regulatory requirements. Continuous upskilling and adaptability have become essential to maintaining high standards of performance.

TES providers play a critical role in managing this workforce transformation. As industry specialists, they can supply trained, certified, and compliance-aware professionals who can be deployed quickly to meet operational and environmental standards. With experience across shutdowns, maintenance, and new plant builds, TES partners understand the technical demands of petrochemical operations.

Providing qualified personnel who can quickly get to grips with operations, they help companies maintain productivity as they meet evolving regulations. TES providers offer industry insight and workforce agility, ensuring talent aligns with a company's technical and sustainability objectives.

Partnerships enabling sustainability

By supplying skilled, ready-to-work professionals, TES partners enable petrochemical companies to meet compliance requirements, continue to operate efficiently, and adopt new technologies with minimal disruption. They help companies transform their workforce while building long-term capability. Flexible, knowledgeable teams support sustainability goals, reduce environmental risk, and help keep operations competitive in a changing industry.

Beyond filling immediate vacancies, TES partnerships can help companies prepare for future technologies, adapt to new standards, and maintain ongoing compliance, recognising that workforce transformation is as important as technological innovation. Sustainable operations depend on people who can implement and manage change effectively. A skilled and flexible workforce drives compliance, efficiency, and innovation.

For more information visit: quyn.co.za

In the petrochemical industry, new technologies and stricter environmental standards and compliance requirements are changing the skills needed.

Investing in young talent to develop artisans

ACTOM, one of South Africa's leading engineering and manufacturing groups, has long recognised that a strong technical skills pipeline is essential – for its own operations and for the future of the country's engineering sector. This led the company to take a more hands-on approach to skills development, identifying learners early – school-going youth with the interest and aptitude – and guiding them towards becoming qualified artisans or engineers.

From left: Jaco Opperman, Principal at Katlehong Engineering School, Mervyn Naidoo, Group CEO at ACTOM, Tony Mfubesi, and Sylvester Makamu, Group HR Executive Director, ACTOM.

Intervening earlier

ACTOM's involvement in education began with a maths and science tutoring programme for matric learners. "Although well intentioned, we discovered that by Grades 11 and 12, many learners had already dropped pure mathematics or physical science, limiting their access to technical careers and tertiary studies," says Sylvester Makamu, Group HR Executive Director at ACTOM.

This sparked a shift in strategy. "We decided to intervene earlier, at Grade 9, because this is when learners are still choosing subjects, gaining confidence, and deciding whether maths and science feel achievable. Connecting with them at this stage, we can prevent their disengagement from the subjects before it begins and keep future career pathways open."

A structured journey

The programme begins with close collaboration with schools. Each participating school identifies the top 20 learners who are then invited to join the ACTOM Maths and Science Tutoring Programme. Participants receive additional lessons, study guides, calculators, and ACTOM-branded kits, which signal that they are part of a special initiative.

Beyond material support, learners also get the opportunity to engage regularly with artisans, technicians, and engineers who provide mentorship and career guidance. "We maintain continuous engagement, checking that learners are staying on track and inspiring them with real-life examples of career success," Makamu notes.

After completing school, learners can pursue one of two paths: an artisan apprenticeship at ACTOM's training centre, or university studies for those aiming to become engineers. ACTOM covers costs for tuition, accommodation, and study materials, and during university holidays, learners gain practical experience at ACTOM factories. This approach ensures continuity from early intervention to career entry.

Real impact, real stories

The programme has already produced measurable results. "When we first engaged with Tony Mfubesi as a school student, he had little hope. Peer pressure and life circumstances distracted him from his goals, but with personal engagement and mentorship, he completed his matric, trained as an artisan, and is now employed full-time with ACTOM. He is incredibly loyal to the company because this programme has given him more than a job. It gave him a lifelong opportunity," says Makamu.

Mfubesi reflects on his journey. "Before joining ACTOM I struggled to afford school transport while supporting my unemployed mother; I even sold sweets to make ends meet. ACTOM gave me engineering skills, discipline and an employment opportunity. Today I can support my mother, and I'm grateful for the chance."

Beyond individual success stories, the initiative has strengthened the broader skills pipeline. ACTOM now benefits from a larger pool of qualified artisans and engineers and the wider industry sees more stability in critical technical roles. "When skilled employees are available and loyal, it reduces industry staff turnover and helps sustain growth," Makamu highlights.

Addressing broader challenges

The programme does not happen without challenges. Many learners come from socio-economically disadvantaged backgrounds, some from children-headed households. ACTOM addresses these obstacles to learning through personal engagement, career guidance, and practical interventions such as providing study materials and access to social support professionals.

For ACTOM, the programme is about more than workforce development. "A skilled company is an empowered company," Makamu says. "We train people to serve as employees but also for entrepreneurship. If we cannot employ them, they can still create opportunities for themselves. This changes the dynamics of job creation and contributes to a sustainable skills base for South Africa."

The ACTOM Maths and Science Tutoring Programme demonstrates the power of early and sustained intervention, led by people. Investing in learners from Grade 9 onwards, ACTOM is preparing its own talent pipeline and contributing to the development of artisans and engineers who will strengthen the country's industrial future.

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

Progressing South Africa's green hydrogen potential

South Africa's green hydrogen ambitions have been boosted by the recent environmental authorisation of the Coega Green Ammonia Project, following an Environmental and Social Impact Assessment (ESIA) conducted by SLR Consulting. Although there is still a lot of work to be done in terms of the cost of hydrogen and associated bankable off-take agreements, and policy uncertainty remains, this development brings South Africa a significant step closer to delivering more clean energy solutions and long-term regional benefits.

Stuart Heather-Clark, SLR Consulting.

The project, located near the Port of Ngqura in the Eastern Cape, is planned as one of the country's largest prospective infrastructure investments. Representing an investment of some $5.7 billion, the green ammonia plant is planned to be powered by 3.5 GW of renewable energy, with the potential to produce a million tonnes of green ammonia each year for export.

Leading the ESIA was Stuart Heather-Clark, SLR Consulting's Power Sector Lead for the Middle East and Africa, who highlights the significance of completing this stage of the project.

"This milestone demonstrates that large-scale green hydrogen developments can navigate complex environmental and regulatory pathways in South Africa and other countries," Heather-Clark says.

SLR Consulting has been involved in several gigawatt-scale green hydrogen and ammonia export projects across South Africa, Namibia, Angola, Tunisia, Egypt and the Middle East.

"The scale and complexity of these projects cannot be overstated," he says. "They share common characteristics, such as vast renewable energy arrays, desalination plants, electrolysers and ammonia synthesis facilities. Critical related infrastructure includes transmission corridors, substations, pipelines and dedicated port infrastructure."

From an environmental perspective, the footprint of the developments can span thousands of square kilometres and include multiple interacting components. Each element introduces distinct environmental and social considerations, often across terrestrial, coastal and marine ecosystems.

"When you combine scale with sensitive biodiversity and community contexts, the cumulative impacts become significant," says Heather-Clark. "Without strategic environmental planning, projects like these, which are important to the global energy transition, can present considerable biodiversity and social risks."

Environmental and social risk management must start early

A central lesson from SLR Consulting's experience is that environmental and social risk management must begin much earlier than in traditional ESIA timing, he says. In this way, situations where infrastructure footprints are poorly located at the planning stage can be avoided. For instance, if plans are made over areas with sensitive biodiversity, heritage sites or critical bird corridors, the project is likely to face appeals, costly redesign and inevitable delays."

Rather, he advocates early-stage environmental and social de-risking, by working alongside engineers and financiers during concept and pre-feasibility phases – and staying focused on risk assessment throughout the project lifecycle.

"As environmental and social practitioners, we are trained to see land differently," Heather-Clark says. "Where a flat piece of land near a substation might appear at first glance to be ideal for a solar power installation, it is essential to walk that site with an eye for aspects such as subsistence farming, cultural heritage sites, biodiversity sensitivities or community access routes."

He highlights that the mitigation hierarchy: avoid, minimise, restore and offset, forms the foundation of SLR Consulting's approach. By revising infrastructure placement before design is fixed, developers can avoid costly redesigns and regulatory delays later.

He also points out that green hydrogen projects – like other large industrial initiatives – are no longer assessed only against local environmental regulations. They must in addition satisfy specific environmental, social and governance (ESG) requirements imposed by international lenders. Banks and third-party financiers that provide debt and equity apply strict frameworks in their due diligence processes.

Large-scale green hydrogen and ammonia developments integrate complex infrastructure extending across renewable energy generation, desalination plants, electrolysers, transmission networks and export facilities.

"The landscape of regulations and standards has shifted substantially over the past two decades. Compliance now goes well beyond satisfying local regulators," he says. "Today, project sponsors must meet the expectations of multiple ESG advisors within lending institutions – focusing on issues from stakeholder engagement and biodiversity assessment to climate analysis and management systems. Human rights, gender-based violence and working conditions are also increasingly under scrutiny."

Among the key global frameworks with which green hydrogen projects must align are the Equator Principles and the International Finance Corporation's Performance Standards. He emphasises that water

Continued on page 31

Eskom shares its 2026 Winter Outlook

Eskom Group Chief Executive, Dan Marokane.

Eskom Group Executive for Generation, Bheki Nxumalo.

At a media briefing on 22 April 2026, Eskom presented its Winter Outlook for the period 1 April to 31 August 2026. The utility enters the 2026 winter season with a resilient power system, projecting a winter period of continued energy stability following the successful conclusion of the summer period, during which the national grid operated with ongoing sustained reliability. With the Generation Recovery Plan embedded in day to day operations, Eskom has moved beyond short-term recovery into a phase of stability and sustained energy security and aims to ensure that homes, businesses and industries remain powered through the peak winter months.

Eskom maintained a consistent energy supply of 98.9% through the past Financial Year (1 April 2025 to 31 March 2026), a major improvement from 9% two years ago, and this reflects the fundamental strengthening of generation performance, operational discipline and system resilience.

The winter outlook anticipates improved reliability and availability across the generation fleet. Additional capacity has been secured primarily through a 5.2 GW reduction in unplanned losses, supplemented by 1.1 GW from demand side management programmes, enabling Eskom to meet national demand this winter. On this basis, it has a surplus peak capacity of about 6 GW over the winter period.

These improvements allow Eskom to lower its base case assumption for unplanned outages to around 12 GW, compared to 13 GW in the previous winter outlook. Even under higher stress conditions, where unplanned losses approach 14 GW, the system is expected to remain resilient, and no load shedding is anticipated under the planned-for scenarios.

The 2026 Winter Outlook takes into account Eskom's expanded customer base. During FY2026, the utility completed 67 578 new household connections, with a further 2 119 households supplied through distributed energy resources (DERs) in the form of microgrids, which help reduce pressure on the national grid, particularly during peak periods. Despite supplying electricity to these additional customers compared to the previous winter, improved generation reliability, reduced unplanned losses, and strengthened operational buffers support a stable winter outlook, with sufficient capacity to meet expected demand.

Eskom Group Chief Executive, Dan Marokane, said: "Eskom, and South Africa, now have a stable electricity platform to operate and grow from. This enables us to integrate renewable energy sources as per the 2025 Integrated Resource Plan (IRP) for the maintenance of energy security in the future. Eskom is consciously assessing the new capacity build rate across all required technologies as this, along with other socio-economic conditions, will be key in determining the transition of the coal fired power stations."

"When our generation fleet was unstable, it was very difficult to embed cost savings Today, we have dramatically reduced diesel

Continued on page 32

Continued from page 30

availability is one of the aspects of hydrogen development in Africa most acutely assessed, especially for gigawatt-scale export projects.

Due to the large volumes of water required to produce hydrogen, green hydrogen projects invariably need to be located on the coastline – desalinating seawater to create a responsible water source that does not compete with drinking water requirements of local communities.

Smaller inland hydrogen projects, such as those targeting local fertiliser production, present different challenges, Heather-Clark points out. These may use alternative water sources such as treated mine water or sewage, but here too, cumulative basin impacts must be assessed carefully.

SLR Consulting highlights that early environmental and social planning is essential for managing the scale, complexity and potential impacts of gigawatt-scale green hydrogen projects.

For more information visit: www.slrconsulting.com

Continued from page 31

dependency and saved R26.9 billion compared to FY2023. These savings are a result of strengthened maintenance discipline and project delivery. Every megawatt we return contributes towards economic growth. The restoration of a consistent baseload electricity supply has further enabled Eskom to support industries in distress, particularly the ferrochrome industry, and to play a role in preventing job losses. The country has invested in Eskom, and we are continuously working to restore this national asset to full health; it is a resource that all citizens have supported," said Eskom Group Executive for Generation, Bheki Nxumalo.

Sustained performance improvements

Since March 2023, the stability progressively achieved is a direct outcome of the Generation Recovery Plan, which has delivered sustained, year-on-year improvements in system performance.

- Diesel expenditure reduced by R26.9 billion: Reduced reliance on open cycle gas turbine (OCGT) emergency peaking power resulted in diesel expenditure in FY2026 being at ~R6.4 billion, which is R26.9 billion lower than FY2023, and ~R10 billion lower year-on-year compared to FY2025.
- Energy Availability Factor (EAF) improved by ~10.8%: The EAF has improved from 54.55% in FY2023 to ~65.35% in FY2026, a gain of ~10.8%, reflecting stronger generation reliability and power system stability. EAF reached or exceeded 70% on more than 83 occasions during FY26.
- Unplanned losses, reduced by ~7.1 GW: Unplanned Capacity Loss Factor (UCLF) measuring unplanned losses, was reduced by ~7.1 GW, declining from 16.5 GW to ~9.1 GW as at 31 March 2026, a reduction exceeding one and a half times the capacity of Kusile Power Station.
- Planned maintenance increased, averaging 5.4 GW: Planned maintenance increasing from an average of 4.7 GW in FY2023 to peaks of around 8.0 GW, with an annual average of 5.4 GW in FY2026, strengthening long term plant reliability while temporarily reducing available capacity.

Together, these improvements supported a period (as at 22 April 2026) of 341 consecutive days without loadshedding.

Marokane also spoke of Eskom's progress in strengthening its financial, governance and institutional capabilities – and he looked to the path ahead in terms of decisions to be made for energy security and the utility's transition to Net Zero.

Financial, governance and institutional strengthening

Sustained operational improvements and financial discipline resulted in Standard & Poor's Global Ratings upgrading Eskom's credit rating for the first time in over a decade. Eskom also recorded a 2.1% year on year improvement in pre tax profit and a 1.6% improvement in EBITDA in FY2026, reflecting enhanced operational efficiency and cost discipline (subject to the finalisation of the audit).

The Eskom Board has been reconstituted with skilled professionals, ensuring continuity as well as strengthened technical, financial and governance expertise.

The utility was also recognised as a Top Employer for the second consecutive year, reflecting Eskom's commitment to employee development, building capability and organisational stability.

Energy security and the path ahead

Since the Summer Outlook for power system presented on 5 September 2025, the Integrated Resource Plan (IRP) 2025 was gazetted on 28 October 2025 by the Minister of Electricity and Energy, providing updated policy direction on the optimal electricity supply mix and the timing of new generation capacity.

In line with this policy framework, Eskom's approach remains focused and it continues to apply a rigorous and evidence based assessment to determine whether planned new generation capacity will be delivered within the required timeframes to support the orderly shutdown, repowering, and repurposing of the five older coal fired power stations, as earmarked, in line with security of supply and just energy transition considerations. Eskom expects to take this decision by around Quarter 2 FY2027 (between 01 July 2026 and 30 September 2026).

The objective is to ensure security of supply is maintained, the gains achieved to date are sustained, and the critical capacity to support economic growth is protected to enable long-term investment decisions by business to be supported.

Any delays in new capacity delivery present a critical risk to supply adequacy between 2029 and 2030, as confirmed by the Medium Term System Adequacy Outlook 2025 conducted by the National Transmission Company South Africa (NTCSA).

Managing the transition to Net Zero

Eskom has consistently maintained that the pathway to net zero is complex and must be technology led. IRP 2025 provides for the development of a clean coal technologies demonstration plant by 2030. In line with this policy position, Eskom, in collaboration with key research and industry partners, intends to develop a High Efficiency, Low Emissions (HELE) demonstration plant to assess cost competitiveness while supporting the responsible and transitional use of coal.

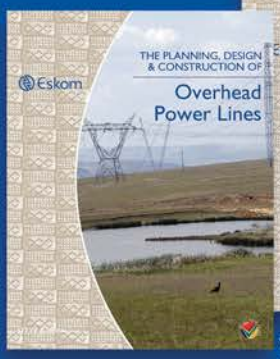
It is pursuing a portfolio based approach to emissions reduction, with its research and development division demonstrating encouraging progress in direct sorbent injection (DSI) trials and ammonia co firing. These technologies offer potentially lower cost emissions reduction pathways compared to conventional flue gas desulphurisation, supporting system reliability and security of supply.

At the briefing, further inputs from Agnes Mlambo, Acting Group Executive for Distribution, and Monde Bala, CEO of NTCSA outlined the progress made in distribution and transmission – and the challenges ahead.

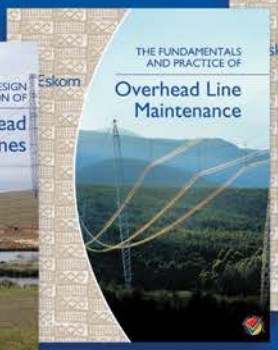
For more information visit: www.eskom.co.za

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.

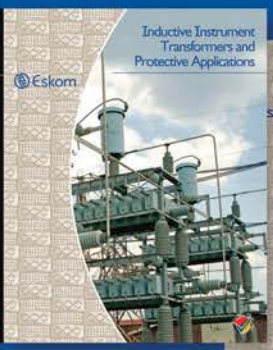


Volume I: The Planning, Design and Construction of Overhead Power Lines



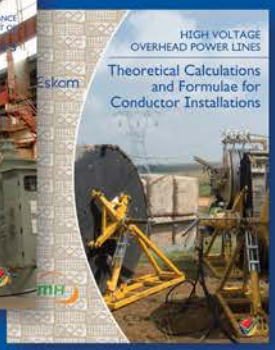
Volume 2: The Fundamentals and Practice of Overhead Line Maintenance

Volume 3: The Practical Guide to Outdoor High Voltage Insulators

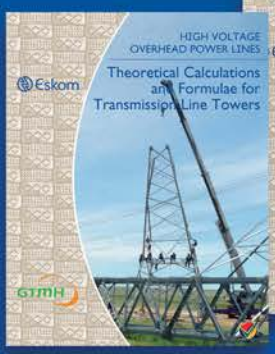


Volume 4: Inductive Instrument Transformers and Protective Applications

Volume 5: Theory, Design, Maintenance and Life Management of Power Transformers



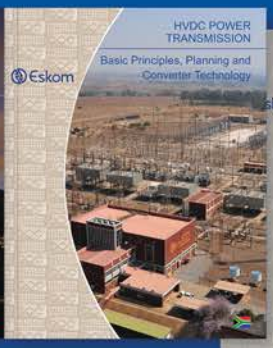
Volume 6 (Part 1): High Voltage Overhead Power Lines: Theoretical Calculations and Formulae for Conductor Installations



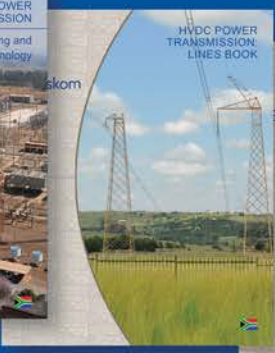
Volume 6 (Part 2): High Voltage Overhead Power Lines: Theoretical Calculations and Formulae for Transmission Line Towers

Volume 7: Corona in Transmission Systems: Theory, Design and Performance

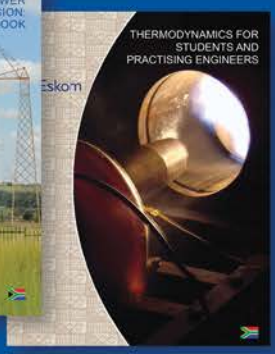
Volume 8: Power Quality in Electrical Power Systems: A Holistic Approach



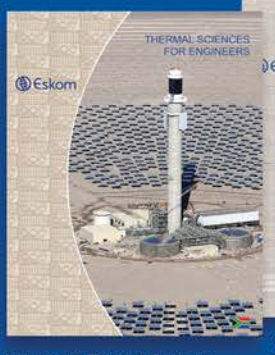
Volume 9 (Part 1): HVDC Power Transmission: Basic Principles, Planning and Converter Technology



Volume 9 (Part 2): HVDC Power Transmission: Lines Book

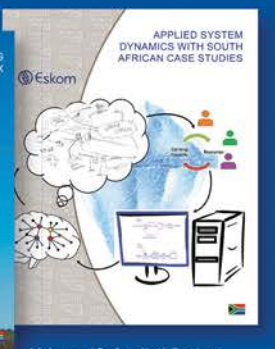


Volume 10: Thermodynamics for Students and Practising Engineers



Volume 11: Thermal Sciences for Engineers

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.

Contact: Sanjeev Bisnath
Tel +27 11 629 5072 Email: sanjeev.bisnath@eskom.co.za

Visit our website: http://www.eskom.co.za/AboutElectricity/EskomPowerSeries/Pages/Our_Products.aspx

Issued by Research, Testing and Development (Innovation Circuit) • Eskom Holdings SOC Ltd Reg No 2002/015527/30

INDUCTIVE SENSORS

The same sensors. The same job. The same reliability

Inductive sensors from ifm are indispensable for industrial automation, offering non-contact detection of ferrous metal targets without wear and tear. Compared to mechanical switches, they provide almost ideal conditions: high switching frequencies, accuracy, and long service life. With their insensitivity to vibration, dust, and moisture, they ensure reliable performance even in harsh environments.

Thanks to a wide operating temperature range and high protection ratings, these sensors deliver dependable proximity sensing across diverse applications. For example; extensive use in industrial automation, robotics, assembly lines, conveyor systems, and packing machinery.

ifm – close to you!

+27 12 450 0400
www.ifm.com/za