07/2025

ELECTRICITY + CONTROL

FEATURES:
Control systems + automation
Energy management + energy efficiency
Measurement + instrumentation
Safety of plant, equipment + people

POWER SECURED

SINGLE AND TREFOIL CABLE CLEATS

- Used to restrain single and trefoil cables onto cable ladder, tray or strut systems.
- Corrosion resistant non-magnetic 316 Stainless Steel.
- UV Resistant LSOH Polymeric Liners.
- Wide range 13mm to 128mm.
- Accessible clamping bolt allows easy tightening with a single tool.
- Open hinge system allows easy positioning of cables.
- Resistance to mechanical forces up to 180 kA.
- Tested and Certified to IEC 61914.

CCG CABLE TERMINATIONS
CABLE CLEATS
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CROWN PUBLICATIONS

A pluggable system solution for control cabinet-free automation: The MX-System

www.beckhoff.com/mx-system

Beckhoff will be showcasing our comprehensive range of EtherCAT-based control technologies at the KwaZulu-Natal Industrial Technology Exhibition 2025. Visit us to explore the latest innovations in industrial PCs, I/O and fieldbus components, drive technology, and automation software. Our New Automation Technology stands for universal and industry-independent control and automation solutions that are used worldwide in a large variety of different applications, ranging from CNC-controlled machine tools to intelligent building control.

We look forward to seeing you at the Durban Exhibition Centre, KZN, Stand C14 from 22-24 July.

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New Automation Technology **BECKHOFF**

CCG cable glands and cable cleats were chosen for South Africa's biggest solar battery storage system, the Kenhardt hybrid solar and battery energy storage facility in the Northern Cape.
(Read more on page 3.)

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An uphill climb

The other day I had a meeting with some colleagues, and the topic in discussion was 'how did we get to the middle of the year so fast?'

Time is indeed flashing by, and an observation from the meeting was that it is by no means downhill from here to the end. It is likely to be uphill all the way!

And uphill it certainly is for our industry: it is very hard not to be alarmed by the contraction in the manufacturing industry in South Africa – and in the mining industry. There is little doubt that two factors seem to be ganging up against progress – one being the policy environment (and often the lack of stability in that environment), which can probably be described as resulting in some unintended consequences now and again; and the other, of course, has been the unreliable power system.

To some extent we have seen the walking back of some policies – here, the ability to be pragmatic is critical, especially from very principled politicians. We know it can be hard.

On the second front, Eskom seems to be getting back on its feet – recovering from disruptions that were not all of its own making, but with a policy environment guiding the re-capitalisation of our transmission and generation capacity.

Again, some good has emerged with regard to the flourishing of independent power producers, and the restructuring of the transmission company. These are positive, if to some extent unplanned, steps.

However, there are some big red flashing lights, and I am sure I have alluded to these previously. The first is the challenges faced by municipal distribution entities – and particularly in their infrastructure needed to distribute electrical energy safely; and the second is the water supply networks throughout the country.

I have little doubt that everyone reading this would have been faced with power outages this year that could not be traced back to load shedding – but rather to problems on local distribution networks.

Absurd as it may seem, it is hard to see any residential property development where new houses are going up, or where extensions are being planned, where folk are not finding a way to build water storage into their plans!

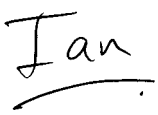
In the residential context it has become a lived reality to do without electricity 24/7. And generally folk are able to cope. But without water, life becomes far more difficult to manage.

The warning is that, in the context of our industry, we need to continue to be vigilant against power outages; and we need to figure out how to operate when water supply is interrupted – often for a few days in a row.

That will be the next challenge.

If we view these as challenges, then of course we can deal with them.

Why are we in this predicament? Well, that is another discussion altogether!



Ian Jandrell

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

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REGULARS

The cable cleats chosen for SA's first hybrid solar battery project

CCG Cable Glands and Cable Cleats are installed on South Africa's biggest solar battery storage system, the Kenhardt hybrid solar and battery energy storage facility in the Northern Cape.

The facility boasts a combined installed solar capacity of 540 MW from three plants, and its massive battery system can output up to 225 MW of power. With a 1 140 MWh capacity, the battery can supply 150 MW of dispatchable power consistently between 05:00 and 21:30 throughout the year.

The project was one of the world's first and largest hybrid solar and battery storage facilities built. Construction of the Kenhardt hybrid facility started in July 2022 and included the installation of almost 1 million PV modules. At the peak of construction, the site employed 2 600 workers. The entire hybrid facility spans 879 hectares and extends 10 km from north to south.

CCG supplied all the cable glands and cable cleats for the 9 000 kilometres of cabling (equivalent to the distance between South Africa and Norway).

Of critical importance was the use of CCG's trefoil cleats for securing the single core cables linking the transformers to the battery rooms.

CCG's range of trefoil cleats was used on the entire MV cable system and the collector runs, which were divided into 6 x Spur-feeders and two Mini-sub feeders. Cables used in each feeder were:

- 500 mmsq 1C AL XLPE MDPE Unarmoured Copper wire screen cable 19/33 kV.
- 300 mmsq 1C AL XLPE MDPE Unarmoured Copper wire screen cable 19/33 kV.
- 185 mmsq 1C AL XLPE MDPE Unarmoured Copper wire screen cable 19/33 kV.
- 150 mmsq 1C AL XLPE MDPE Unarmoured Copper wire screen cable 19/33 kV.

The international standard governing cable cleats used in electrical installations is IEC 61914:2021. In this standard, Cable Cleats are defined as "devices designed to provide securing of cables when installed at intervals along the length of the cables".

Cable cleats are designed to ensure that cables are fixed, supported, and routed in a manner that provides safe operation and reduces the risk of damage or injury in the event of a short circuit fault, emergency, or accident. Improper clamping of cables can result in loss through unnecessary downtime or even injury and death.

CCG's range of single and trefoil cleats are designed to restrain single or trefoil cables onto ladder tray or strut systems. They are manufactured from corrosion resistant, magnetic free, 316 stainless steel with LSOH and UV protected polymeric linings for cable protection. They have an open-hinge single-bolt fastening system allowing for ease of installation for a wide range of cables from 13 mm to 128 mm.

CCG's cleats are designed to withstand mechanical forces caused by fault currents of up to 180 kA.

The battery section of Scatec's 540 MW/1 140 MWh Kenhardt hybrid plant.

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Visit: www.ccgcablegland.co.za

PC-based control opens possibilities in pod packaging machines

For TME, a machine builder specialising in the packaging of powdered foods, Beckhoff was the obvious choice of system supplier: Beckhoff PC-based control technology offers multiple opportunities with regard to the performance and innovative capacity – in terms of flexibility, scalability, and openness – of its packaging machines. In this report, Stefan Ziegler of Beckhoff Automation notes that this is particularly evident in the latest Cialdy Evo machine series.

Founded in Fidenza, Italy, in 1982, TME Packaging Solutions is known around the world for its packaging solutions, especially for powdered foods such as coffee in capsules and pods. Alice Magnani, Head of HR and Marketing, and member of the founding family's second generation, says, "TME was one of the first companies to produce packaging lines for single-dose products. It is currently focusing on technologies for sustainable packaging." TME's export share of over 80% reflects the company's standing on an international scale, and its reliability and ability to innovate, which is necessary in the face of tough international competition.

With the Cialdy Evo, TME has developed a compact packaging machine for coffee, barley, tea, and herbal teas in sealed paper filter pods in single-portion bags. The machine precisely dispenses and fills up to 200 pods per minute and the pods are then sealed with the integrated sealing unit.

Andrea Zuccheri, who is responsible for software engineering and automation at TME, highlights: "The special thing about this packaging machine is that the packaging process takes place around the pod that has just been formed." In addition to higher productivity, the integration of the packaging and sealing process offers further advantages such as a smaller footprint of just 10 m^2. The compact automation components from Beckhoff also play a part.

All disciplines combined in one system

"We're thrilled about PC-based control as an automation solution, which is why we have fully automated our machines with Beckhoff technology," says Zuccheri. TME has implemented the entire range of Beckhoff components, from CX series Embedded PCs and CP-Link 4 remote control panels to numerous EtherCAT Terminals, AX5000 servo drives, and AM8000 servomotors with One Cable Technology (OCT). He adds: "PC-based control ensures a clear control architecture, saves space in the machine, and reduces installation, wiring, and maintenance work." What's more, EtherCAT ensures fast

© TME

PC-based control enabled TME to increase the output of the Cialdy EVO packaging machine to 200 individual pods per minute.

© Beckhoff

AX5000 servo drives control the AM8000 servomotors precisely.

and synchronous communication with all components.

A further advantage is that several applications can be integrated into a single control system, including PLC and motion control, visualisation and vision, as well as external applications such as the management of additional devices. For example, users can access the labeller integrated via EtherCAT in the control panel using a browser to set the parameters for labelling.

Innovation unlimited

The decision in favour of PC-based control was also based on the continual innovations and the resulting development potential that Beckhoff offers machine builders like TME. "PC-based control offers endless possibilities in the design phase. If we have an idea, we're certain that we'll be able to implement it," says Zuccheri. The system-integrated approach also makes it possible to divide scarce personnel resources across the various machine series. This has enabled TME to reduce the overall design, development, and testing times for its machines.

"You can't build flexible and truly open machines today without using a PC-based architecture," Zuccheri states, describing the paradigm of Industry 4.0. With PC-based control, it is possible to connect the machine to the Internet, communicate with other machines or devices on a production line and, if required, manage devices and systems from other manufacturers. All this with a standardised, scalable solution that can be upgraded to the latest available PC technology or a more powerful CPU at any time – without having to adapt the application. This is a great advantage in the design phase, during commissioning, or when servicing.

Another favourable consideration Zuccheri notes is that the TwinCAT development environment is free of charge, which is not the case with all software platforms. "Our technicians can always access the complete development environment on their laptops, which means they can carry out upgrades or software reconfigurations at our customers' premises at any time." In the event of acute faults, the end customer can install TwinCAT on a local computer and connect to the system within a few minutes. Using remote maintenance, the service technician can then search for and rectify the fault. "During the Covid-19 pandemic, our support team was able to carry out commissioning and maintenance tasks on systems that were thousands of kilometres away," adds Magnani.

Investing in sustainability

According to the machine builder, Beckhoff as a system supplier optimises purchasing management and accelerates

© Beckhoff

The One Cable Technology connection technology for the AM8000 servomotors speeds up installation and saves valuable space.

© Beckhoff

For the Cialdy EVO packaging machine, TME uses a CX5130 Embedded PC with numerous EtherCAT Terminals (right) and the CU8802 CP-Link 4 transmitter box (left) for communication with the control panel.

© Beckhoff

The openness of PC-based control and EtherCAT makes it possible to configure third-party devices such as a labeller via the CP3916 Control Panel.

the implementation of innovations with its product developments. TME is currently focusing on sustainability, in terms of reducing energy consumption and processing environmentally friendly materials. "Our upcoming machine series will be more modular and open for integration – and will come with an app for monitoring," Zuccheri says.

For more information visit: www.beckhoff.com

Machine upgrade to advance paper production operations

ABB will upgrade one of Neopak's paper machines with the latest distributed control system to enhance productivity and quality. [Photo credit: Neopak]

Neopak, a leading manufacturer of containerboard and paper products, has renewed its partnership with global technology company ABB, to upgrade the existing automation system at its Rosslyn Paper Mill in Pretoria, South Africa. At the mill, Neopak produces a variety of paper grades, including high-performance recycled liner and fluting, paper bags, core board, and plasterboard – essential materials for local industry applications such as building hardware, converters, and corrugators for packaging.

ABB will provide its latest ABB Ability™ System® 800xA distributed control system (DCS) for the mill's Paper Machine 3 (PM3). The existing system, which includes the ABB Quality Control System (QCS), a current ABB DCS, and variable speed drives, will be upgraded to leverage new advances in technologies and digital integration. The upgrade will assist Neopak to achieve optimal efficiency, productivity, and consistency through smart manufacturing.

Since its construction between 2007 and 2009, Neopak's PM3 has been operational for over 15 years. Recent process adjustments have boosted production to around 85 000 tonnes per year. With the further upgrade by ABB, Neopak expects to improve production efficiency and product quality significantly. This will enable it to meet rising market demand for essential materials with the highest standards of quality and sustainability.

Working towards future digital operations, Neopak will aim for advanced process control (APC), cybersecurity, and increased accuracy and efficiency across the entire machine and process. ABB has been tasked with defining a strategic digital roadmap for Neopak to facilitate a phased implementation of industry-leading digital solutions tailored for the pulp and paper sector. These will include enhanced cybersecurity and advanced process control (APC). Designed for peak performance, the ABB Ability System 800xA DCS will empower Neopak to adopt sophisticated control strategies and automation techniques, to support long-term operational efficiency.

Nitesh Singh, Operational Director at Neopak, said: "ABB is a champion for the South African pulp and paper industry and a trusted partner in our business, consistently delivering solutions that expand the boundaries of what's possible. Expanding our partnership with them is a natural step towards achieving our digitalisation goals. Their digital toolkit, complemented by extensive industry expertise, is helping us unlock smart manufacturing at Neopak."

Arvin Ramjee, Account Manager, ABB Pulp and Paper, South Africa, said: "We believe it is important to support Neopak in the next stages of its journey towards smart manufacturing. This project demonstrates ABB's commitment to supporting manufacturers globally in achieving their digitalisation objectives and optimising operations for sustained success."

System 800xA integrates with various process components, streamlining operations and optimising production schedules. This, along with the critical next stages of Neopak's digital transformation journey set to begin this year, will result in increased efficiency and throughput for the manufacturer as well as significant improvements in yield and paper quality. Additionally, the APC capabilities enable more precise management of the paper machine, leading to reduced waste. The system facilitates streamlined operations through a centralised platform, simplifying process monitoring and control for operators. This enables them to make informed decisions and respond quickly to process variations.

The upgraded process controls and automation strategies will position Neopak for long-term success and provide the flexibility to integrate ABB's digital solutions for future optimisation.

Project commissioning is expected to be completed in Q3 2025.

For more information visit: www.abb.com

For Neopak, production will benefit from digital solutions, including advanced process control and cybersecurity. [Photo credit: Neopak]

Lightweight energy chain for simple gliding applications

Energy chain specialist, igus, has introduced its new 'glide-chain' which has been developed specifically for gliding applications with travels of up to 30 m, as is the case with indoor cranes, for example. Its slim design enables cost savings of 30 to 40%.

Energy chains made of high-performance plastics are in use all over the world. They are intended primarily to guide cables reliably on indoor cranes used in production halls, as well as other applications. The new, cost-effective and lightweight chain developed for simple gliding applications, glide chain G4.42, is characterised by its extra-large sliding surfaces and specific material, which is only used where it is needed for sliding movements. Due to this innovative design, the G4.42 is up to 25% lighter than standard

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Automation is advancing SA's rail network

Rail, ports and logistics are a key focus in South Africa's multibillion rand planned infrastructure build – and ACTOM is one of the engineering companies that keeps the country's rail networks running. With more than 120 years of experience, ACTOM has a strong footprint in rail, supporting both modernisation and maintenance projects across South Africa. Its work with key clients like Transnet and PRASA reflects a broader effort to ensure continuity in rail services while adapting to new technologies and challenges.

Balancing continuity and change

"In many ways, we're helping to bridge South Africa's rail past and its future," says Nqobile Mthembu, Business Development Manager at ACTOM. "Much of the country's rail infrastructure still relies on older systems, but the pressure is on for South Africa to upgrade and automate. That transition needs to be managed carefully."

In KwaZulu-Natal, ACTOM is assisting with the refurbishment of legacy relay-based interlocking systems, a key part of the signalling infrastructure. In other parts of the country, it is involved in modernising rail yard automation systems for Transnet, improving safety and operational efficiency.

ACTOM plays a critical role in supporting both in-house and third-party legacy technologies, drawing on its experience as an original equipment manufacturer (OEM). This capability enables the company to service and maintain aging infrastructure and lay the groundwork for modernisation, to ensure that older systems remain functional and safe as new technologies are phased in.

"We are installing new equipment, and our cradle-to-grave operational model means we stay involved throughout the system lifecycle, providing the support needed to keep things running and to ease the shift to more advanced technologies."

Cross-cutting industry expertise

ACTOM's work in the rail sector brings together several business units within the group, each contributing to different parts of the network.

- Signalling systems (ACTOM Signalling): currently focused on upgrading relay-based systems, particularly in PRASA's KZN operations.
- High Voltage Equipment (HVE): produces components like disconnectors, circuit breakers, and instrument transformers.
- Smart technologies: offers substation automation, smart metering, and battery backup systems that help improve energy resilience – a growing concern in the context of power outages and cable theft.
- Rotating machinery and traction motors: ACTOM subsidiaries LH Marthinusen and Reid & Mitchell support the repair and supply of key electromechanical components used across freight and passenger rail.
- Vibration management: Arnot Vibration Solutions contributes technology that enhances locomotive reliability and passenger comfort.

Maintenance is also an important focus for ACTOM. The company's after-sales support and proactive service models help rail clients achieve up to a 30% reduction in downtime. This in turn results in significant savings that lower the total cost of ownership of electromechanical equipment and improve overall operational efficiency.

One of ACTOM's key advantages is its local reach. With service hubs and factories across the country, the company can respond quickly to clients' needs – often dispatching technical support teams in less than two hours.

"Our nationwide footprint means we're not flying in support from elsewhere," Mthembu highlights "We are embedded in the areas we serve, and that's essential when it comes to reducing downtime on critical infrastructure."

Key risks in the rail sector

She adds: "There is no doubt that security and sustained funding are major challenges. We've seen many instances where progress is rolled back by vandalism or delays in key upgrades. There's a real need for coordinated investment – not only in equipment, but also in protecting what's already there."

Mthembu says that while companies like ACTOM are ready and able to support rail revitalisation with local manufacturing and technical expertise, lasting improvements will require long-term commitment from all stakeholders.

"Government, operators, and private sector partners need to work together to create a stable environment for rail to thrive. If we can secure the infrastructure and maintain consistent investment, rail can once again become the backbone of affordable, sustainable transport in South Africa."

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

Upgrading and automating South Africa's rail infrastructure requires a careful balance between continuity and change.

Advanced micro controls for automation systems

As a leading sales and distribution company specialising in industrial electrical, automation and global software and hardware brands, Referro Systems has achieved notable growth since it introduced Advanced Micro Controls Inc. (AMCI) products into the African market.

Through this strategic partnership, Referro brings world-class automation solutions closer to home, empowering manufacturing, mining, and industrial automation sectors with enhanced performance, efficiency and reliability.

Adrian van Wyk, Managing Director at Referro Systems, says the introduction of these solutions is already delivering measurable value across sectors. "AMCI's automation technologies help eliminate manual errors, improve consistency, and increase output," he says. "By optimising production workflows, organisations can reduce operational costs and minimise downtime and maintenance, which translates into improved overall efficiency."

AMCI, a well-known US-based manufacturer and global supplier, offers a comprehensive portfolio of motion control and automation products. Through the collaboration with Referro, local industries benefit from access to high-quality precision-engineered solutions that streamline operations and boost productivity.

Central to the offering is a commitment to seamless integration and long-term reliability. AMCI's stepper and servo motion control products come with optional network connectivity and are designed to fit into existing PLC-based systems, enhancing capabilities and providing years of dependable service.

Backed by over two decades of success in developing industrial control solutions, the AMCI portfolio extends the functionality of standard programmable logic controllers (PLCs) which often require specialised features not included out of the box. The product range includes a selection of speciality I/O modules. These enhance PLC controllers with advanced capabilities such as position sensing, motion control, stamping press automation, and packaging solutions – making them suitable for a range of industrial applications. Compatibility with control platforms such as Allen-Bradley and Siemens supports f lexible, powerful upgrades to existing control systems.

In addition, the range features sensor interface products for linear and rotary applications, designed for optimal performance and ease of use. AMCI's lineup of rotary sensors includes heavy-duty rotary shaft models like the NR-Series networked encoders, and DuraCoder® rugged encoders, each engineered for reliability and durability.

For precise position sensing in harsh environments, AMCI also offers the industry's most extensive collection of resolver transducers, including single-turn, multi-turn, and redundant versions. These specialised sensors are purpose-built to withstand extreme conditions where conventional encoders may not survive.

Local availability and support

With branches in Gauteng and the Northern Cape, Referro Systems provides prompt and reliable access to AMCI products throughout South Africa and the continent.

"Our dedicated technical team offers full support across the project lifecycle – from product selection and installation to configuration and ongoing operation," van Wyk notes. "This hands-on service ensures that customers get the most from every AMCI solution."

He adds that Referro Systems' partnership with AMCI reflects its ongoing commitment to empowering African industry with the best in automation technology, delivered with local expertise and support.

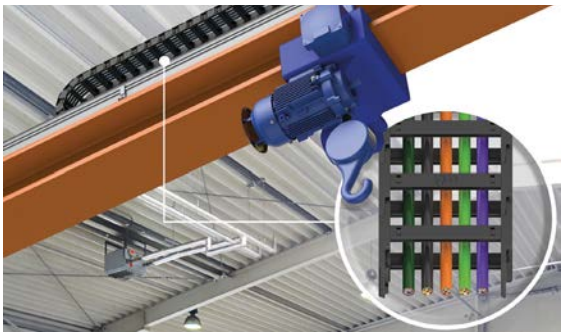
Referro Systems offers the full range of AMCI automation solutions to the South African market and across Africa.

Continued from page 6

igus chains.

Another advantage of the G4.42 is the cost-optimised side link, which is used on the left and right. In combination with the large pitch, the glide-chain consists of only a few individual and different components. This results in a price advantage of 30 to 40% compared to standard chains with the same dimensions from igus's E2 and E4 product ranges.

"In times when customers are under heavy pressure to reduce their costs, we have developed a product that saves money, and has a long service life in the application," says Christian Ziegler, Head of Product Management e-chains at igus. He adds that the new glide-chain was subjected to intensive tests in the company's in-house 4 000 m² test laboratory. Furthermore, igus provides a four-year guarantee on all its energy chains.



The new igus glide-chain can reduce costs for indoor cranes by up to 40%.

Recycling energy chains

What happens when an energy chain reaches the end of its service life? igus has established its 'chainge' programme for this purpose. The recycling initiative aims to reuse worn out energy chains in an environmentally friendly way. Regardless of the manufacturer, old plastic chains can be sent in for recycling, to contribute to the circular economy. In return, participants in the programme receive a voucher for the purchase of new igus products. Since the launch of the programme, igus has already recycled over 170 t of plastic. The plastics specialist uses the recycled material to manufacture new energy chain series. For example, the standard E2.1 series from igus now consists of recycled material.

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

Schneider Electric launches first registered Innovation Hub in Africa

Schneider Electric, the global leader in energy management and automation, and recognised sustainability leader, has unveiled its first registered Innovation Hub in Africa – a milestone development that forms part of the company's long-term investment on the continent.

Located at Schneider Electric's new, state-of-the-art English-speaking head office in Midrand, Johannesburg, the registered Innovation Hub is a testament to the company's continued commitment to Africa and its valued partners.

Furthermore, it brings Schneider Electric's vision for sustainability and digitalisation to life, ensuring that customers, partners, and stakeholders across the continent have direct access to groundbreaking innovations that can transform industries and drive meaningful progress.

The registered Innovation Hub also joins the ranks of Schneider Electric's over 40 registered global Innovation Hubs, standing shoulder to shoulder with its international counterparts, offering the absolute latest in technology and sustainable solutions.

Like its global peers, the hub is a fully interactive environment where visitors can explore the company's integrated solutions spanning critical segments such as energy, buildings, data centres, industry, and power and grid.

"We are building an ecosystem that thrives on collaboration, innovation, and relevance to the African context, one that values local talent, fosters local partnerships, and drives local solutions. The registered Innovation Hub is an important step forward in enabling our customers and partners with leading technologies that can shape Africa's future while advancing global sustainability ambitions," says Canninah Dladla, Cluster President for English-speaking Africa at Schneider Electric.

A tailored, engaging experience

The registered Innovation Hub offers a fully customised and guided experience for every visitor, ensuring they interact with the newest innovations in the Schneider Electric portfolio.

Visitors are introduced to the company's story through an interactive touchscreen before exploring tailored spaces, including:

- The Software Portfolio, featuring AVEVA Operations Control, eTAP, and various EcoStruxure software solutions.
- Industrial Automation Solutions, showcasing live conveyor systems, EcoStruxure Plant and Machine control units, sensors, and industrial intelligence.
- Building Solutions, demonstrating advanced control technologies for access, lighting, HVAC, and room management.
- Power and Grid Solutions, featuring Schneider Electric's acclaimed SF_6-free AirSet switchgear, protection relays, and microgrid solutions.
- Secure Power displays, including a live server room demonstrating Schneider Electric's data centre and UPS solutions.

Designed as a flexible, evolving space, the Innovation Hub constantly adapts to ensure the latest innovations from Schneider Electric are always on display.

The hub is also accessible to partners, consultants, and system integrators, who can book the space to demonstrate specific solutions to their clients. Each session can be tailored to showcase industry-specific applications, ensuring that businesses and stakeholders receive real-world insights into how Schneider Electric's technology can drive success.

The Innovation Hub is backed by a team of skilled Innovation Hub Managers and Operations Specialists, ensuring expert guidance and a tailored visitor experience. Additionally, Schneider Electric is expanding its global Innovation Hub Ambassador Programme, training even more employees to bring a wealth of expertise from across the organisation, enhancing every visit to the facility.

Designed for sustainability

The Innovation Hub is housed within Schneider Electric's new English-speaking headquarters, which truly represents the pinnacle of sustainable building design and operations.

With a 20% smaller footprint than its previous premises, the headquarters delivers significant sustainability gains, including:

- 37% lower energy consumption per month.
- 34% less water usage per month.
- 32 tonnes of CO_2 emissions reduced monthly.

Further amplifying its environmental performance, the headquarters boasts a 200 kWp rooftop solar installation, mitigating 15 tonnes of CO_2 emissions each month. Also, plans are underway for a full microgrid solution with battery energy storage (BESS), reinforcing Schneider Electric's drive toward renewable and sustainable energy practices.

Schneider Electric's EcoStruxure Buildings Operation and Power Monitoring software seamlessly integrates into the Innovation Hub, providing intelligent control over lighting and HVAC systems in customer-facing areas.

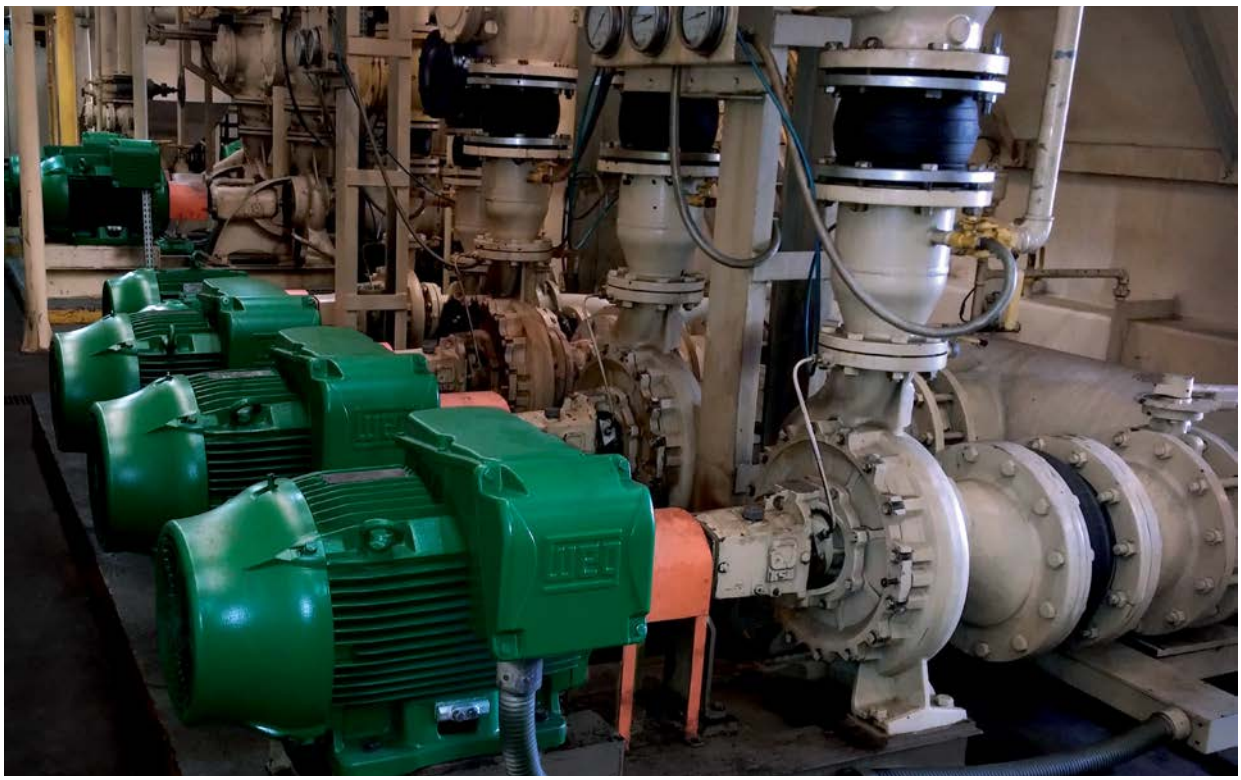
Through the registered Innovation Hub, Schneider Electric is undoubtedly strengthening its commitment to its partners and customers across the continent, ensuring that Africa's industries benefit from the very best in technology, innovation, and sustainability.

Life Is On | Schneider Electric

Reserve your spot now and take the first step towards innovation!
https://cloud.go.se.com/InnovationHubJohannesburgBooking

MEPS regulations for electric motors in effect

South Africa's Minimum Energy Performance Standards (MEPS) came into effect from June 2025. The new standards, in line with international trends, will see the phasing out of IE1 and IE2 electric motors for more energy-efficient IE3 motors. WEG Africa, which is one of the few companies that assembles electric motors for industry in South Africa, recently hosted a roundtable gathering to share the context, implications and opportunities of the new MEPS.



Low voltage motors with power output ratings from 0.75 kW to 375 kW are widely used in industry and will need to be replaced.

International Efficiency (IE) ratings are defined by the International Electrotechnical Commission (IEC) as a measure of energy efficiency in electric motors. Thus, the classification of IE1 and IE2 motors distinguishes them from premium efficiency IE3 motors and super premium efficiency IE4 and IE5 motors.

In South Africa, the MEPS regulations were gazetted one year ago to give the market due notice of the legislative change. The regulations will require most three-phase, low-voltage electric motors between 0.75 kW to 375 kW to be replaced, over time, by IE3 rated motors.

The lower efficiency IE1 and IE2 low voltage motors will no longer be admitted as imports into the country.

Speaking at the roundtable gathering, Fanie Steyn, LV&HV Executive of Electric Motors at WEG Africa, highlighted several important points. He noted, among other things, that:

- IE3 electric motors are 4 to 8% more efficient than IE1 and IE2 motors, and continuously running premium-efficiency motors can recoup their replacement cost within a few months.
- End-user businesses are not obliged to replace motors currently in operation; they can phase out older motors as they fail.
- Electric motor manufacturers and original equipment manufacturers can sell current IE1 and IE2 stock until May 2026.

Steyn noted too that WEG Africa has already phased out IE1 and IE2 motors from its product portfolio and has established local IE3 motor production lines.

A financial win for businesses

All businesses, suppliers, and OEMs should be aware that the switch to IE3 premium energy efficiency motors introduces efficiency and cost benefits across all industry sectors.

According to the International Energy Agency (IEA), electric motor-driven systems consume more than 40% of global electricity [1], which new regulations can reduce by at least 5%.

Although IE3 motors are sold at a higher cost, they are, as noted, four to eight percent more efficient than IE1 motors. Electric motors can consume the energy equivalent amounting to their acquisition costs in the first few weeks of operation. However, when cumulative running costs are compared, savings achieved using IE3 motors typically return the investment outlay within one to five years, depending on the application. Premium IE3 motors that run continuously can recoup their costs within months.

IE3 motors also make a difference in enabling companies to reduce their environmental impact and improve market

competitiveness, as well as offset rising energy costs.

Exceptions and responsibilities

The new IE3 efficiency standard, officially the Compulsory Specification VC 9113, becomes mandatory from June 2025. The specification applies to a broad range of three-phase, low-voltage electric motors, specifically motors with two, four, six, or eight poles with a rated power output ranging from 0.75 kW to 375 kW. It includes motors with non-standard mechanical dimensions and geared motors.

It excludes certain categories, such as single-speed motors with ten or more poles, multi-speed motors, motors that use mechanical commutators, and motors designed to operate entirely immersed in a liquid.

Businesses can continue to run operational IE1 and IE2 motors, and need only replace these when they fail, installing IE3 or more efficient motors.

In most cases, OEMs and equipment suppliers must certify their motors. End-user businesses can request to see a supplier's Letter of Authority for the motors, issued by the National Regulator for Compulsory Specifications (NRCS).

Steps to align with the MEPS

The category of motors affected are motors very commonly used, including in industrial applications, mining, agriculture, cold chain systems, and HVAC units. The MEPS transition will impact many different businesses. WEG Africa suggests that businesses can take the following steps to progress the transition in their operations and gain the benefits.

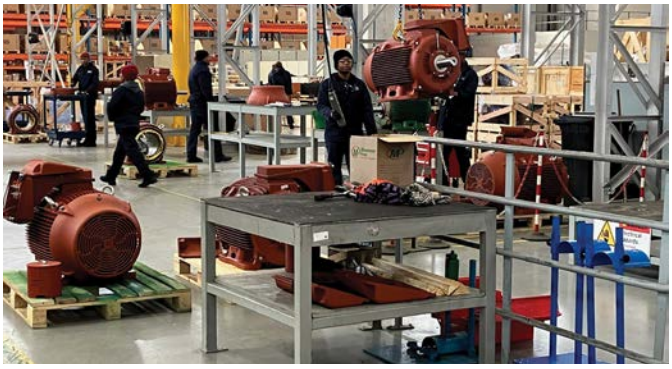
- Conduct a thorough inventory audit of electric motors in use in their facilities to identify all those motors that fall within the scope of the MEPS regulations.
- Talk to equipment suppliers to understand the impact on equipment used in operations and how the supplier will address MEPS requirements.
- Develop a comprehensive, long-term strategy to replace older motors, prioritising those that operate for extended periods to maximise potential energy savings.
- Update procurement policies and technical specifications to explicitly mandate that all applicable new electric motor purchases must meet the IE3 efficiency standard.
- Train relevant staff members (including procurement, maintenance, and operations) on the new MEPS regulations and compliance.
- Undertake a cost-benefit analysis to assess the possibility of replacing older, less efficient motors before they fail, taking into account the potential for significant energy savings and the projected increases in the cost of electricity.

Equipment suppliers and end-user businesses can engage with WEG Africa to learn more about the new standard.

The market context

Several speakers at the roundtable meeting shared their market insights.

Harvest-Time Obadire, Power And Renewables Analyst, BMI, outlined the context of the global energy market and increasing energy demand. "Global energy consumption has doubled in the last 20 years, spurring the international trend towards a more energy-secure and energy efficient future. Industrial applications consume nearly a third of electricity produced, and electric motors



WEG Africa is one of the few OEMs that produces electric motors locally on assembly lines at its Longlake facility, Johannesburg.

From left: Bruce Grobler, External Sales Executive for WEG Africa, with the speakers at the roundtable gathering: Zadok Olinga, Director of Olinga Resource Management Consulting and Past President of the SAEEC; Harvest-Time Obadire, Power And Renewables Analyst, BMI; and Fanie Steyn, LV&HV Executive of Electric Motors at WEG Africa.

are responsible for two-thirds of that consumption. In the South African context, from our research-based calculations, the market is at risk of experiencing an energy deficit by the end of the decade. In parallel, electricity prices continue to place growing pressures on consumers across all sectors. When you look at the numbers, the MEPS regulations make enormous sense for businesses and society," Obadire said.

Zadok Olinga, Director of Olinga Resource Management Consulting and Past President of the Southern Africa Energy Efficiency Confederation (SAEEC) emphasised the value of improving energy-efficiency as a first step in the energy transition. "South Africa and our African peers are playing a growing role in the global energy story. We are prolific adopters of renewable energy and new energy blends, and we support global energy market trends. But the transition is not only about new energy sources. Improving what we have by pursuing greater energy efficiency is a fundamental strategy. It is the 'first fuel' of the energy transition. The MEPS regulations enable local businesses and utilities to improve their efficiency, and they also create new employment and market opportunities in local manufacturing and skills development."

Fanie Steyn of WEG Africa noted that regions such as the US, Europe, and China have already started switching to MEPS. "As a major OEM of electrical motors, WEG Africa is helping spearhead and guide this process in the interests of our customers. We are here to assist them and to make the transition as beneficial as possible," Steyn said.

Reference:

[1] https://www.iea.org/reports/walking-the-torque

For more information visit: www.weg.net

Proactive energy management delivers returns

On-site energy systems such as boilers should be independently managed to achieve optimum performance outcomes. Steam and boiler operations and maintenance service provider, Associated Energy Services (AES) often finds that companies incorrectly rely on a single fuel-to-product usage ratio to capture energy metrics and performance. Dennis Williams, AES Commercial Director, says this does not help them optimise plant performance as independent energy services providers could.

Managing energy systems needs multiple measurements

Williams notes that cost pressures, competitive forces and other challenges have decimated South Africa's manufacturing sector in recent years. He emphasises that in managing thermal energy operations and their use in production facilities two major processes need to be considered: the conversion / generation process and the production / usage process.

Multiple measurements are essential to monitoring and managing the systems: water meters, for example, are needed to assess feed water to boilers and makeup water; temperature probes to measure condensate and feed water temperature; and specialised probes to measure the CO_2/O_2 in flue gas. It is also important to monitor steam splits and condensate return volumes.

"When AES is appointed to manage customers' on-site energy systems, at the outset, we conduct an energy analysis as part of an initial proposal to develop solutions, determining the current baseline and comparing it to either the client's outcome expectations or AES's best-case performance baseline.

A more detailed energy analysis follows once AES is on site managing the client's boiler operations and proactively addressing cost, efficiency, emissions performance, reliability and uptime," Williams explains.

He emphasises that energy management requires consistent focus, effort and intervention. AES works from its experience, expertise, established systems and methodologies, applying these via a system of meticulous and ongoing checks.

"This level of energy management is beyond the scope and capability of clients – and is generally seen as a non-core business activity. And that is where AES comes in," he says.

The company has a core national and regional team of experts to support client operations. The personnel on site serve as the critical client interface and 'hands' of AES.

While automation can successfully manage the combustion process on liquid or gaseous fuels, the same does not apply to solid fuel combustion systems due to the variability in the quality of the fuel (particle size, moisture content, volatile content, ash content).

Williams says AES's on-site teams aim for continuous improvement, looking at new management approaches to extract greater value. "We rely on robust personnel training, retaining hard-won industry and application experience and fostering an environment of skills transfer and empowerment across the team."

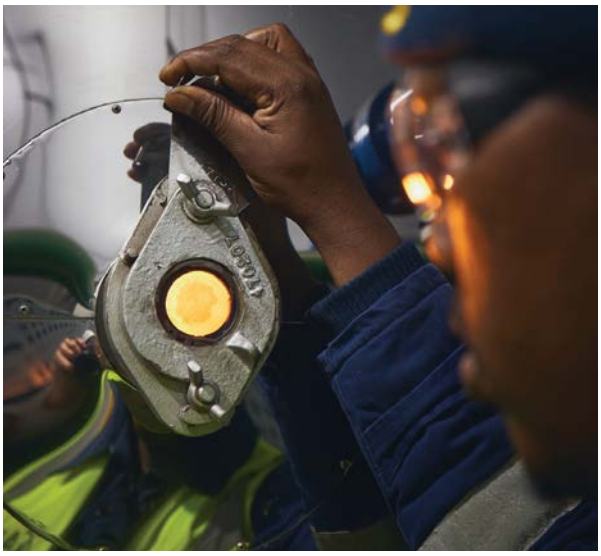
Consider the risks and benefits

Where companies do not undertake regular energy management assessments of on-site energy systems, they face potentially significant safety risks, Williams cautions. These relate to combustion, heat, dust, gases, rotating equipment or electricity.

Process safety management (PSM) manages activities where there is an element of risk, and specific personnel are trained in Hazard Identification and Risk Assessment (HIRA). "These team members are tasked with identifying and quantifying risks – which are then rolled out into management tools and work procedures, ensuring that all on site have specific work instructions, information and training on how to execute the relevant activities safely."

Conducting operational performance evaluations is equally important, to overcome inefficiencies and prevent the resulting higher operating costs (fuel and maintenance), increased plant downtime, a higher carbon footprint and reduced lifespan of plant.

"The more efficient the combustion, the lower the losses in unburnt carbon in ash, or CO_2 in flue gas. The more efficient the management of the heat transfer process, the lower the energy



Left: Boiler control system. Right: Boiler combustion checks.

losses," Williams explains.

Highlighting further factors that need to be considered, he says the fuel used constitutes by far the highest cost, and this can be managed effectively through the recovery of the energy released (boiler heat transfer), ensuring that the maximum amount of energy is recovered from the fuel into the steam.

Closely aligned with this are the considerations of fuel costs and quality. With its in-house laboratory, significant buying power, access to market supply and sourcing expertise, AES ensures the best quality fuel is procured at the lowest cost.

The quality of the steam supply is another key consideration. Williams says, "This relates to stability of steam pressure, maximisation of condensate return, the dryness of steam and the reliability / continuity of steam supply. These all impact on how a company can use the steam supplied effectively to maximise efficiency and lower usage per unit of product."

Efficient operations also impact positively on aspects such as sustainability and reducing emissions. Improved boiler efficiency and the maximisation of condensate return also lower resource usage (coal and water) per unit of production.

Effective maintenance management including scheduling, quality execution, planning and recommissioning, all play a part in meeting the objectives to maximise efficiency and plant reliability / uptime.

An illustrative case

The beneficial outcome of effective energy management is illustrated by a pilot project that AES undertook for a multinational fast-moving consumer goods (FMCG) client.

"This entailed the installation of an additional boiler, mitigation of liquid fuel use and overall outsourcing of operations. Following operational takeover and maintenance / operations interventions by AES, significant improvements were achieved. A 100% reduction in costly liquid fuel use for steam generation, and a 21% improvement in CO_2 emissions when compared with the client's operational baseline."

As a result, the client outsourced its largest steam generation facility to AES, achieving similar results with lower steam cost, improved availability and a substantial 35% reduction in fuel use and associated CO_2 emissions. "All these gains confirm that proactive energy management pays off. AES now services five of this client's sites," Williams concludes.

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

Energy management + energy efficiency: Products + services

A new transfer switch for power systems

Vertiv has launched the Vertiv™ PowerSwitch 7000, a next-generation static transfer switch, consolidating its position as a complete power solutions provider. The new static transfer switch expands Vertiv's end-to-end portfolio of solutions that enable the critical digital world to accelerate and perform.

Designed to support uninterrupted operations across critical sectors including data centres, financial services, and manufacturing technology, Vertiv PowerSwitch 7000 addresses the growing demand for power reliability in an increasingly digital world. Now available in Europe, Middle East and Africa markets, this solution supports continuity in power supply to help prevent costly disruptions.

Vertiv PowerSwitch 7000 operates downstream from redundant uninterruptible power supply (UPS) systems in reserve bus and dual-bus power architectures for facilities that cannot tolerate power interruptions. The system delivers seamless, automatic transfers between independent power sources, providing critical redundancy for single-corded loads and additional protection for dual-corded equipment. An internally redundant architecture further eliminates potential single points of failure.

"Power protection and reliability are increasingly critical concerns for data centre operators, especially when planning for computing growth," said Greg Hoge, Product Management Global Director at Vertiv. "Combining reliable switching, operational flexibility, maintenance simplicity, and intelligent diagnostics, Vertiv PowerSwitch 7000 sets a high standard for operational excellence in power switching technology for the most demanding data centre applications."

The upgraded system offers innovative serviceability features which include a compartmentalised design that separates high-voltage sections from maintenance areas, enhancing operator safety and improving overall serviceability. The front-access design allows for maintenance without service interruption, reducing repair time and maintaining continuous power to critical loads. Flexible installation options, including top and bottom cable entry, make the system suitable for raised and non-raised floor environments. Modular SCRs (Silicon Controlled Rectifiers), hot-swappable fan assemblies, and tool-free air filters support quick servicing and consistent performance.

The on-unit 9-inch colour touchscreen control panel provides advanced waveform capture capability. This allows the platform to function as a diagnostic tool by capturing power measurements at a high sampling rate during transfer events to support comprehensive root cause analysis. This intelligent monitoring system provides facility managers with easy access to system data, helping them quickly identify and respond to power disturbances. Remote monitoring is available through Vertiv™ Intellislot™ RDU120 communication card, which is UL2900-1 cybersecurity certified, delivering secure, remote access to system status and diagnostics.

Vertiv PowerSwitch 7000 is designed to support uninterrupted operations across critical sectors.

Vertiv™ PowerSwitch 7000 integrates with Vertiv's comprehensive portfolio of power management systems, including UPS systems and power distribution units, creating a complete power protection ecosystem. The solution is supported by Vertiv™ Global Services, a worldwide network of trained experts offering a comprehensive portfolio of project, lifecycle, and digital services to maximise reliability and minimise downtime.

Battery energy storage critical to stabilise SA's grid

Bernard Janse van Rensburg, Logistics & Procurement Manager at Mulilo, highlights that as the global energy transition advances, South Africa is quietly becoming a major player in one of the fastest-growing areas of the energy sector: Battery Energy Storage Systems (BESS). With 1.3 GWh of installed capacity, South Africa now ranks eighth globally, according to a recent benchmark study by Rho Motion [1].

Bernard Janse van Rensburg, Mulilo.

Energy experts recognise that this is a remarkable position to be in, especially for an emerging market still battling the legacy of load shedding and ageing infrastructure.

At the Africa Energy Forum (AEF) held in Cape Town from 17 to 20 June, the role of BESS in stabilising Africa's electricity grids was one of the topics under discussion. Janse van Rensburg says South Africa's progress offers a valuable case study – one increasingly shaped by independent power producers (IPPs) like Mulilo. The company was awarded preferred bidder status for four of the five projects in Bid Window 3 of the country's BESIPPP Programme [2], as announced by Minister of Electricity and Energy, Dr Kgosientsho Ramokgopa, at the end of May.

"Battery storage is now essential to South Africa's energy future," Janse van Rensburg says. "It allows us to harness solar and wind energy when it's abundant and then distribute it when it's needed most, filling the gap left by baseload power and effectively stabilising the national grid."

BESS store energy typically generated from renewable sources or off-peak grid supply. With the energy stored, these systems can discharge the power when demand surges. For South Africa, as it works towards stabilising electricity supply, the technology holds significant promise.

Most of South Africa's current projects use lithium-iron-phosphate (LFP) batteries, which are prized for their thermal stability and long lifecycle. However, as new procurement windows emerge, alternative chemistries such as flow batteries and solid-state storage are entering the conversation, especially for longer-duration applications, which are essential for large nationwide infrastructure tenders.

"What makes battery storage so attractive is its versatility," Janse van Rensburg explains. "Beyond energy shifting, BESS can help balance the frequency of the grid, reduce the need for expensive diesel-fuelled peaking plants, and possibly defer transmission upgrades."

Government procurement driving private sector momentum

Much of the country's recent progress stems from the Battery Energy Storage Independent Power Producer Procurement Programme (BESIPPPP), the government-led initiative to bring large-scale storage online.

In the first round of bidding, Mulilo secured 1 GWh of storage capacity in partnership with French energy company EDF. The second round saw the company sweep all five of its submitted projects, adding a further 1.5 GWh to its portfolio. In the most recent bidding round (as noted above), Mulilo was awarded four projects with a total capacity of 1.97 GWh.

"The demand from Eskom is there, the technology is ready, and the private sector is mobilised," says Janse van Rensburg. "What we need now is consistency in procurement, opening up of the live market and clarity on stacked revenue models which make full use of all the benefits to unlock long-term investment."

Despite South Africa's early adoption of BESS, challenges remain. IPPs like Mulilo experience delays in accessing the grid, along with other regulatory and funding issues.

"We need to simplify the interface between public and private sector players," says Janse van Rensburg. "Failing to act could undermine the momentum we've established."

He says one of the biggest missed opportunities is the lack of revenue stacking – a mechanism used internationally to enable BESS projects to participate in multiple markets, from energy trading to ancillary services to capacity provision. "Without it, developers are restricted to a single income stream, limiting the business case to achieve more competitive tariffs"

As South Africa embraces a Just Energy Transition in the fast-changing energy landscape, Janse van Rensburg says Mulilo has repositioned itself as a vertically integrated IPP, managing all aspects from land acquisition to engineering, construction, and long-term operations. This strategy is central to the company's aims. "We see battery storage not as a bolt-on but as an essential component of the future energy supply mix. In solar, wind, or hybrid developments, BESS is the enabling technology and will be part of the design from day one," says Janse van Rensburg.

"If we can get the regulatory and commercial models right, South Africa could become a global leader, in battery deployment, and in demonstrating how a country can transform an entire national grid," Janse van Rensburg concludes.

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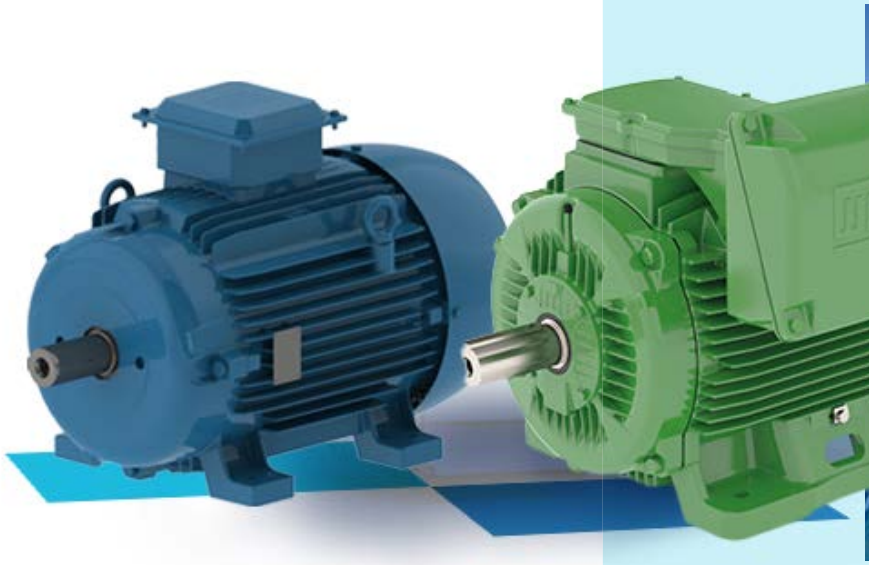


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Driving efficiency and sustainability

Maintaining battery storage systems

Michael Ginsberg is a solar expert, trainer for the US Department of State, author and Doctor of Engineering Science candidate at Columbia University. He highlights some of the important steps to maintain batteries in good condition, shared here by Comtest, for Fluke, a leading manufacturer of test tools for maintenance, troubleshooting and performance testing of batteries and battery banks, among other equipment.

We all know lead-acid batteries – they are in our cars and start our generators. Solid, hard-working, relatively inexpensive and reliable, yet they do require a lot of maintenance.

One of the newer types of commercial batteries is lithium-ion batteries. According to the International Renewable Energy Agency (IRENA) 2017 report, *Electricity Storage and Renewables: Costs and Markets to 2030* [1] lithium-ion batteries then accounted for the largest share (59%) of operational installed capacity. They are lightweight, have a high energy density and can be fully depleted without issue. This is important with variable solar energy, which won't always be able to charge the battery.

Batteries are sensitive. They work best between 15 and 35°C and require a charge controller to receive a specific amount of current. At low temperatures, the electrochemistry is slowed, and at high temperatures, internal corrosion is increased.

Most of us have experienced a car not starting in cold temperatures – that's because the battery cannot deliver as much current. In cold climates, a battery heater or thermal insulation can be used as a maintenance measure, and in hot climates, batteries (and cars) should be stored in shaded, well-ventilated spaces.

Another issue is terminal corrosion. This happens when hydrogen gas is released from the acid in the battery and reacts with other substances, or electrolyte leaks from overfilling with water or overcharging. To remove corrosion, an antioxidant material can be used, as recommended by the manufacturer.

For lead-acid batteries

For lead-acid batteries, it is essential to maintain a high state of charge (SOC). Lead-acid batteries have a low depth of discharge, meaning a small amount of their total capacity should be used. A too-low SOC can lead to a build-up of small sulphate crystals on the terminals, which reduces performance. To handle sulphation on the terminals, technicians need to keep the SOC high and, if it falls too low, a de-sulphating battery charger should be used to dissolve the sulphates with high-frequency electronic pulses. Additionally, an alarm can be used to provide a visual and audible indication to signal a low battery state of charge (50% for lead acid).

Diagnosing battery health

Technicians need to know the internal health of the battery to maintain it. Using the Fluke 500 Series Battery Analyser, the technician simply connects the leads to the negative and positive terminals and turns the switch to milliohms (mΩ). The display will simultaneously read battery voltage and internal resistance. Low voltage indicates a low state of charge and high internal resistance means internal deterioration. It is essential to test the battery in an open-circuit state (after 24 hours for lead-acid batteries). The analyser corrects for temperature to ensure accuracy – it can save up to 10 thresholds – and sends the readings to the Fluke Battery Management Software so maintenance teams can view trends.

Capacity loss refers to the battery storing less charge. Technicians can determine the capacity loss using the analyser in discharge mode, where the battery voltage is read multiple times until it drops below the cut-off voltage, which can cause damage.

A hydrometer, which measures the relative density of liquids, can also be used to measure electrolyte specific gravity, an indicator of a battery's state of charge.

Lithium-ion energy storage technology

Although more expensive than lead-acid batteries, lithium-ion batteries represent a significant improvement in terms of maintenance. Although the SOC needs to be checked regularly and they should be kept at a temperature as close to 25°C as possible, they have higher energy density, which means they are lighter. They also have higher depth of discharge, so, much of their charge can be depleted before recharging. This is a particular advantage for use with variable solar and wind power.

Battery storage plays a significant role in renewable energy generation.

However, thermal runaway is an issue. This can occur when overcharging, a short circuit, or high temperature creates a feedback loop that rapidly accelerates temperatures until there is an explosion. Using a cathode with a higher temperature tolerance, such as iron phosphate (FePO4), mitigates thermal runaway.

New battery technologies, such as saltwater and liquid metal batteries, which promise both low maintenance and cost, are coming on the market.

Importance of battery maintenance

The question of whether batteries are worth it for a working facility can be answered by considering priorities and costs. Lead-acid batteries have low upfront costs but high ongoing maintenance costs, including weekly cleaning, testing, and top-up tasks. Lithium-ion batteries have high upfront costs but low ongoing maintenance costs.

Nonetheless, as the costs of lithium-ion and other non-lead acid batteries decline and the adoption of solar and wind energy grows, batteries will become an increasingly essential part of a facility.

About the author

Michael Ginsberg is also a Chief Executive Officer of Mastering Green, where he has trained nearly a thousand technicians worldwide in solar PV installation, maintenance, and operation.

The Fluke 500 Series Battery Analyser is an ideal test tool for maintenance, troubleshooting and performance testing of individual batteries and battery banks in critical battery backup applications.

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

Energy management + energy efficiency: Products + services

Helping farmers drive down irrigation costs

SEW-EURODRIVE is helping South African farmers reduce irrigation costs and improve operational efficiencies. By leveraging its world class expertise in conducting energy audits on drive systems and supplying premium IE3 motors and durable gearboxes tailored for centre pivot systems, the company is helping farmers to optimise irrigation operations.

As part of its full-service offering to the farming community, SEW-EURODRIVE supplies robust and energy efficient gearboxes and motors for centre pivot irrigation systems and can conduct in-depth energy audits to identify inefficiencies and recommend optimised drive solutions tailored to each operation.

Willem Strydom, Business Development Manager: Electronics at SEW-EURODRIVE, highlights that: “Electricity is one of the fastest growing input costs in agriculture, placing significant pressure on farmers who depend on irrigation for consistent crop yields. In our energy audits, we take a holistic view of the system, assessing all aspects, from motor and gearbox performance to how effectively power is used.”

SEW-EURODRIVE helps farmers comply with Minimum Energy Performance Standards for electric motors, standardising on energy-efficient IE3 motors.

The audits typically evaluate the condition of installed equipment, the suitability of motor sizes for the application, and the potential for savings by upgrading to premium efficiency IE3 motors. SEW-EURODRIVE has already standardised on IE3-rated motors across its irrigation solutions – a step ahead of some competitors that still supply lower efficiency IE1 motors.

“By replacing outdated or oversized components, our customers often achieve a noticeable reduction in energy consumption and associated costs,” says Strydom. “In many cases, the investment pays for itself within just a few irrigation seasons.”

This proactive service is particularly valuable for large-scale commercial farms and irrigation-intensive operations, where even incremental gains in efficiency can translate into substantial savings. It also aligns with the Department of Mineral Resources and Energy’s recently implemented Minimum Energy Performance Standards (MEPS), which places increasing emphasis on energy efficiency in industrial equipment.

“As well as the benefits of working with SEW-EURODRIVE’s products, our customers gain access to our nationwide network of service teams and technical specialists. We conduct on-site inspections of drive systems, identify opportunities for optimisation and provide practical cost saving recommendations,” Strydom says.

Within its strategy of ‘closing the loop’, SEW-EURODRIVE provides a complete drive solution for centre pivot irrigation – from local assembly and inspection, to supply and installation, repair and energy optimisation. This end-to-end approach is backed by extensive local stockholding and standardised internal gearing across gearbox ranges, which enable fast turnaround times for repairs and refurbishments.

“We are proud to offer more than just components; we offer long-term value,” says Strydom. “Energy audits are just one of the many ways we are helping South African farmers become more efficient, resilient and sustainable.”

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

The instrumentation solution for a uniquely challenging environment

Leon van Niekerk, VEGA Sales Engineer.

This application case illustrates the capabilities of VEGA's instrumentation. Leon van Niekerk, VEGA Sales Engineer, says, "Put to work in the Lake Kivu methane extraction project, VEGA's sensors demonstrate the role that advanced technology can play in addressing engineering challenges, providing accurate measurements for safe and efficient resource development."

Lake Kivu, which lies on the border between the Democratic Republic of Congo and Rwanda, presents a fascinating case study in limnology and geochemistry. Its unique characteristics arise primarily from its location within the East African Rift Valley, a tectonically active region subject to volcanic activity and high heat flow. The nearby Nyiragongo and Nyamuragira volcanoes contribute significantly to the lake's geochemical composition as the volcanoes release large amounts of carbon dioxide (CO_2), a key precursor to methane formation. The Rift Valley environment has led to the formation of a deep lake basin with a stratified water column. This stratification results in the accumulation of gases at depth.

Organic matter from the lake's ecosystem, including plankton and other organisms, sinks to the bottom, where it decomposes anaerobically. Without oxygen, communities of certain microbes convert the organic matter into methane (CH_4) as a byproduct of their metabolism. Due to its low solubility in water, methane accumulates in the lake's deeper, colder layers, forming a gas-rich hypolimnion. The dissolved CO_2 from volcanic sources also contributes to the accumulation of gas, creating a potentially explosive mixture.

The high concentration of dissolved gases in Lake Kivu poses a significant risk of a limnic eruption, a rare but deadly event where the gases erupt to the surface, suffocating life in the surrounding area. However, the benefits in this case outweigh the risks: the methane reserves represent a substantial energy resource. The process of gas extraction and use needs to be carefully managed to minimise environmental impacts on the lake ecosystem.

Resource exploration and extraction

Methane exploration in Lake Kivu has focused mainly on analysis of the gas composition, determining the composition of the gas mixture, including methane, carbon dioxide, and other potential components, and estimation of the quantity of gas by assessing the total volume of methane available in the lake's depths.

During the gas extraction process at Lake Kivu, various challenges presented themselves. Given the depth at which methane is concentrated, specialised equipment and techniques have to be used. Once extracted, the gas mixture is separated into its components, primarily methane and carbon dioxide. Mitigating the environmental impact of this process has to be considered, and careful planning is essential to minimise the impact of extraction on the lake's ecosystem and surrounding communities.

KivuWatt is a notable example of a successful methane extraction and power generation project on Lake Kivu. It has demonstrated the feasibility of harnessing this unique resource and served to highlight the complexities involved. The extracted and processed methane is

In the Lake Kivu project, VEGA instrumentation provides accurate measurements for the safe and efficient extraction of methane.

used as a fuel in power generation and, alternatively, the methane can be used for industrial processes or converted into other energy forms.

Understanding the challenge

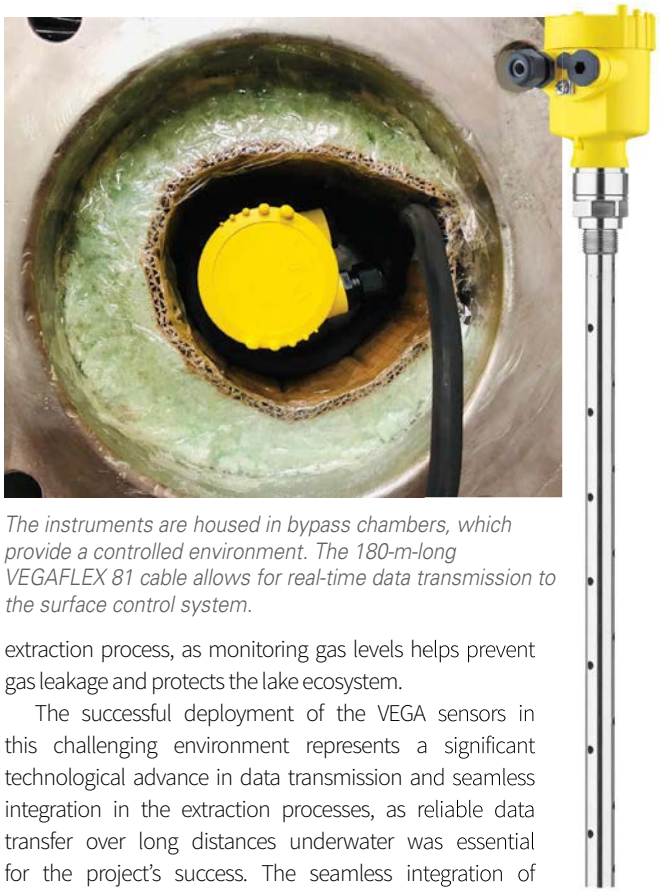
Lake Kivu presented an unusual set of challenges for instrumentation, considering the extreme underwater environment. Instrumentation in this environment must deal with high pressure, low light, and corrosive conditions. Precise monitoring of gas levels and interfaces for safety and efficiency are critical, as is continuous operation in this demanding environment.

The instrumentation solution

The VEGABAR 82 pressure transmitter was used for differential pressure measurement, the key to monitoring gas levels in the lake. It offers high precision and ensures accurate data for decision-making. With its rugged design it can withstand the harsh underwater environment. The VEGAFLEX 81 level sensor is equipped with guided wave radar technology – ideal for level measurement in liquids and gases. Its accurate interface detection is essential in determining the gas-liquid boundary. VEGA instrumentation is known for its reliable operation which, in this application, ensures consistent performance in challenging conditions.

The instruments are housed in bypass chambers which provide a controlled environment for their operation. The 180-metre cable of the VEGAFLEX 81 allows for data transmission from the underwater instruments to the surface control system. Real-time data received from the sensors is used to monitor gas levels, calculate extraction rates, and implement safety protocols.

VEGA sensors offer an early warning system where accurate gas level monitoring enables early detection of potential gas eruptions. It allows for optimised extraction rates at Lake Kivu, as precise measurements allow for efficient gas extraction without compromising safety. The VEGA instruments deployed in this application are key in managing the environmental impact of the extraction process, as monitoring gas levels helps prevent gas leakage and protects the lake ecosystem.



The instruments are housed in bypass chambers, which provide a controlled environment. The 180-m-long VEGAFLEX 81 cable allows for real-time data transmission to the surface control system.

The successful deployment of the VEGA sensors in this challenging environment represents a significant technological advance in data transmission and seamless integration in the extraction processes, as reliable data transfer over long distances underwater was essential for the project's success. The seamless integration of instrumentation with the overall extraction system optimises operations, reducing costs and increasing safety.

The use of VEGA instrumentation in the Lake Kivu methane extraction project demonstrates the critical role of advanced technology in addressing complex engineering challenges. By providing accurate and reliable measurement data, VEGA contributed to the safe and efficient development of this valuable energy resource.

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

The robust VEGABAR 82 pressure transmitter measures differential pressure, delivering precise and reliable data.

Accurate temperature measurement in flame hardening

Flame hardening is a heat treatment process widely used on parts made from mild steels, alloy steels, medium carbon steels, and cast iron. The process involves heating the metal's surface directly with oxy-gas flames until it reaches its austenitising temperature. At this critical temperature, the surface structure transforms while the core remains softer and unchanged. This is where precise temperature measurement is needed, and Instrotech offers the right instruments for this task.

Following the heating of the metal's surface, Immediate quenching is required to achieve the desired hardness, as the rapid cooling solidifies a hard surface layer, significantly enhancing the metal's resistance to wear and corrosion. Before hardening, the steel surface typically consists of austenite or ferrite, which are converted into martensite through flame hardening.

Flame hardening can be applied either differentially, focusing on specific areas, or uniformly across the entire surface of a workpiece. The success of this process is influenced by several factors, including flame intensity, heating duration, quenching speed and temperature, and the material's elemental composition. The flame is generated using gases that can achieve high, stable temperatures, most commonly a mixture of oxygen and acetylene, although propane may also be used.

A key advantage of flame hardening is its ability to enhance wear resistance, reduce processing times, and minimise distortion, while remaining cost-effective. However, the process also presents significant challenges. The open flame introduces fire hazards, and the hardened martensite, though tough, can become brittle if overheated, leading to potential cracking and flaking. Furthermore, flame hardening is inherently less precise than other case hardening methods, such as induction hardening or boronising, and the process can lead to oxidisation or decarburisation of the material.

Hence, accurate temperature measurement is critical to successful flame hardening. The precise control of the surface temperature directly impacts the quality of the hardened layer. However, conventional infrared sensors often fall short in this application, as the flame can interfere with the infrared signal, leading to inaccurate temperature readings. Additionally, there is a risk that the sensor might mistakenly register the flame's temperature rather than that of the workpiece.

Effective thermal monitoring

When hydrocarbon gases burn, the infrared energy emitted comes from the flame as well as from the by-products of combustion, such as water vapour (H_2O) and carbon dioxide (CO_2). These gases emit infrared radiation across various wavelengths, which can interfere with accurate thermal measurements taken through the flame. Traditional infrared devices measure the flame, not the part.

To obtain precise thermal measurements in such conditions, it is crucial to use a wavelength region where both water vapour and CO_2 have high transmittance. This wavelength allows infrared radiation to pass through with minimal absorption. Additionally, it

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Flame hardening is a heat treatment process widely used on parts made from mild steels, alloy steels, medium carbon steels, and cast iron.

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Continued from page 20

must be far removed from the intense infrared energy emitted by the flame, to avoid interference and ensure accurate readings.

The wavelength band around 3.7 µm to 3.9 µm is particularly suitable for these measurements. This specific range is chosen because it offers a delicate balance of high transmittance for H_2O and CO_2 and is relatively free from the radiant energy of the flame itself. The balance ensures more accurate temperature readings through the flame without the distortions caused by the emitted infrared radiation of the flame and combustion gases, which makes this a practical choice for thermal measurements.

Non-contact methods are essential; using a 3.9µm wavelength, the pyrometer or imager 'sees' through the flame and measures the temperature of the hot metal surface.

Cost-effective solutions for reliable process control

Detecting infrared radiation within this specific wavelength typically requires the use of cooled detectors. While such cameras offer high-precision thermal imaging by reducing sensor noise through cryogenic cooling, they are expensive due to their complex systems and require regular, costly maintenance. Additionally, they have longer start-up times and are larger and heavier, which makes them less practical for large-scale process automation.

In contrast, the test CTLaser MT pyrometer provides accurate temperature measurement through flames, with a wide temperature range from 200°C to 1 650°C. Its robust stainless steel housing, dual laser aiming system, and versatile analogue and digital output options ensure precise targeting and better control of the flame hardening process, helping to prevent overheating and brittleness.

OPTRIS CTlaser MT, CTlaser F6, infrared thermometer & pyrometers, and OPTRIS Xi 410 LT Ethernet infrared camera designed for precise non-contact thermal imaging in industry.

For imaging needs, the Xi410 MT infrared camera, equipped with a 3.9 µm filter, offers an affordable alternative. Although uncooled, it is recommended to use the Xi410 MT together with the test CTLaser MT pyrometer for enhanced temperature accuracy. The PIC Connect software facilitates this by allowing the pyrometer's 4-20mA output to correct temperature offsets in the infrared camera.

Given the varying compositions of flame gases, it is advisable to test CTLaser MT pyrometer or Xi410 MT for each specific application, with support from Instrotech.

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

Measurement + instrumentation: Products + services

Grain by grain, safe measurement

In the milling industry – whether grinding, mixing or filling – where tonnes of grain are moved every day, accurate monitoring of the volumes of product moved is important. Minebea Intec supplies highly accurate weighing and inspection solutions that enable milling companies to organise their processes safely, efficiently and in compliance with the relevant regulations – including in hazardous areas.

In the milling industry, accurate monitoring of the volumes of product moved through production processes is important.

Silos and buffer tanks are central in modern milling plants. This is where raw materials need to be batched precisely and resources used economically. Load cells such as the Inteco® load cell from Minebea Intec, enable precise process control with continuous weight measurement, even under difficult conditions where there are vibrations or moisture is present.

The Inteco® load cell is made of high-quality stainless steel, OIML C6-certified and designed for continuous industrial operation. It covers a wide load range of 500 kg to 75 tonnes – suitable for smaller raw material containers as well as large-volume silos. With the robust FlexLock mounting kit, it reliably compensates for lateral forces and enables accurate measurements even with asymmetrical load distribution.

The load cells also meet the highest requirements in terms of explosion protection. Certified variants with international approvals such as ATEX and IECEx are available for applications up to Zone 0 and Zone 20.

"The Inteco® load cell combines maximum precision with robustness and flexibility. It is specially designed to meet the requirements of the milling industry so we can offer our customers the highest product quality," says Yannick Salzmann, Product Manager at Minebea Intec.

Safety in free fall - metal detection

When processing bulk materials such as flour, semolina or flakes, there is always a risk of metallic foreign bodies entering the product flow – through abrasion or from worn machine parts, for example. The free-fall metal detectors Mitus® and Vistus® were developed precisely to provide reliable detection of metallic contaminants in free fall – quickly and efficiently.

The flexible MiWave Modulation Technology is used in the Mitus® metal detector. The system modulates the transmission signal in several frequencies, separates them and analyses them using an intelligent algorithm. This makes it possible to achieve a high detection sensitivity with a low false alarm rate. The Vistus metal detector® also offers a robust and proven solution for free-fall applications – without MiWave.

Both systems can be flexibly integrated into existing lines.

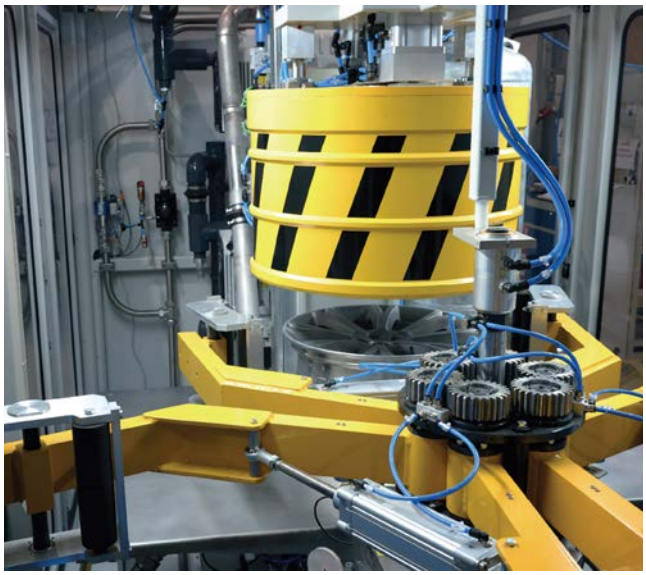
Machine light provides efficient illumination

The new LED machine light from ifm provides efficient illumination and combines compliance with the strict requirements of the Ecodesign Directive with robustness and versatile application options. The device has a smooth surface and hygienic design, making it suitable for use in demanding areas. The materials used are especially robust and guarantee a long service life.

With a length of 250 mm and the option of connecting the light via an M12 connection, it offers considerable flexibility. Up to four lights can be arranged in a row to create optimum illumination. The machine light provides efficient white light together with vibrant RGB signal colours, at a price that competes with conventional products that provide only white light. It is controlled via four 24 V dc channels, and the IO-Link integration via the DP1615 enables many different control options.

The tried-and-tested plastic injection moulding technology used in production ensures the machine light is extremely robust and resistant to chemicals. The sheathing reliably protects the electronics and guarantees a long service life, even in harsh environmental conditions. The light is mounted using a universal mounting clip, which can be attached with a screw, magnet or ifm clamp.

For more information visit: www.ifm.com



The slim machine light from ifm is robust and designed to deliver efficient illumination.

Workplace safety is a universal responsibility

Jared Kangisser, CEO at KBC Health & Safety, highlights that many people think Operational Risk Management is relevant only to industries that are obviously hazardous, like mining and construction. However, South Africa's workplace safety law, the OHS Act, mandates all employers to keep their workplaces safe, no matter what kind of business they run. While heavy industries like mining and manufacturing clearly need ongoing safety training, all workplaces, including white-collar environments can benefit from tailored safety awareness.

Safety risks in every workplace

The idea that only traditionally hazardous sectors require robust risk management ignores both legal obligations and the inherent dangers present in all workplaces. Section 8 of the OHS Act – the Occupational Health and Safety Act – creates a clear obligation on all employers to provide and maintain a safe and healthy work environment. In manufacturing plants, warehouses, and logistics centres, hazards range from machinery malfunctions and chemical spills to ergonomic injuries and physical strain.

While there may be fewer immediate physical risks in white-collar settings, these workplaces are not immune to issues such as ergonomic problems, stress-related illnesses, and slip-and-fall accidents. One of the main differences is in the intensity and frequency of required training. Rather than daily safety mandates, Operational Risk Management (ORM) can be effectively integrated into focused safety events, but the fundamental principle remains: safety is a universal responsibility in all workplaces, and it must be practised regularly.

Jared Kangisser, KBC Health & Safety.

Building a unified safety culture

Waiting for incidents to occur before taking action is like asking for trouble. Employers must proactively prioritise safe and productive environments, as the OHS Act emphasises continuous risk monitoring. In high-risk sectors, this means integrating ORM with ongoing training, audits, field observations, and employees' input. These measures protect an organisation's operational and financial health. In workplaces focused on office or professional work, periodic safety events can reinforce a safety culture without daily disruptions, acknowledging unique sector risks while maintaining employees' wellbeing. The goal is to create a unified safety culture that acknowledges the unique risks of each sector and each site, while maintaining consistent commitment to employees' wellbeing.

Adapting to diverse workplace needs

Section 13 of the OHS Act stipulates that employees must be informed and trained about workplace risks. Employers must also understand that a one-size-fits-all approach is not appropriate, and training methods will need to be adapted for the target workforce.

KBC's Riski Diski programme exemplifies a dynamic, gamified approach to training that uses soccer as a medium for safety training which can be implemented as a detailed, continuous training module for workers in manual labour-intensive categories. The aim of the programme is to empower employees to identify, assess, and mitigate risks in real time.

In desk-based environments, where the need for daily in-depth ORM training is less critical, Riski Diski offers a fun and engaging activity for safety days, reinforcing key safety principles through interactive activities. Such an adaptable programme supports companies in complying with legislative requirements and encourages a sense of ownership and commitment among employees at all levels.

The benefits

Failure to adopt a comprehensive ORM framework tailored to the working environment carries significant legal and financial consequences. In terms of Section 38 of the OHS Act, organisations and their leadership risk severe penalties (fines, litigation, and imprisonment) if they neglect their duty to maintain a safe workplace. Additionally, workplace incidents can lead to lost productivity, increased workers' compensation claims, and reputational damage.

Companies that invest in industry-appropriate ORM will reap benefits beyond compliance. An embedded safety culture enhances operational efficiency, improves employees' morale, and boosts productivity. For manual labour-intensive sectors, continuous ORM provides a strategic edge, by minimising disruptions and strengthening corporate responsibility. In service sector environments, regular safety initiatives promote awareness and commitment without the need for routine daily safety training.

It should be clear that safety is both a legal requirement and a smart investment, in every workplace. In industries with significant physical risks, detailed and ongoing ORM is critical. In environments with fewer immediate physical hazards, engaging safety day programmes can have a substantial positive effect. Implementing tailored risk management practices helps businesses comply with legal standards, strengthens their problem-solving capabilities, boosts efficiency, and supports long-term stability. All organisations, no matter their size or the industry in which they operate, should prioritise effective ORM. Investing in these practices is a sound business decision.

For more information visit: www.kbcsafety.com

Stopping the sparks from flying

Intrinsically safe electrical equipment plays an important role in industrial site safety. Whenever electrical equipment is required for use in hazardous environments, such as those common in the chemical, oil and gas, mining and processing industries, it must be designed with intrinsic safety in mind. This will prevent the equipment from acting as a potential ignition source in plant areas containing volatile dusts, gases or liquids. Here, Darren Barratt, Product Sales Manager at alarm and event management specialist Omniflex, outlines the key aspects of intrinsic safety design.

Electrical components designed for use in hazardous environments must follow the principles of intrinsic safety, which allow for the safe operation of electrical equipment by limiting the electrical and thermal energy available for ignition. Components need to be selected carefully, so any failure does not compromise safety, and balancing functional and performance requirements with those safety considerations.

This includes any constructional requirements as well as considerations around the separation of PCBs (printed circuit boards) between components and terminals, the current rating and PCB tracks, and the type of environment in which they will operate.

Intrinsic safety measures need to be built into electrical equipment that is to be used in hazardous environments.

Hazardous environments are separated into three zones. Zone 0 is defined as a constant explosive environment in normal operating conditions; Zone 1 indicates an occasionally explosive atmosphere, usually caused by factors such as leakages and maintenance operations. Here, energy limiting practices and considerations for possible component failure become mandatory, due to the higher possibility of explosion that comes with frequent exposure to flammable or explosive materials. Zone 2 indicates an area in which an explosive atmosphere is not likely to occur in normal operation and, if it does occur, it will exist for only a short time.

Regulatory considerations

Intrinsically safe instrumentation is required in environments where there is a significant risk of explosion. This includes gas and oil rigs, refineries, mining and chemical factories.

Equipment used in these settings must adhere to strict international standards, and manufacturers have to stay updated with changing regulations. Electrical components must adhere to ATEX certification. Any batch of products can be verified in a Testing Lab against the original approval – although manufacturers themselves can certify equipment for Zone 2 components as standards can be verified in the EU. For the more explosive areas of Zones 0 and 1, equipment requires testing by an ATEX approved notified body.

Alarm annunciation

Alarm annunciators in potentially explosive environments can help avert any hazardous events. They inform operators of potential problems that need to be addressed – notifying them of a safety action to be carried out. In turn, this prevents unplanned downtime at a facility. Thus, as well as supporting a safe working environment, the annunciators can contribute to cost savings.

Rather than operating on a supervisory control and data acquisition (SCADA) system or another computer systems, alarm annunciators provide an independent means of detection for the safety of a facility. While performing the same role as a standard alarm annunciator – in alerting operators to a problem – the devices can be developed and manufactured by specialists to ensure less risk of electrical sparks, reducing the risk of any dangerous events or downtime that halts production or output.

Omniflex's Omni16C-EX integral alarm annunciator and displays are an example of the intrinsically safe electrical equipment the company can provide for international markets.

With ATEX certification, annunciators can be used in Zone 2 areas, notifying operators of dangerous situations in potentially hazardous areas, and alerting any staff operating in that area. Once mounted, the Omni16C-EX is fully protected in a protective enclosure to allow location in hazardous areas.

At its certified facility in Durban, South Africa, Omniflex manufactures the Omni16C-EX integral alarm annunciator, which offers protection, ensuring critical alerts reach your team without compromising performance or safety in industrial environments, including gas and oil rigs, chemical factories, mining operations and more.

For more information visit: www.omniflex.com

Fire protection for transformers

Transformer protection is crucial in business environments because transformers are essential components in power distribution systems, stepping up or stepping down voltage levels to ensure efficient power transmission and distribution. Proper protection helps prevent faults such as overloading, short circuits, and internal failures, which can lead to significant equipment damage, costly downtime, and in some cases can cause system-wide outages, says Michael van Niekerk, CEO of ASP Fire.

He highlights the importance of transformer protection particularly in on-site power supply systems. He notes that there are different types of transformers, some filled with non-flammable fluids, others with mineral oils, which are combustible, and dry-type transformers filled with gas. "The key is to ensure that there is enough safety distance, or there are fire-rated walls, between transformers and adjacent buildings to prevent the spread of fire," he explains.

Effective transformer protection minimises the risk of power outages and maintains continuous operations, reduces the risk of fire and other hazards associated with transformer failures, and prevents expensive repairs and replacements by mitigating damage early. It is also required in terms of industry standards and regulations.

Van Niekerk refers to the various South African standards and regulations that govern transformer protection and fire safety. For example, SANS 780 covers the requirements for distribution transformers, including design, construction, and testing. The South African Grid Code, administered by NERSA, includes guidelines for the protection and operation of electrical systems.

SANS 10142-1-2 is a wiring standard that outlines the requirements for electrical installations in South Africa. NRS 048 focuses on power quality and effective maintenance standards. "These standards ensure that electrical systems, including transformers, are designed and maintained to minimise risks and ensure safety and reliability."

However, these SANS standards do not address the required safety distances between transformers – especially those filled with ignitable fluids – and important buildings or other important electrical equipment, nor the containment of ignitable oil that may leak from a transformer. International standards like the FM Global Property Loss Prevention Data Sheets provide specific guidance on the protection from or mitigation of transformer fire hazards.

Michael van Niekerk of ASP Fire highlights the importance of transformer protection, particularly in on-site power supply systems

Transformers with less than 1 900 litres of ignitable oil should not be located closer than 7.6 m from exposed combustible exterior walls or equipment. This can be reduced to 4.6 m where the external walls of the exposed building are non-combustible, like IBR sheeting, for example, or to 1.5 m where the external walls are fire-rated for two hours.

Vertical separation is equally important so the fire rated walls between the exposed building and the transformer need to extend to 7.6 m above the transformer where the building is constructed from non-fire rated walls.

Separation between adjacent transformers is also important. A minimum separation of 1.5 m between transformers with less than 1 900 litres of ignitable transformer fluid is recommended. A two-hour fire-rated barrier that extends 300 mm above the highest point where ignitable fluid is stored in the transformer can be built between adjacent transformers to provide adequate protection.

"ASP Fire can assist in designing passive and active fire protection for transformers and associated electrical equipment or buildings, including indoor and outdoor installations such as those in solar field installations or standby emergency power generation," van Niekerk says.

Prefitted junction boxes streamline electrical installations

In today's fast-paced world, electrical contractors and wholesalers are looking for solutions that help streamline installations and still ensure compliance and reliability. A range of prefitted junction boxes from Pratley, now available ex-stock, offers practical, time-saving, and high-quality solutions designed for convenience and efficiency.

Pratley supplies prefitted junction boxes in popular terminal configurations.

The ability to source high-quality junction boxes that are prefitted with terminals without delay is a significant advantage for electrical professionals. With these prepopulated boxes available ex-stock, contractors need not contend with extended lead times and electrical wholesalers can maintain their supplies to meet demand.

Popular terminal configurations

Tristan Blades, Technical Projects Manager at Pratley, says prepopulated junction boxes in popular terminal configurations, such as single- and three-phase, are convenient for electrical wholesalers and contractors.

"This approach means the lead time between the manufacturer, Pratley, and the wholesaler is shorter, providing for the wholesaler to stock the boxes and improve service levels for their customers," he says.

For electricians and electrical contractors, who often face the challenge of the time required to fit junction boxes with terminals before installation, Pratley's prefitted boxes eliminate that step and offer a solution.

Quality and compliance

Pratley's fitted boxes are manufactured to meet strict industry standards, ensuring safety, durability, and regulatory compliance. "For hazardous areas, it is a regulatory requirement that junction boxes must be populated with the correct terminals," Blades highlights.

Pratley's fitted boxes offer an innovative, practical, and compliant solution for electrical professionals looking to save time and improve efficiency. With an IP66/68 rating when used with appropriately rated cable glands and blanking plugs, the junction boxes provide the reliability and safety required for various electrical applications.

"For wholesalers and contractors looking to enhance their service levels and installation efficiency, Pratley's Fitted Junction Boxes are the ready-to-use solution," says Blades.

For more information visit: www.pratleyelectrical.com

Check points for safe, effective fire extinguishers

SafeQuip, a leading distributor of fire safety solutions puts compliance at the heart of everything it does, ensuring every extinguisher performs when it matters most.

Why compliance matters

South Africa has clear fire safety regulations, and for good reason. Lives depend on them. According to SANS 10400-T, all fire extinguishers installed in buildings must meet the requirements set out in SANS 1910. The Pressure Equipment Regulations also make it illegal to use extinguishers that have not been manufactured or filled according to these standards.

Not every extinguisher in the market – or installed – meets these standards. SafeQuip warns that some suppliers cut corners to save costs. They might use inferior powder, skip safety components or place a fake approval label on a cylinder that has not been appropriately certified. From the outside, the layperson would not necessarily know. That's what makes the equipment risky.

What to check

There are a few key things property owners, facilities managers, and plant operators should always check to ensure their fire extinguishers are compliant with the national standards.

- Certification marks: Only SABS, BSI (Kite Mark), or SACAS can certify extinguishers under SANS 1910. If the label does not show one of these certifications, it should not be trusted.
- Powder quality: The extinguisher must contain SANS 1522-certified dry chemical powder. Anything less is a risk.
- Cylinder stamps: Every extinguisher must be permanently marked with the standard, the manufacturer's name, date, test pressure, and serial number.
- Label details: Customers should look for the manufacturer's information, as well as working pressure, weight, fire rating, and hydrostatic test pressure. If anything is missing, the equipment is not compliant.
- Valve check: The valve must include a safety pressure relief device and CE marking. Customers should ask for the module certificate.

Servicing and reconditioning

Servicing is another area to monitor. Fire extinguishers must be serviced to the original specifications by SANS 1475-certified companies, and by SAQCC-registered technicians. Some service companies may replace the original manufacturer's instruction label with a fake label, which would make the unit non-compliant if the company's name is not on the manufacturer's certification schedule.

Choosing reliable equipment

When lives, livelihoods, and legal liabilities are at stake, the details matter. Next time you walk past that red canister on the wall, ask yourself: is it up to standard? If it's not, it might not work when you need it most.

SafeQuip provides a full range of SABS-certified fire extinguishers, for homes, workshops, the factory floor, and other applications. Its stored pressure dry chemical powder (DCP) extinguishers are built to handle Class A, B, and C fires. And because not all fire risks are the same, SafeQuip offers different powder grades to match the level of hazard in a given environment.

The SANS 1910:2022 approved, Lith-Ex fire extinguisher range, from SafeQuip, carries NTA 8133:2021 (KIWA/POOO55865) test approval, which confirms its lithium-ion battery fire extinguishing capability.

The company also supplies high-performance CO_2 extinguishers for electrical and flammable liquid fires, as well as specialised units like wet chemical and foam extinguishers. All products are built for easy maintenance to SANS 1475 standards by SAQCC-qualified technicians. A full range of accessories and spares ensures complete fire protection from installation to servicing.

SafeQuip provides a full range of SABS-certified fire extinguishers for homes, workshops, the factory floor, and other applications.

Ensuring radiation-safety in electronics recycling

Desco Electronic Recyclers has partnered with ThorTech, a leader in advanced radiation protection solutions, to elevate safety standards and operational efficiency in the electronics recycling industry. This collaboration sees the integration of ThorTech's comprehensive suite of radiation protection management programmes into Desco's recycling operations.

ThorTech's solutions – including advanced radiation detection systems, training courses, radiological emergency support and consultation on regulatory compliance as well as on full-spectrum radiation safety – ensure that every batch of incoming and outgoing material is thoroughly screened and certified to be free from radiological contamination.

This proactive approach is critical in an industry where hazardous materials, from medical, military, and industrial sectors, may inadvertently enter the recycling stream. With the core focus on generating a circular economy, ensuring that radioactive materials do not enter the recovery process becomes important.

ThorTech CEO and founder Dr Ryno Botha, says, "The main aim of our service is to address the growing challenge of orphan and radioactive sources that are unknowingly or unintentionally introduced into recovery facilities. Even with strict regulations under the Hazardous Substances

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Stepping up: locally manufactured safety boots for women

As South Africa's industrial and mining sectors increasingly integrate women into high-risk operational roles, Sisi Safety Wear is addressing a critical and long-overlooked gap: the lack of heavy-duty safety footwear for women working in harsh industrial conditions. Sisi, a local manufacturer of personal protective equipment (PPE) designed for women in the workplace – has introduced its Fuse Safety Boot, designed specifically for women working in demanding industrial, mining, electrical, manufacturing and heavy-duty environments. This new safety boot provides the essential protection, fit, and comfort long missing from the PPE ranges available to women working in these sectors.

Jamie-Lee Bishop of Sisi Safety Wear.

For many years, women working in these industries have had to wear protective boots designed for men, often compromising safety and comfort. This mismatch increases the risk of injury, causes discomfort, and reduces productivity in environments where reliable protection is essential.

"Women in these industries face the same dangers as men – from electrical hazards to tough, abrasive surfaces – yet their safety footwear has not kept pace with their growing representation in the workforce," says Jamie-Lee Bishop from Sisi Safety Wear. "The introduction of the Fuse Boot marks an important step up in providing women with PPE that protects and fits properly to support them through long, demanding shifts."

The Fuse Safety Boot

Developed in direct response to market demand and feedback from safety professionals, the Sisi Fuse Safety Boot is the first locally manufactured PU/rubber soled safety boot specifically engineered for women. Tested to withstand 20 kVA electrical hazards for 60 seconds, the boot offers premium protection in hazardous conditions.

The Fuse Boot features a full-grain leather upper, abrasion- and slip-resistant PU/rubber sole, and a reflective strip for enhanced visibility in low-light environments. Comfort is prioritised with a padded collar and Birdseye breathable lining, treated to include anti-microbial properties, to keep feet cool and hygienic.

The PU/rubber sole offers long lasting durability and is specifically designed to resist cuts, abrasions, and slips. The tread pattern channels water and debris away, improving grip and preventing slips in harsh working conditions.

Responding to industry needs

The Fuse Boot was developed after years of industry feedback emphasising the need for safety boots with a PU/Rubber sole, capable of enduring tough working conditions, and designed specifically for women. One of the requests came from eThekwini Municipality, which required a safety boot for women working near high-voltage equipment.

"This boot is much more than a checklist item – it is a solution born from real, on-the-ground challenges," adds Bishop. "It is designed to withstand tough terrain and electrical dangers, offering reliable protection without compromising comfort."

The launch of the Fuse Boot confirms Sisi's commitment to transforming the local PPE market by ensuring women working in demanding industries receive properly fitted, high-quality protective gear.

Industry stakeholders, safety officers, and procurement specialists are encouraged to explore how purpose-built PPE can enhance operational safety and wellbeing for women working in hazardous environments.

The Fuse Boot is the first locally manufactured PU/rubber soled safety boot specifically engineered for women.

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Act, many facilities struggle to meet legal standards for managing radionuclides. By being proactive, we help manage orphan sources and protect facilities, enhance their operational quality, and improve overall risk management. Our goal is to ensure that no hazardous material compromises a facility's operation," he adds.

Desco Managing Director, Giulio Airaga says ThorTech has provided a value-added service to Desco with an innovative radiation monitoring programme that detects orphan sources and ensures its products are free of radiation contamination.

"In the e-waste sector, where miscommunication or inadvertent errors regarding hazardous materials can occur, this partnership is a crucial upgrade. It ensures our facilities are protected and our clients receive the highest standard of safety and compliance," Airaga explains.

Recent market research by Gartner highlights the strategic importance of advanced safety measures in the electronics recycling industry. Gartner's latest analysis projects that the global e-waste recycling market will expand at a compound annual growth rate (CAGR) of about 9.2% over the next five years. Findings indicate that over 35% of recycling facilities have encountered compliance challenges related to unidentified radioactive materials – an issue that significantly increases operational risks.

Integrating advanced safety technologies such as ThorTech's state-of-the-art radiation controllers can reduce operational disruptions by as much as 20% while achieving cost savings of up to 15% by minimising regulatory non-compliance risks.

A greener mining industry needs a skills revolution

Historically, mining has always had a big impact on the environment. Today, however, with new technology and the global push for sustainability, the industry is changing significantly. Jacques Farmer, Managing Director of PRISMA Training Solutions, emphasises that as much as this transformation is about adopting new technology and changing processes – it hinges on the development of a highly skilled workforce that is equipped to operate effectively in this changing environment. He points to the need to prioritise training and skills development that will support the industry in implementing advanced technologies and sustainable practices, and attracting the next generation of mining professionals.

Beyond automation – skills for the technological revolution

The Fourth Industrial Revolution has brought a paradigm shift to mining, with autonomous and remote operations, artificial intelligence (AI), and big data analytics becoming part of daily operations. However, these technologies are only as efficient as the individuals who operate, maintain, and optimise them. This means there is now a high demand for workers skilled in the technologies and their application. It highlights the need to invest in comprehensive training programmes to shape and equip the workforce.

The environmental impact of the mining industry historically, in dust pollution, water contamination and ground degradation, for example, also needs to be addressed as the sector moves towards a more sustainable future. Here, a workforce not only skilled in traditional mining practices but also adept at implementing and monitoring new technologies that support sustainability is needed. For example, the operation of advanced water treatment and recycling systems requires specialised skills in chemical engineering, environmental science, and data analysis. These skills will need to be developed through focused training.

Furthermore, the ability to interpret data generated by AI and analytics and to take action to optimise the use of resources and minimise environmental impact indicates the need for mining professionals who are tech savvy and environmentally conscious.

Integrating renewable energy into mining

The integration of renewable energy sources, such as solar and wind power, is a major stride towards greener mining operations. These technologies too require a workforce that has the knowledge and skills to maintain the systems and optimise their performance according to the demands of the mining environment. Although government policies encouraging the adoption of renewables have spurred substantial investment, skilled technicians and engineers are needed to ensure the efficient long-term operation of site-specific renewable energy plants.

Training providers have a critical role to play here in facilitating specialised learnerships in the installation, maintenance, and optimisation of solar and wind energy systems for mining operations. These programmes should extend beyond technical skills to impart an understanding of the environmental implications and support the integration of these technologies into existing mining operations. Additionally, ongoing training is required across the sector to keep the workforce up to date with advances in renewable energy technologies, from the development of more efficient solar panels to the integration of smart grid systems.

Jacques Farmer, PRISMA Training Solutions.

Attracting talent

According to Farmer, careers in mining are becoming more attractive due to the potential for technological innovation to solve real-world problems and achieve sustainability goals. To capitalise on this growing interest, he says the industry needs to highlight the skills and expertise that will be required to succeed in the modern mining industry. It needs to articulate clear pathways for career development through robust training programmes.

By offering training in new technologies like robotics and virtual reality, the mining industry can potentially attract and retain top talent. A step further would involve collaboration with universities and other higher education institutions as well as the introduction of relevant technology-focused courses at secondary school level to build a next generation workforce, technically proficient and committed to sustainable practices. This approach would position mining as a leader in technological innovation and environmental stewardship.

The industry's ability to balance economic growth with environmental responsibility will depend to a considerable extent on the development of a skilled and adaptable workforce. Mining companies will benefit from investing in training that will lay the foundation for the industry's long-term sustainability. A shift to more dynamic and adaptive training models that incorporate continuous learning, on-the-job training, and mentorship programmes will also support a cleaner, greener, and more prosperous future for mining, and for the planet.

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MIT launches Initiative for New Manufacturing

Peter Dizikes, MIT News

The Initiative for New Manufacturing (INM) is an institute-wide effort to reinfuse US industrial production.
[Photo credit: Emily Dahl]

In May, MIT – the Massachusetts Institute of Technology – launched its Initiative for New Manufacturing [1] (INM), an institute-wide effort to reinfuse US industrial production with leading-edge technologies, bolster crucial US economic sectors, and ignite job creation.

The initiative will encompass advanced research, innovative education programmes, and partnership with companies across many sectors, in a bid to help transform manufacturing and elevate its impact.

"We want to work with firms big and small, in cities, small towns and everywhere in between, to help them adopt new approaches for increased productivity," MIT President Sally A. Kornbluth wrote in a letter to the institute community. "We want to deliberately design high-quality, human-centred manufacturing jobs that bring new life to communities across the country."

Kornbluth added: "Helping America build a future of new manufacturing is a perfect job for MIT – and I'm convinced that there is no more important work we can do to meet the moment and serve the nation now."

The Initiative for New Manufacturing also announced its first six founding industry consortium members: Amgen, Flex, GE Vernova, PTC, Sanofi, and Siemens. A seventh founding member, Autodesk, was announced subsequently. Participants in the INM Industry Consortium will support seed projects proposed by MIT researchers, initially in the area of artificial intelligence for manufacturing.

INM joins the ranks of MIT's other presidential initiatives – including The Climate Project at MIT [2], MITHIC [3], which supports the human-centred disciplines; MIT HEALS [4], centred on the life sciences and health; and MGAIC [5], the MIT Generative AI Impact Consortium.

"There is tremendous opportunity to bring together a vibrant community working across every scale – from nanotechnology to large-scale manufacturing – and across a wide range of applications including semiconductors, medical devices, automotive, energy systems, and biotechnology," says Anantha Chandrakasan, MIT's chief innovation and strategy officer and Dean of Engineering, who is part of the initiative's leadership team. "MIT is uniquely positioned to harness the transformative power of digital tools and AI to shape the future of manufacturing. I am excited about what we can build together and the synergies this creates with other cross-cutting initiatives across the institute."

The initiative is the latest MIT-centred effort in recent decades aiming to expand American manufacturing. A faculty research group wrote the 1989 bestseller *Made in America: Regaining the Productive Edge* [6], advocating for a renewal of manufacturing; another MIT project, called Production in the Innovation Economy [7], called for expanded manufacturing in the early 2010s. In 2016, MIT also founded The Engine [8], a venture fund investing in hardware-based 'tough tech' start-ups, including many with potential to become substantial manufacturing firms.

The MIT Initiative for New Manufacturing is based around four major themes:

- Reimagining manufacturing technologies and systems – realising breakthrough technologies and system-level approaches to advance energy production, healthcare, computing, transportation, consumer products, and more
- Elevating the productivity and experience of manufacturing – developing and deploying new digitally driven methods and tools to amplify productivity and improve the human experience of manufacturing
- Scaling new manufacturing – accelerating the scaling of manufacturing companies and transforming supply chains to maximise efficiency and resilience, fostering product innovation and business growth
- Transforming the manufacturing base – driving the deployment of a sustainable global manufacturing ecosystem that provides compelling opportunities to workers, with major efforts focused on the US.

The initiative has mapped out concrete activities and programmes, which will include an institute-wide research programme on emerging technologies and other major topics; workforce and education programmes; and industry engagement and participation. INM also aims to establish new labs for developing manufacturing tools and techniques; a 'factory observatory' programme which immerses students in manufacturing through visits to production sites; and key 'pillars' focusing on areas from semiconductors and biomanufacturing to defence and aviation.

The workforce and education element of INM will include TechAMP, an MIT-created programme that works with community colleges to bridge the gap between technicians and engineers; as well as AI-driven teaching tools, professional education, and an effort to expand manufacturing education on campus in collaboration with MIT departments and degree programmes.

INM's leadership team has three faculty co-directors: John Hart, the Class of 1922 Professor and Head of the Department of Mechanical Engineering; Suzanne Berger, Institute Professor at MIT and a political scientist who has conducted influential empirical studies of manufacturing; and Chris Love, the Raymond A. and Helen E. St Laurent Professor of Chemical

Continued on page 31

Unlocking energy, jobs and opportunity for Africa's young population

Jacob Mukunukuji at his workshop in Marimauta Village, Zimbabwe, where business is booming.

Local entrepreneurs drop by to commission bespoke machinery. A solar-powered maize processing machine serves farmers across the region. Young apprentices learn new technical and digital skills.

The scene contrasts sharply with 2019 when Cyclone Idai ripped through the area, tearing down power lines and shuttering businesses. For months, workshop owner Jacob Mukunukuji and his neighbours struggled with expensive, noisy diesel generators that could barely power basic tools, let alone the heavy-duty machinery that Jacob's burgeoning business demanded.

"Having electricity is very important," Jacob, aged 31, says. "If I want

Continued on page 32

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Engineering. The initiative's executive director is Julie Diop.

The initiative is in the process of forming a faculty steering committee with representation from across the institute, as well as an external advisory board. INM stems partly from the work of the Manufacturing@MIT working group, formed in 2022 to assess many of these issues.

The launch of the new initiative was previewed at a daylong MIT symposium on May 7, titled 'A Vision for New Manufacturing'. The event featured over 30 speakers from a range of manufacturing sectors.

"The rationale for growing and transforming US manufacturing has never been more urgent than it is today," Berger said at the event. "What we are trying to build at MIT now is not just another research project. … Together, with people in this room and outside this room, we're trying to change what's happening in our country."

"We need to think about the importance of manufacturing again, because it is what brings product ideas to people," Love told MIT News. "For instance, in biotechnology, new life-saving medicines can't reach patients without manufacturing. There is a real urgency about this issue for economic prosperity and creating jobs. We have seen the impact for our country when we have lost our lead in manufacturing in some sectors. Biotechnology, where the US has been the global leader for more than 40 years, offers the potential to promote new robust economies here, but we need to advance our capabilities in biomanufacturing to maintain our advantage in this area."

Hart adds: "While manufacturing feels very timely today, it is of enduring importance. Manufactured products enable our daily lives, and manufacturing is critical to advancing the frontiers of technology and society. Our efforts leading up to the launch of the initiative revealed great excitement about manufacturing across MIT, especially from students. Working with industry – from small to large companies, and from young startups to industrial giants – will be instrumental to creating impact and realising the vision for new manufacturing."

In her letter to the MIT community, Kornbluth emphasised that the initiative's goal is to drive transformation by making manufacturing more productive, resilient, and sustainable.

"We want to reimagine manufacturing technologies and systems to advance fields like energy production, healthcare, computing, transportation, consumer products, and more," she wrote. "And we want to reach well beyond the shopfloor, to tackle challenges like how to make supply chains more resilient, and how to inform public policy to foster a broad, healthy manufacturing ecosystem that can drive decades of innovation and growth."

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For more information visit: https://inm.mit.edu/

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to fabricate metal to any extent, I'm able to do it because there's plenty of electricity."

Of the 685 million people around the world who do not have access to electricity, nearly 600 million live in sub-Saharan Africa [1]. Students are unable to study after nightfall. Businesses cannot thrive. And local and national economies falter for want of power to run businesses, create jobs and grow.

At the same time, Africa has the world's fastest growing, and youngest population. More than 60% of people are under 25 years old. According to the United Nation's Economic Commission for Africa, the continent's youth population is expected to grow by 138 million [2] in the next 25 years.

This presents a huge challenge – and an opportunity. At the current rate of growth, Africa will not be able to create enough decent, dignified jobs for its growing population. And with so many people without access to electricity, or to the finance, training and business support to accelerate its uptake, realising the required economic growth will be hard.

Yet, with the right investment, Africa can unlock trillions in growth and become a key driver of global economic resilience and clean energy innovation. Africa's abundant natural resources and renewable energy potential alone could create up to 100 million [3] new and improved jobs and livelihoods by 2050. With the right support, Africa's energetic young workforce could help the continent leapfrog traditional fuels and power a bright, clean and prosperous future, becoming the drivers of this transformation, and benefitting from it.

Access to electricity, paired with apprenticeships, technical training and finance, can empower young people to grow businesses and fuel progress across many sectors, from agriculture and manufacturing to energy leadership and beyond. With clean, affordable, and stable energy, young people have more opportunities to further their education, build skills, start businesses, and help others progress.

Consider Hasmia Sidratu Bangura from Sierra Leone. After completing a clean energy traineeship programme, this young engineering graduate became a field technician at a renewable energy company, sharing the skills she gained to power her country's sustainable growth.

In Nigeria's Kiguna Community, fisherwomen made use of innovative financing to obtain a solar-powered cold storage facility, reviving local commerce and bringing new life to their community. "Now our food doesn't spoil, and we don't need to sell it cheaply," says fish trader and entrepreneur Blessing Bitrus [4].

In Kenya, John Masha Ngowa's barbershop in Tezo operates well into the evening, working with off-grid solar power.

And in Zimbabwe, Jacob Mukunukuji regularly hosts apprenticeships at his workshop. Last year, four students earned certificates in welding and fabrication, opening doors to new careers.

Five organisations – the World Bank and the African Development Bank, supported by Sustainable Energy for All (SEforALL), the Global Energy Alliance for People and Planet (GEAPP), and The Rockefeller Foundation with its charitable offshoot, RF Catalytic Capital – united in their aim to accelerate economic growth in Africa, joined forces to launch Mission 300. This initiative aims to connect 300 million Africans to electricity by 2030. By pooling resources, influence, and expertise and partnering with governments, businesses, and communities Mission 300 is transforming energy markets, scaling finance, and helping governments set and deliver on national energy goals. And it is committed to ensuring electricity access is paired with the right tools, finance, and training to upskill a dynamic young workforce and spark a ripple effect of innovation, entrepreneurship, and jobs.

The power line that reconnected Jacob and his community to electricity was funded by the African Development Bank.

The solar power and cold storage that transformed Blessing's community was enabled by GEAPP and partners.

The training that allowed Hasmia to advance her clean energy career, was provided by SEforALL, equipping young energy professionals across Africa to lead sustainable energy development.

The mini-grids powering schools and businesses in rural Kenya were supported by the World Bank's Off Grid Solar Access Project [5] bringing solar mini grids to power schools, health clinics, and homes – and benefitting 1.5 million people.

The task ahead is immense and urgent. By investing in Africa's youth, Mission 300 [6] is ensuring that every new electricity connection is a stepping stone for jobs and growth, paving the way to Africa's energy-rich and prosperous future.

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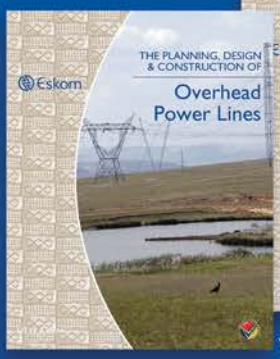
The Eskom Power Series was conceived in response to the continuing worldwide loss of critical technical skills and experience. The aim of the series is to promote international best practice, including experience acrued by Eskom over the years, as a guide and legacy and to serve as a source of reliable,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



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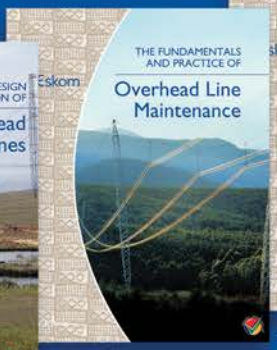

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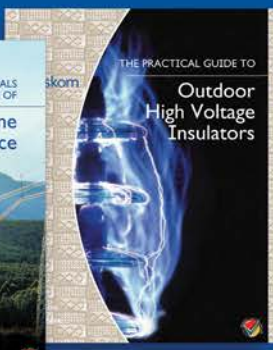

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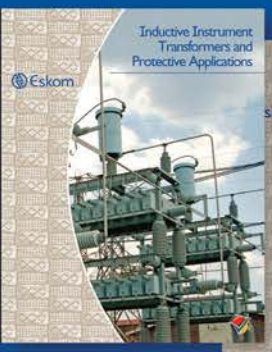

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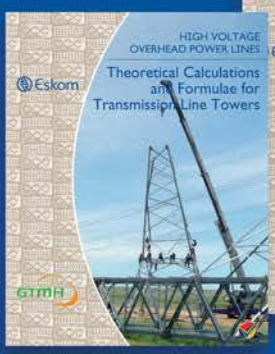

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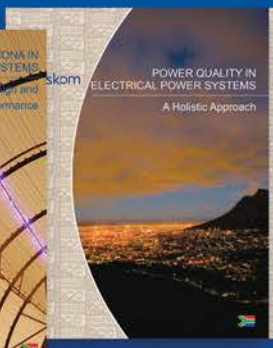

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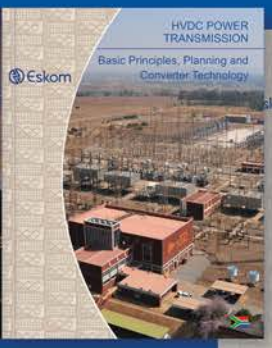

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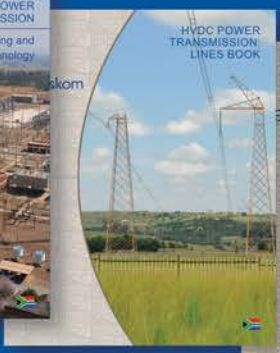

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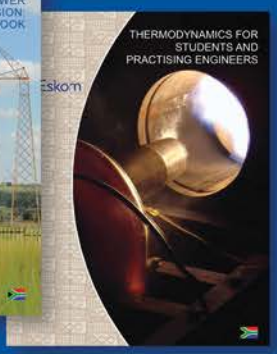

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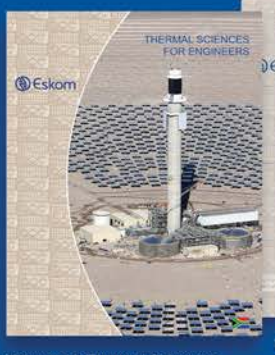

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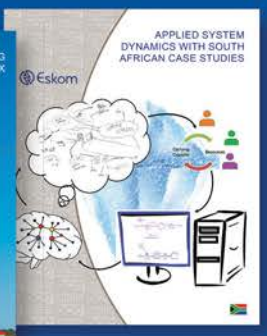

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The Eskom Leadership & Management Series was introduced by Eskom at the request of readers and stakeholders of the Power Series who felt that the series should be expanded to include non-technical topics. These topics are often not well understood 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.

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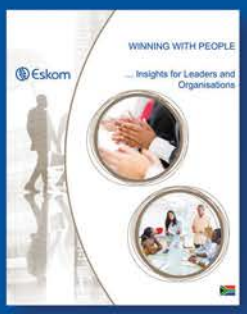

Volume 2: Winning with People ... Insights for Leaders and Organisations

Volume 1: Procurement Management Key Concepts and Practices

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

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

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