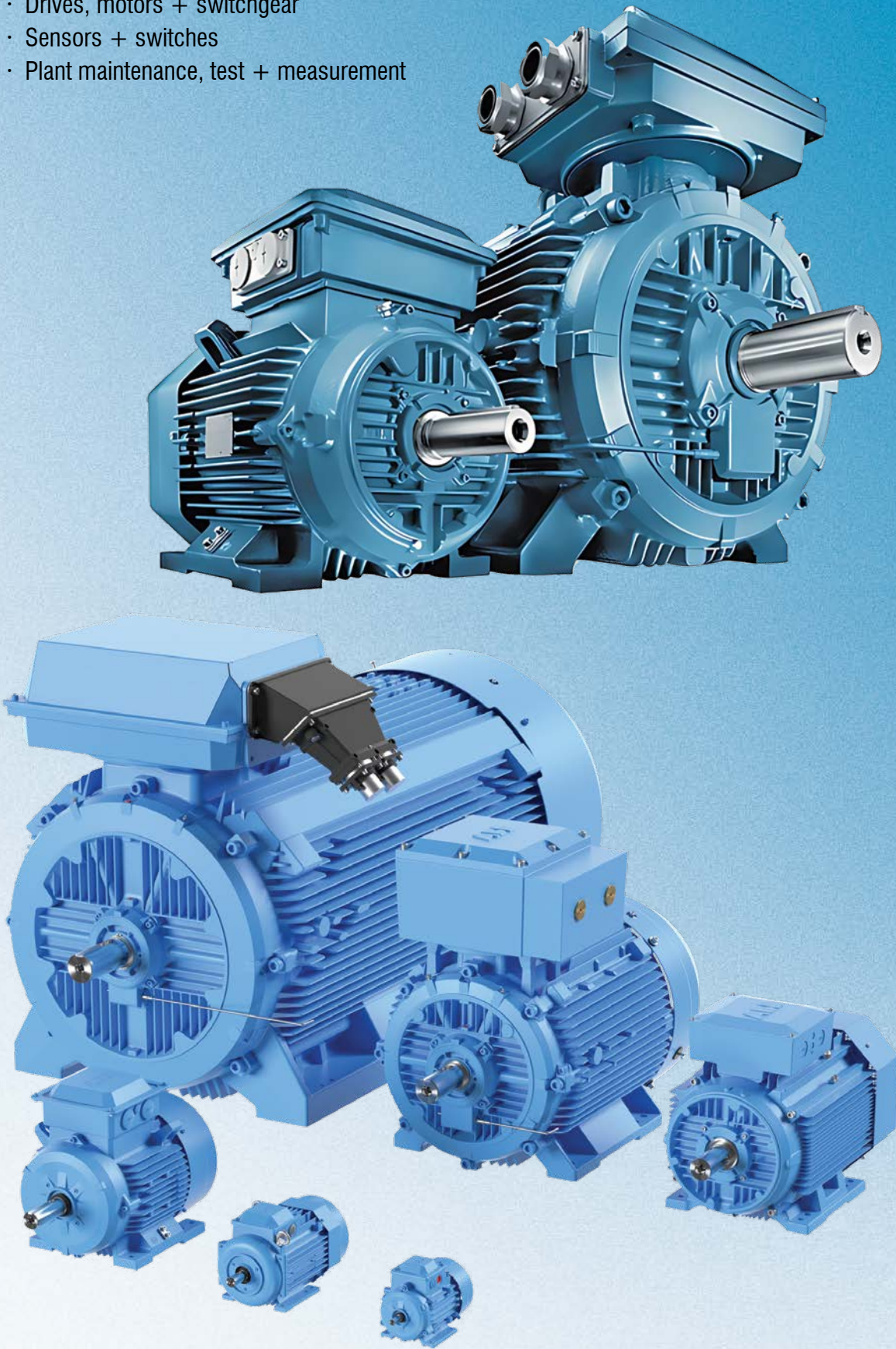


FEATURES:

- Control systems + automation
- Drives, motors + switchgear
- Sensors + switches
- Plant maintenance, test + measurement

05/2024



Bearings & Seals
Chains & Sprockets
Electric Motors & Drives
Belts & Pulleys
Gearboxes & Couplings
Lubricants & Tools
Field Services

ELECTRICITY + CONTROL

CROWN
PUBLICATIONS

Condition Monitoring is at the heart of machine reliability



WearCheck, Africa's leading condition monitoring company, specialises in a range of sophisticated condition monitoring techniques which help to boost the availability and reliability of machinery, thereby helping our customers to operate more efficiently and save money on maintenance costs.

Machines speak, we listen, you save!

SA Branches

Bloemfontein	+27 51 101 0930
Eastern Cape -PE	+27 82 290 6684
Eastern Cape -EL	+27 72 510 5755
Gauteng	+27 11 392 6322
Middelburg	+27 13 246 2966
Northern Cape	+27 66 474 8628
Rustenburg	+27 83 938 1410
Western Cape	+27 21 001 2100

International Branches

DRC	+260 977 622 287
Ghana	+233 54 229 8912
India	+91 44 4557 5039
Mozambique	+258 85 792 7933
Namibia	+264 81 141 7205
UAE	+917 6 740 1700
Zambia	+260 212 210 161
Zimbabwe	+263 24 244 6369



Condition Monitoring Specialists

Head Office (South Africa)

+ 27 31 700 5460 marketing@wearcheck.co.za www.wearcheck.co.za

Testing and Analysis | Lubricant-Enabled Reliability | Asset Reliability Care



As a leading distributor of bearings and power transmission products in South Africa, Bearings International supplies electric motors and drives to meet the needs of most industry sectors.

(Read more on page 3.)

Editor: Leigh Darroll

Design & Layout: Darryl James

Advertising Manager:

Paul Engelbrecht

Circulation: Karen Smith

Editorial Technical Director: Ian Jandrell

Publisher: Karen Grant

Deputy Publisher: Wilhelm du Plessis



Audited circulation Quarter 4 (Oct-Dec) 2023
Total print and e-editions 12 578

Published monthly by:

Crown Publications (Pty) Ltd
Cnr Theunis and Sovereign Sts,
Bedford Gardens, PO Box 140,
Bedfordview 2008

Printed by: Tandym Print

Telephone: +27 (0) 11 622 4770

E-mail: ec@crown.co.za; admin@crown.co.za

Website: www.crown.co.za/electricity-control

CROSS PLATFORM CONTENT INTEGRATION:

* Electricity+Control Magazine * Online Edition

* Weekly e-Newsletter * Website * LinkedIn



Electricity+Control is supported by



The views expressed in this publication are not necessarily those of the publisher, the editor, SAAEs, SAE, CESA or the Copper Development Association Africa

The value of planned maintenance

Maybe it is just me, or just in my city, but of late, we have received a number of notices regarding planned shutdowns of both water and electricity systems to allow for maintenance.

The trouble is we seem to perceive any shutdown as a bad thing. We've slowly been conditioned to associate a shutdown with an indication of neglect.

Of course that is not always the case at all! Juxtapose a planned shutdown for maintenance, if you will, against load shedding, burst pipes and various other system failures.

So, I find it somewhat disconcerting that when there are genuine shutdowns for planned maintenance in electricity and water systems people become remarkably irritable.

"Why must this happen?"

Planned maintenance and the associated shutdowns (and inconvenience) should be embraced. They are indicative of due care and diligence.

It is precisely because we have, in many cases, not been planning and scheduling maintenance activities that we find ourselves continually surprised by system failures and the huge costs incurred in getting the system up and running again.

I think we are all aware of the importance of maintenance on any plant – and indeed of any system. However, maintenance can be costly – and there are certainly instances where maintenance has been delayed based on fundamental budgetary issues. In some cases though, this may also have been based on the misguided principle of convincing ourselves that a system could run for a longer period before needing maintenance.

There are many examples of this, and some simple analogies.

It is quite probable that you could miss a service or two for your own car – and it may be that nothing bad happens. However, it is more likely that some permanent damage

could occur. Often that is not obvious until the matter is more fully investigated.

The real problem comes when you convince yourself that you really do need to drive all the way from the Cape to Cairo – without a service – because you simply cannot pause along the way. Firstly, you provide a continuous operation by not stopping (which must be good, right?) and secondly, you save money on the servicing (which must be good, right?).

I think we have all encountered instances where plant availability has been taken way beyond what could be reasonably expected – and yet that has been lauded at the time.

The trouble, of course, is that your car will not be happy at all. And there is little doubt that damage will have been done. So, after the excitement of exceptional plant availability has died down – the plant itself may well have died too ...

Another aspect of not scheduling maintenance, or sticking to the maintenance schedule, is that when things do break – it is a crisis. It's almost as if the breakdown is then unexpected. And the consequence of an unexpected breakdown is that repairs are urgent – and they will be costly. They also often create 'emergency' conditions that allow significant leeway in how the repairs are executed.

So, what is the message: if you run any plant or system you need to take maintenance seriously. You need to plan your maintenance, and you need to budget for it. And if maintenance is planned, it can be budgeted for.

It is always inconvenient to shut things down, but if that is part of your plan, everyone can work around it.

Enjoy this month's edition of *Electricity+Control*.

Ian

Ian Jandrell

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



CONTENTS

FEATURES

CONTROL SYSTEMS + AUTOMATION

- 4 Streamlining panel building
Kovilan Chinnathambi, Schneider Electric

- 7 Products + services

DRIVES, MOTORS + SWITCHGEAR

- 10 Global standards in local mechatronics assembly
Leigh Darroll spoke to Werner Engelbrecht and Robert Fletcher at SEW-EURODRIVE

- 13 Products + services

SENSORS + SWITCHES

- 16 Products + services

PLANT MAINTENANCE, TEST + MEASUREMENT

- 18 Maintaining efficient steam systems in the dairy industry
Associated Energy Services

- 20 A new approach to testing insulation on HV equipment
Falk Werner, Doble Engineering Company

- 22 Wireless telemetry for widespread water networks
Ian Loudon, Omniflex

- 23 Products + services

REGULARS

- 1 Comment
The value of planned maintenance

- 3 Cover article
Motors and drives for all industry sectors

- 26 Reskilling, upskilling + training
New in education and training for industry

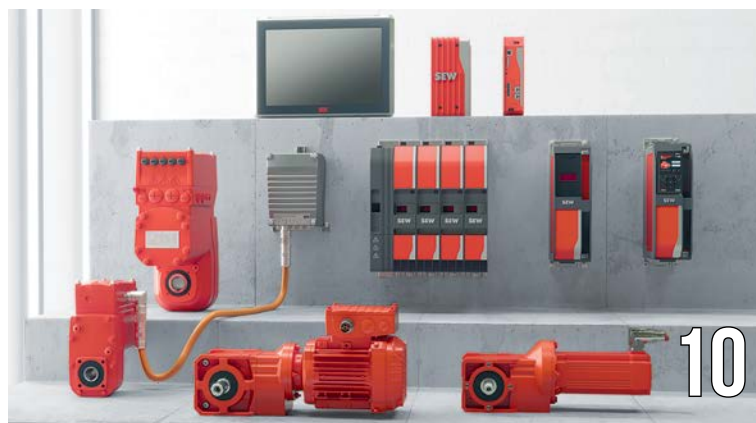
Transitioning from the NQF to OQSF

- 28 Engineering the future
Industrialisation starts with focused R&D

- 30 Cybersecurity
Turning the browser into a security endpoint

- 31 Events in Energy 2024
Enlit Africa 2024, and more

- 32 Write @ the back
Battery system bridges power outages to secure water supply



Motors and drives for all industry sectors

Bearings International (BI) is a leading distributor of bearings and power transmission products in South Africa. The company offers a wide range of products, including electric motors and drives.

As well as supplying its in-house Alpha brand, manufactured by TechTop, it is an approved Channel Partner for ABB motors, which it supplies country-wide through its national distribution network. Low voltage motors in the power range from 0.18 kW to 355 kW are available directly ex stock – and up to 1 200 kW on request. Medium and high voltage motors can be supplied on request.

The BI product portfolio also includes its Alpha HV10 and HV100 series of variable speed drives (VSDs) which replace the former V-Drive. The VSDs range in size from 0.4 kW up to 220 kW – available ex stock – with larger units available on request.

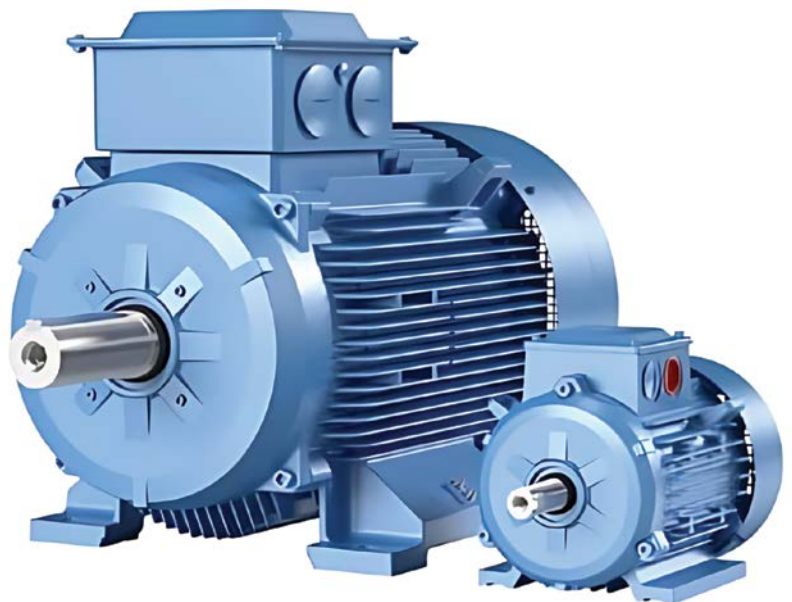
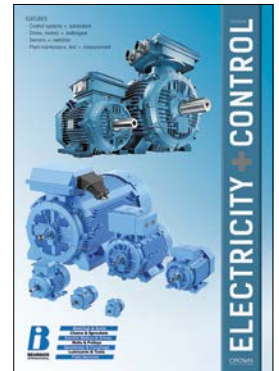
Long established as a supplier of industrial equipment, BI provides motors and drives that meet the needs of most industry sectors. Stephen Bekker, Product Leader: Motors & Drives at BI says, “As a premium range, recognised for quality and reliability, ABB motors are suited to the mining, water management, and pulp & paper industries, as well as process industries and others. Alpha motors,” he says, “can be used more widely across almost any sector, from FMCG (fast-moving consumer goods) production to general industry and in mining too.”

Bekker notes that some customers are becoming increasingly energy conscious, concerned with energy efficiencies in their plant and equipment to optimise costs and performance. Others, however, are more price sensitive

and prefer to work with equipment that offers a lower upfront cost. “We can assist them all and we offer guidance on the best motors and drives to suit their needs and priorities,” he says.

He highlights that the South African government is in the process of introducing a minimum efficiency performance standard (MEPS) for electric motors sold in South Africa. The MEPS is expected to be introduced in South Africa in the near future and this will mean the lowest efficiency motors sold in the country will have to be IE3 (premium efficiency) motors. Bekker adds that BI is ready to make this transition as soon as the new standards are officially introduced, as both ABB and Alpha factories already hold the respective accreditation in Europe and Australia.

With an experienced team handling motors and drives, BI offers support to customers to select the right product based on the application, environment, operation, electrical or mechanical specifications. Product technical information is also readily available, and the team provides after sales support on site. “We can assist customers with any questions, challenges or information they require,” Bekker says. □



BI offers a wide range of electric motors and drives, including its own Alpha brand motors and Alpha HV10 and HV100 series variable speed drives.



For more information contact Bearings International.
Tel: +27 (0)11 899 0000
Email: motors@bearings.co.za
Visit: www.bearings.co.za



Kovilan Chinnathambi
at Schneider Electric.

Streamlining panel building

Kovilan Chinnathambi, Product Manager at Schneider Electric

Data centres run critical applications and require equipment and infrastructure that operate at 100% uptime; any downtime caused by faulty components in electrical panels could have severe ramifications.

By their nature, data centres' operations change continuously, but the requirement for dependability and operational efficiency remains constant and non-negotiable. Electrical panels are key components of data centres, providing power to the racks, servers and cooling infrastructure. The panels should therefore be of high quality and type-tested to ensure safe and reliable operations and maximum power availability.

Panel builders working on data centre projects often face challenges that can be mitigated by using products designed to prioritise simplicity and seamless integration, which allow for streamlined implementation and deliver significant advantages.

One of the main challenges that panel builders face is to produce a board in the shortest possible time. A standardised design enables them to do this and to reduce labour time required. A panel that is a complete system, has been fully type-tested and is a finalised design will reduce the need for ad hoc labour, as is often required to complete the build.

Improving productivity

Using a pre-configured electrical panel can have a positive impact on the productivity and efficiency of the setup process, as each mounting plate and front plate is designed to accommodate various circuit breakers. The plates are pre-punched and pre-drilled, reducing the labour time required from the panel builder to cut or drill in order to mount components, and the mounting plate is designed specifically to make it easy to assemble in the least amount of time.

Considering that downtime in a data centre (as in most industrial facilities) can have serious implications, the endorsement of equipment from the original equipment manufacturer (OEM) is paramount for panel builders. With OEM solutions,

the relationship and integration of the different components – from busbars to circuit breakers – is guaranteed.

The only way to guarantee uptime, reliability and safety is with a fully type-tested panel, where the panel is fitted with the same components that will be used to produce the board for end customers and has been tested in a laboratory. This means the performance of the circuit breakers fitted to the panel is guaranteed and there will be no surprises if they operate in an environment that is within the limits of the product.

Although a circuit breaker installed into a board and running in an environment at slightly elevated temperatures will not fail immediately, it will have a limited lifespan and is likely to fail prematurely. This compromises reliability and adds to the cost of ownership for the end user.

Flexible configuration and scalability

Equally important factors for panel builders to keep in mind are modularity and scalability. Where the panel is designed with modular components, this allows for flexible configuration and easy scalability. Such adaptability is especially advantageous for data centres which often need to accommodate changing IT equipment and power requirements over time. With a modular system, end users are not tied to what they bought initially but can modify and extend the panels as their needs change.

Additionally, the inclusion of integrated circuit protection improves the reliability of panels in data centres significantly. Circuit protection devices play a critical role in safeguarding sensitive equipment by preventing electrical overloads and short circuits. This, in turn, reduces the risk of downtime and damage, making protection devices essential components for the smooth functioning of data centres.

A digital switchboard with connected circuit breakers is the ideal solution for a data centre environment, as it allows the end user to monitor the electrical loads and pre-empt any potential trips or failures. This supports reliability and provides load information from the board, so loads can be optimised and energy consumption managed for efficiency.

Thus, for panel builders working on data centre projects a properly designed panel can provide several advantages, in terms of enhanced reliability, safety and performance as well as in total cost of ownership, scalability and modularity. Panel builders should therefore choose a trusted OEM with a reputation for quality and safety, which are particularly crucial in installations, where equipment failure can have severe consequences. □



Using a pre-configured electrical panel can have a positive impact on productivity in the setup process.

For more information visit: www.se.com

Automation platform providing cohesive systems

As part of its Boundless Automation™ vision to help organisations deliver seamless operations, global automation technology and software leader Emerson has developed its DeltaV™ brand into the DeltaV Automation Platform. This is newly expanded to include supervisory control and data acquisition (SCADA) systems, manufacturing execution systems (MES) and operations management software, alongside the distributed control (DCS) and safety systems (SIS) and other technologies that have been part of the brand for decades. It builds a more comprehensive automation platform to make it easier for users to deliver smarter, safer, optimised and more sustainable operations.

Organisations across almost every industry – life sciences, speciality chemicals, mining and extraction, food and beverages, energy and more – are experiencing new complexities as they face the modern challenge of improving throughput, performance and quality while simultaneously increasing the sustainability of operations. Navigating this increased complexity requires seamless mobility of data, reliable performance and advanced control strategies from the plant floor to the corporate boardroom. The comprehensive DeltaV Automation Platform will empower users to move away from 'plant-by-plant' strategies to 'site-by-site' or enterprise automation solutions – the more advanced, integrated automation strategies that are increasingly necessary to compete in a global marketplace.

"In an era of increased demand and higher sustainability targets, today's organisations are looking

for ways to manage and contextualise data across the many software solutions they use to help unlock easier, faster and safer decisions," said Nathan Pettus, President of Emerson's process systems and solutions business. "The DeltaV Automation Platform will combine a flexible, fit-for-purpose portfolio of DCS, SIS, SCADA, MES and operations management software with application and cross-industry expertise to help cross-functional teams across the enterprise more easily achieve their goals."

With an extensive, unified portfolio, users will have access to a technology ecosystem that provides a broader suite of solutions. Organisations will more quickly and easily find the right solutions to meet their needs and will gain easier access to service, training and support.

All solutions in the DeltaV Automation Platform will be supported through the Guardian™ digital customer experience. Users will have a single point of access to Guardian's digital tools and subscriptions for all their solutions, providing easy access to real-time monitoring, in-depth analytics and actionable insights.

The continuing evolution of the platform will extend to future Emerson products. Development for DeltaV Automation Platform offerings will focus on products and systems that communicate and work better together, offering users a more cohesive and streamlined experience. □



The new DeltaV Automation Platform adds SCADA, MES and operations management software technologies to promote smarter operations.

More electronics engineering solutions from one source

RS South Africa, a trading brand of RS Group plc, a global provider of product and service solutions for industrial customers, has expanded its RS PRO electronics engineering range with 1 900 new products across 20 technologies. It offers high-quality electronics components from industrial connectors and passives to the latest test and measurement equipment.

This expansion is selected for professionals engaged in research and development, the development of printed circuit boards, design of equipment and machinery, and production line engineering. The electronics engineering range demonstrates RS PRO's commitment to providing high-calibre components and precision measuring instruments of the highest quality.

RS PRO claims a competitive advantage in its association with high-quality products that have been rigorously tested and comply with industry standards.

The RS PRO product line offers an extensive selection of over 80 000 items, boosting its capability to meet almost any requirement and provide complete solutions. High inventory availability ensures customers can find everything they need in a simple, efficient and straight-



RS South Africa has added 1 900 new products to its range of quality-checked electronics engineering solutions.

forward way, all under one brand.

The expanded range encompasses the following electronic products: resistors, capacitors, inductors, circuit protection, industrial and AV connectors, fuses, LED indicators, electronic test and measurement components, soldering equipment and more.

All products feature the RS PRO Seal of Approval, a guarantee of professional, industrial-grade quality and performance, tested by the brand's team of experienced engineers. The product line provides customers with a comprehensive choice of quality solutions meeting design and compliance specifications at all stages of the product lifecycle. □



Alwyn Rautenbach, CEO at Iritron.

Opportunities in plant automation despite obstacles

Although 2023 was tough – and particularly so for South Africa's mining industry, a traditional sector for Iritron's electrical, instrumentation, control systems and decision support systems expertise – the company reports some highlights from the year.

CEO Alwyn Rautenbach notes the buoyancy of the technology sector worldwide, with advances in IIoT (Industrial internet of Things), smart sensors, online asset management, digital methodologies and information sharing in the IT environment – and this produced some green shoots for Iritron.

He says this buoyancy is manifest in Gauteng and the Western Cape in the manufacturing and agricultural sectors, and in the application of integrated digital control systems for large and smaller solar energy installations, which is a growing aspect of Iritron's business. The same is true in the mining sector. "In particular, by combining our instrumentation and control expertise in the mining space with solar developments, we have launched the concept of solar-powered wi-fi trailers, which bring wi-fi into the open pit environment. This allows for remote control of autonomous drilling operations and traffic control of vehicles operating in an open pit – with benefits accruing in safety improvements, control, cost and fuel savings for the mine."

Additionally, with advanced technology solutions, Iritron has commissioned several projects in the mining sector and in food processing lines.

"Automation, digital control and the complex synchronisation of electric motor driven equipment have been core to Iritron's success and established us as experts for commercial and industrial control management, plant optimisation and data recording," Rautenbach says.

In mining

In the mining space, the company has delivered automation and on-site instrumentation for crushers at an iron ore mine and, for a different customer, is involved in the upgrading of complex motor control and variable speed drives (VSDs) of plant controlling fans, pumps and conveyors.

"The first four of a total of 67 motor control centres have been commissioned on this project, on time and within budget. That entailed the replacement of obsolete equipment with advanced electronics in an extremely confined space. It necessitated redesigning proprietary equipment, in conjunction with the OEM, and ensuring that our design didn't compromise the OEM's certification and guarantees on the equipment. Furthermore, advanced software programming skills enabled the synchronisation of the conveyor motor drives – there are

up to four VSDs per conveyor and all of them have to operate in unison," Rautenbach explains.

He reports that other mining projects have involved management consulting to devise strategies and specifications for asset management systems, data sharing at ERP level and the integration of existing communication systems with more advanced communications and telemetry. These Iritron-designed and -installed systems can provide management with an integrated dashboard for day-to-day operations and for disaster management incidents, providing situational analysis of multiple factors – power, water, utilities, firefighting, pumps and compressor availability, performance and consumption information – which can be shared across the organisation if necessary, in real time.

The global nature of the mining industry has placed greater emphasis on ESG (environmental, social and governance) issues and the accurate accounting, tracking and reporting of metals production. Global mining companies view the accurate accounting for and reporting on production and work in progress on par with financial accounting and reporting. With its systems integration and software expertise Iritron addresses these challenges.

In food processing

In the food processing sector where Iritron also offers its expertise in production lines, recent projects are concerned with optimising canning and packaging operations for major producers.

"Currently we are commissioning a data recording system for measuring line efficiency of a canning plant producing condiments in Tzaneen. The customer set a target of increasing plant capacity by 50% and required an integrated solution which would measure the line efficiency and performance of its fill and cap machine. Bringing together two different technologies, our engineers were able to provide a system that records throughput against a target plan, identifies quality issues, and records downtime and line blockages using electronic capture techniques. It is a sophisticated system that allows for a plant manager to interrogate it from anywhere via a smart phone," Rautenbach says.

In a separate project, Iritron has upgraded a TrakSYS system to allow the tracking and seamless capture of palletised products' mass and throughput from production to warehouse with an automated solution, replacing a previously manual, paper-based system.

And in 2024?

"Mines are demanding more tech to provide automation and real-time online equipment condition monitoring for critical equipment, such as drainage pumps, compressors, and bulk handling equipment like crushers

Continued on page 7

Versatile copper busbar for electrical connections

Referro Systems, a sales and distribution company specialising in the supply and support of industrial electrical, automation and global software and hardware brands, and an authorised distributor of Rockwell Automation's products in South Africa, can now offer the Cubic product range of Cu-flex flexible copper busbars to the South African market.

This follows the conclusion of Rockwell Automation's acquisition of CUBIC, a company that specialises in modular systems for the construction of electrical panels.

Applications

Due to their versatile properties, Cu-flex busbars have applications in many industries. Their flexibility, high electrical conductivity and durability make them an ideal solution where safe, reliable electrical connections and current-carrying capabilities are required.

For electrical connections, Cu-flex busbars provide a reliable and low-resistance connection between components, such as transformers, circuit breakers and busbars. They are particularly useful where vibrations, thermal expansion or movement could cause rigid connections to fail. Cu-flex busbars also offer the flexibility to accommodate changes or additions to the systems.

In power distribution, the busbars can be used to connect large electrical equipment, such as generators and substations.

In the automotive Industry, Cu-flex busbars can be used for grounding and connecting various electrical components.

In power electronics devices like inverters and rectifiers, Cu-flex busbars can be used to connect semiconductor devices, capacitors and other components.

In renewable energy, wind turbines and solar inverters can benefit from the flexible copper bars to interconnect components and carry high currents generated by renewable energy sources.

In aerospace and aviation the busbars can be used in aircraft wiring and electrical systems where weight savings and flexibility are essential.

In industrial machinery, flexible copper bars can be



Cu-flex copper busbar is made of strands of copper wires woven into a flexible busbar with the ends forged into a solid unit.

used for power transmission, control systems and motor connections.

In battery systems for large-scale energy storage or electric vehicles, Cu-flex busbars can be used to connect battery cells or modules.

A Cu-flex flexible copper busbar is made of strands of copper wires that are woven into a flexible busbar. Using a proprietary technique, the ends of the busbar are forged into a solid unit. The insulated busbar provides time-saving and maintenance-free connection contact surfaces for motor control centres, switchboards or industrial control panels.

The busbars are supplied ready for use, with no need to spend time on shortening, stripping the wires, making holes, or complicated bends.

Cu-flex has been tested and approved under various authorities such as DEKRA and DNV, and it is UL recognised in the category 'Component – Panel board and Switchboard Accessories'.

Cu-flex busbars are supplied ready for use in a wide range of lengths and sizes. Their flexibility makes them easy to install or to use for modifying an existing installation.

With a track record of more than 24 years in business, Referro Systems has established a reputation for excellent pre- and post-sales support on some of the world's leading brands – and this is extended to customers for the new Cu-flex busbar range. □

Continued from page 6

and conveyors, to improve efficiency and control costs. Collection of operating data on these assets and presenting the information in a visual form allows mine engineers to optimise operations and to predict and prevent equipment failures, and at the same time records machine performance and power consumption.

"Demand for copper and platinum group metals from manufacturers of batteries for electric vehicles has led to an upswing in mining activities further north in Africa. Iritron has provided automation and system solutions for enterprises in Gabon, Senegal, Zambia and Tanzania.

This is likely to grow as the switch to EVs gathers momentum," Rautenbach notes.

With its commitment to supporting efficiencies in mining and its move into the solar power industry providing control systems and specialised wi-fi enabled solar trailers, Iritron sees opportunities ahead, despite local economic headwinds.

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

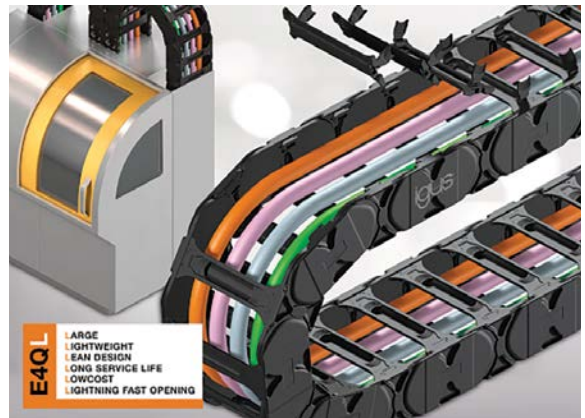
Cable protection for longer runs

Polymer energy chain manufacturer, igus, has introduced a new lighter weight e-chain for cable management and protection applications with large unsupported lengths and high fill weights, previously the domain of larger, more expensive energy chains.

The manufacturer's 'L' Lean variant has been designed especially for users for which its industry standard E4Q is too big. From the seventh robot axis in linear robot applications to machine tools, the igus E4Q-series energy chain has established itself in recent years in demanding applications with large unsupported lengths and high fill weights. However, for applications with medium loads – in machine tools, or woodworking, for example – the E4Q is oversized.

"To offer users the advantages of the E4Q in these applications as well and at a lower price, we developed the L version – the E4Q.64L," says Ian Hewat Managing Director at igus South Africa. "Depending on the width, the low-cost version of the energy chain costs between 15% and 20% less than the E4Q."

To reduce costs, the igus designers modified the E4Q's design with the aim of striking a balance between low dead weight and maximum robustness. The side links are narrower than those of the E4Q, reducing the weight. The bionic design, which dispenses with any material that has no load-bearing function, was retained. Tests in the igus test laboratory show that the E4Q.64L



Lighter, stronger energy chains from igus.

has a breaking moment about 30% greater than the 14240 series, which is also used for unsupported applications. This results in up to 20% more length with the same fill weight.

The chain can also be operated in two bending directions by replacing the outer link with a special RBR link. This provides it with what is known as a reverse bend radius (RBR), which means circular movements can be implemented (on a robot's axis 1, for instance).

Unlocked on both sides, the crossbar can be lifted up with little effort. The other advantage is that an extensive product range of crossbar widths is directly available, so the E4Q.64L is available in 29 widths between 100 and 500 millimetres. □



Marco Sutter, MD, Bühler Southern Africa.

Process solutions for the food industry

Bühler Southern Africa is committed to addressing food security, regionally and continent-wide. MD Marco Sutter says, "We are participating in various discussions, highlighting the importance of this issue and our dedication to finding solutions."

As a result, the company has started 2024 in full swing. "Our mission is to deliver innovation for a better world. The food challenges we face, and challenges in the mobility sector too, demand innovative solutions, technologies, process solutions, and business models," Sutter says.

"At Bühler we want to contribute to a sustainable world that affords the next generation the same chance to live and develop as today's society does. The digitalised world we live in requires greater flexibility and agility to be successful and, as a result, a culture based on self-responsibility and collaboration," he adds.

Values are the basis of any company culture, and Sutter highlights that Bühler Southern Africa cares equally for its customers and colleagues. "Innovation for

a better world: what does that mean for us in southern Africa? We have a major responsibility to create solutions for safe and affordable food and enough to feed for everyone."

Sutter says Bühler is the technology leader in the industry and sets new trends with its advanced solutions. "We develop new process solutions and business models for the industry and nurture fresh talent for the region."

Bühler has been operating in South Africa since 1972 and currently has over 220 employees. Its Johannesburg operation provides sales and service, project execution and manufacturing and logistics. In addition, it has service stations in Cape Town, Lusaka, and Maputo, offering its extensive client base spares and wear parts, roll refuting, and die refurbishment. "We offer a strong and trusted local presence in Africa, with a state-of-the-art workshop and local spares stockholding," Sutter says. □

The control system for process automation: PC-based control



Full automation of all processes and plants

- integration of all control functions into a single hardware and software platform
- control and cable redundancy to increase system availability
- extensive portfolio of components for explosion protection
- EtherCAT modules with intrinsically safe interfaces for the direct connection of field devices up to zone 0/20
- support for typical industry standards such as NAMUR, HART, and FDT/DTM
- seamless integration of MATLAB®/Simulink® and Labview in TwinCAT
- TwinCAT MTP for system modularization



Scan to discover
everything you need
to know about PC-
based control for the
process industry

New Automation Technology

BECKHOFF

Global standards in local mechatronics assembly

Having invested significantly in the construction of its new, state-of-the-art production facility and head office in Aeroton, Johannesburg, which it opened in March 2022, SEW-EURODRIVE has progressively established all its assembly lines – for industrial gear units, motors, drives and related equipment and systems – at this site. Most recently, the electronics assembly line was relocated from Cape Town to the new production facility. Leigh Darroll spoke to Werner Engelbrecht, Electronics Operations Manager, and Robert Fletcher, Electronics Field Service Technician, on site.

The new facility reflects SEW-EURODRIVE's confidence in the growing African and South African markets and the company has made this investment to support its own forecast growth locally and across the continent.

Importantly, Engelbrecht highlights that it enables the company to streamline all its operations at this centralised site. It also allows for a broader range of SEW-EURODRIVE's products and capabilities to be assembled and delivered locally. For instance, he says, electronics assembly and allied systems were previously assembled at the production facility in Cape Town. With the new centralised facility, efficiencies in output are immediately realised and the modular product makes more variations available to customers – plus the benefits of reduced lead times on meeting new orders, or in handling maintenance diagnostics and the turnaround on repairs. He notes too, that it supports the more interactive approach the company is taking in working with its customers to develop automation solutions with them – as their needs or new requirements evolve.

Fletcher highlights that SEW-EURODRIVE is working more closely with customers to find out what they need and to set out the broader scope of services that it offers



Werner Engelbrecht,
Electronics Operations Manager
at SEW-EURODRIVE.

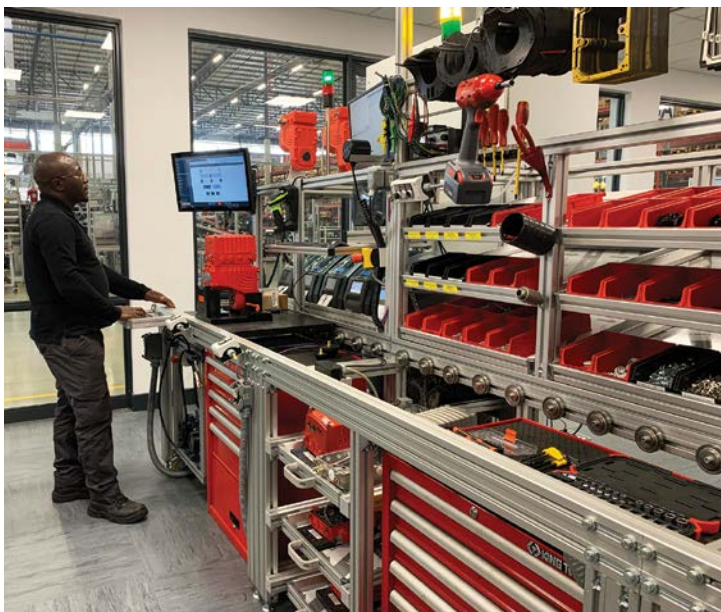


Robert Fletcher, Electronics
Field Service Technician at
SEW-EURODRIVE.

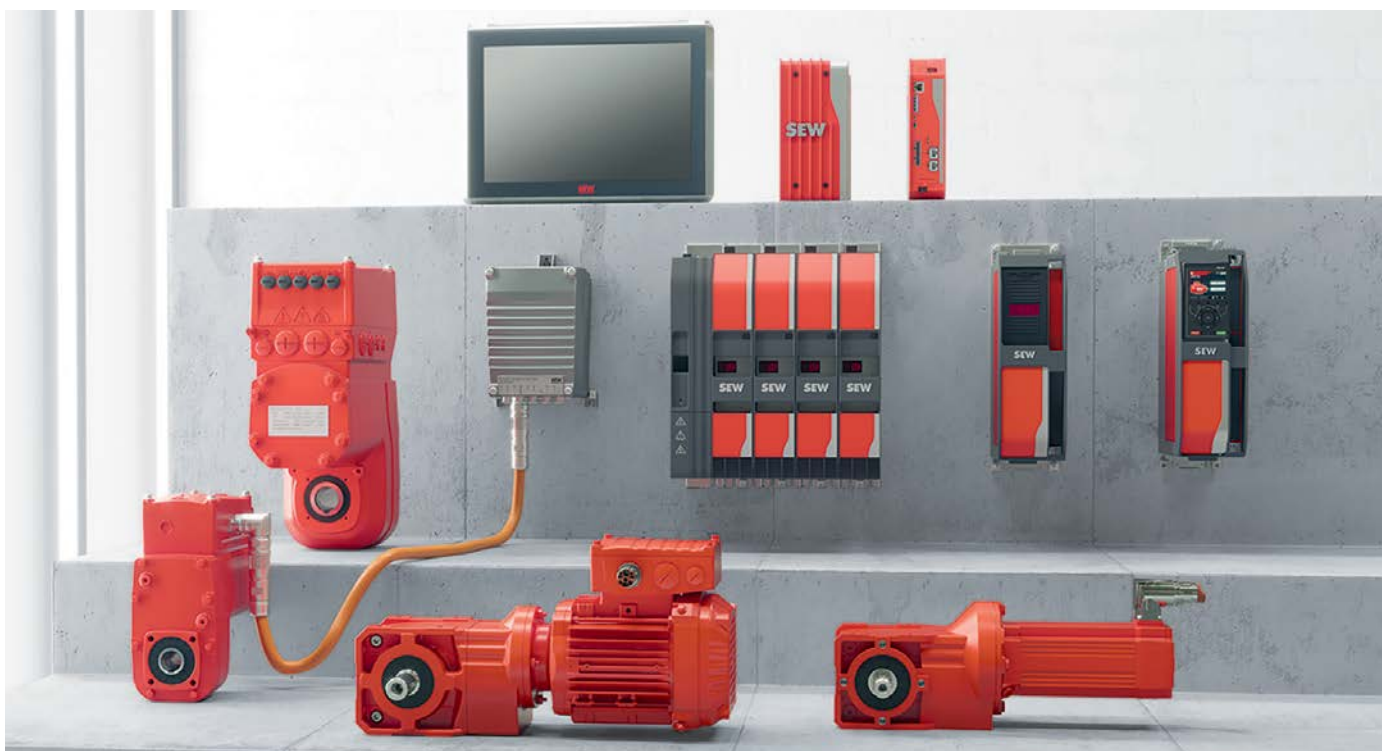
– to support customers in improving production efficiencies, advancing plant automation, or creating automation solutions for specific operational requirements. Customers have welcomed this approach as it opens up new opportunities for them to boost their plant performance.

A walk through the new production space at the 26 000-m² headquarters makes the streamlining of the assembly operations and output clear, particularly in the case of the mechatronics assembly. The layout is modelled similarly to that in SEW-EURODRIVE's showcase factory in Graben-Neudorf in Germany, designed to optimise efficiencies.

Globally, SEW-EURODRIVE offers a multitude of possible combinations of motors and gear units, plus customised modifications within those. This indicates the complexity of bringing all the correct components together for each unique unit to match the standards of quality for which the company is recognised – and demands precision and order. Like all its facilities worldwide, the Johannesburg operation is networked to the global SEW-EURODRIVE systems. As work begins on assembling a new unit, for instance, the system sets out the parts to be selected from stores and the assembly instructions for the unit (according to the work order), in a standard works procedure and these are presented on a PC interface, at the assembly line, to provide a quick, easy reference for the technician handling the assembly. This simplifies and concentrates the work the assembly technician or team needs to do – following a clear step-by-step process. Assemblies are checked au-



The MOVIGEAR® production line at SEW-EURODRIVE's facility.



SEW-EURODRIVE'S Generation C MOVI-C® electronics range.

tomatically at each step so that if, for instance, a screw is not accurately torqued, the assembly line will not allow for the technician to move on to the next step. Additionally, an SEW-EURODRIVE designed and produced motor test panel provides for the automated testing of each motor coming off the assembly line to ensure it matches the company's global quality standards. Thus, a motor assembled at the Johannesburg facility will match the same unit produced at the Graben-Neudorf facility or any other SEW-EURODRIVE production facility worldwide.

Noting the output efficiencies achieved on the new assembly lines, Fletcher says the company can produce a standard gearbox, for example, within hours, fully assembled, tested, and spray painted.

Quality control and traceability

Further, all test records and reports are retained online, so accurate assembly information is always accessible, and each unit is traceable to the specifics of the original assembly – the technician who assembled it, when, where, and what components were used – at any time. Going forward, this fine level of traceability can assist with diagnostics when required for maintenance and repair. In turn, repairs records and reports are also retained online so the information is available when it is needed and can provide a history of each unit produced, through its production journey to delivery and over its serviceable life. And the information generated from the Johannesburg facility (like any other SEW-EURODRIVE facility) is tracked by SEW-EURODRIVE in Germany.

Training on site for the assembly technicians also supports the quality standards that the company maintains.

In the assembly of IGUs, for example, newly appointed technicians go through a three-months mentorship on site, working on the line with the guidance of a mentor. Additional training is conducted at the company's Drive Academy, on the same site, which provides training for staff as well as for customers, on request. There are upwards of 75 technicians working on the different assembly lines at the Johannesburg facility, with specific skills in assembling motors and industrial gear units, for example, or for electronics assembly, testing and repairs.

The electronics assembly line

The same precision and control applied to the production of motors and gears applies in the electronics assembly workshop. Here, electronic drives are produced in a closed dust-free and controlled environment. The workshop also matches SEW-EURODRIVE's global standards and provides the same level of traceability as for motors and gear units, through production and over the service life of each drive or decentralised drive system produced. All production is monitored automatically, locally and by head office in Germany, and the Johannesburg operations are audited by a team from head office every three years. This includes a site visit to check and inspect the operations.

Each drive will be unique and each has its own processing ID. This provides a high level of traceability for diagnostics, to serve future maintenance needs. Traceability extends to each unit and to each component in each unit.

Mechatronics in decentralised drives

As well as control cabinet drive technology, SEW-EURODRIVE produces decentralised drive systems which

can be installed on the customer's production line as needed. This reduces cabling and allows for daisy chain cable installation. The MOVIGEAR® performance drive unit is part of the decentralised portfolio and combines gearbox, motor and drive in one unit, providing more flexibility and greater efficiencies in many applications, depending on plant and operational needs.

The mechatronics assembly and repair workshop is positioned alongside the main assembly floor and next door to the drive assembly workshop. Assembly of control panels complete with electronic drives, decentralised drive systems, and assembly and repair of high-speed, high-precision servomotors are done in this workshop. Like the motor test panel (MTP) on the motor assembly line, a decentralised test panel (DTP) tests all the elements of the decentralised drive systems. This test panel is also produced in-house and automatically aligned to the standards SEW-EURODRIVE applies to the equipment it produces worldwide. Again, assembly and testing processes here are audited every three years by the team from SEW-EURODRIVE in Germany, to ensure quality standards are maintained. The test equipment can also be managed remotely, if the need arises.

The electronics test and repair workshop is the third workshop aligned alongside the main assembly floor. Here, drives that need repair are received, comprehensively tested according to the standard testing procedure, and components are repaired or replaced as needed.

Creating new solutions

SEW-EURODRIVE has advanced its mechatronics drive system from MOVIGEAR® Generation B now to Generation C as part of the MOVI-C® portfolio, which incorporates new software and standardised communication protocols with significantly increased capabilities. It allows for decentralised units to be adapted to localised needs on a plant; the software platform is in place and can be modified

to serve particular plant requirements. This saves customers a lot of development and programming time. MOVIKIT® provides the basics to all the products in the MOVI-C® range, which can then be adapted to meet different and changing requirements. Adaptations can be done by the customer, or by SEW-EURODRIVE programming specialists. Customised MOVIKIT® software can in turn be licensed to protect each customer's respective intellectual property.

SEW-EURODRIVE's Maxolution automation solutions can be seen as an extension of its automation programming expertise. Maxolution allows for multiple modifications to meet specific automation requirements. It serves diverse industries and is already in use in automotive production, mining and the food and beverage sector, among others.

All elements of a solution can be modelled at small scale to simulate and test performance. Gearbox, drives, panels, and programming can be tailored to serve specific applications. Solutions can be demonstrated to the customer in advance of implementation, and developed further, adjusted or extended as required. Thus, Fletcher says, improvements can be made over time, or new functionalities added. He emphasises that this provides a major time- and cost-saving service for customers as it bridges the automation software development process – and the trial and error that often accompanies that. It is solution oriented. Small changes can make a big difference, he says.

Maxolution also allows for remote diagnostics and maintenance support. In many cases, problems can be fixed remotely, although Fletcher says some things are still best checked on site to gain a full understanding of the problem and the operating context.

SEW-EURODRIVE provides customer support and back-up 24/7 and is recognised today as 'not just as a product supplier' but a leading provider of customised automation solutions. □

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

What is mechatronics?

Mechatronics engineering is an interdisciplinary branch of engineering that focuses on the integration of mechanical engineering, electrical engineering, electronics engineering and software engineering, and includes a combination of robotics, computer science, telecommunications, control systems, and product engineering.

As technology advances, various subfields of engineering have adapted and multiplied. The objective of mechatronics is to produce a design solution that unifies these various subfields. Originally, the field of mechatronics was intended to be simply a combination of mechanical, electrical and electronics engineering, the name being a portmanteau for the different disciplines, but as the complexity of technical systems continued to evolve, the definition has been broadened to include more technical areas.

The word mechatronics originated in Japanese-English and

was created by Tetsuro Mori, an engineer at Yaskawa Electric Corporation. The word 'mechatronics' was initially registered as a trademark by the company, in Japan, in 1971. However, the company later released the right to use it to the public, and the word began being used globally. Currently mechatronics is translated into many languages and is considered an essential term for advanced automated industry.

Many people treat the term mechatronics as a modern buzzword synonymous with automation, robotics, and electro-mechanical engineering.

French standard NF E 01-010 defines it as: "an approach aiming at the synergistic integration of mechanics, electronics, control theory, and computer science within product design and manufacturing, in order to improve and/or optimise functionality".

Reference: <https://en.wikipedia.org/wiki/Mechatronics>

30 years of growth serving Cape Town and beyond

Starting out in 1994 to serve the metropolitan area of Cape Town with a range of low voltage electric motors, WEG Africa's Cape Town branch has grown in size and the range of products and solutions it offers.

Testament to this is that it has again outgrown its premises and, last year, relocated to larger, well-equipped facilities in Richmond Business Park. This enables it to enhance its services to customers.

Branch Manager Marthinus Greeff says, "30 years ago, the branch was established with three staff members – the manager, an administrative assistant, and a storeman. Our dedication to customers soon put us on a growth path, which has continued to this day. The experienced staff complement at Richmond Park now numbers 35 people."

Another sign of success is the geographical area that the branch now covers – from Cape Town northwards as far as Upington and eastwards to the town of George. And it reaches a wider range of industrial sectors. These include the mining, cement, petrochemical, water and wastewater sectors as well as building, food processing, materials handling and heating, ventilation and air conditioning. Greeff highlights the agricultural sector as a new field of development, where the branch serves farmers who are keen to use more renewable energy.

"Perhaps the most exciting aspect of our growth over the years is that we have become a solutions provider to our customers – more than simply a supplier of products. Hence, we can also assist customers in reducing their carbon footprint and energy costs."

WEG Africa's comprehensive product range covers low voltage electric motors from 0.18 kW to 500 kW. These are available in energy efficiency categories from IE1 to IE4. The branch also provides high voltage electric motors up to 11 kV and 6 000 kW – for demanding applications such as mill motors in mining operations.

"We expanded into variable speed drives (VSDs) quite

early on and offer low voltage VSDs from 0.18 kW to 500 kW, and medium voltage VSDs from 1 MW upwards, in 3.3/6.6 kV and 11 kV," Greeff says.

Additionally, a decade ago the branch opened an Electrical Panel Division. This facility manufactures solutions using the wide range of WEG components, and enclosures that are electrical type tested or non-type tested.

"We can also supply starters, VSD boxes and motor control centres (MCCs) – all custom-made to the required specifications," Greeff adds. "Our motor workshop facilities allow us to conduct various motor modifications including fitment of space heaters and temperature monitoring devices such as thermostats, thermistors and Pt-100 (RTD) temperature detectors as well as the fitment of special bearings, where required by the customer's application, ensuring we deliver a high standard of quality in all our solutions."

This in-house capability reduces lead times and optimises cost effectiveness for the customer, he points out. The branch also has its own in-house repair facility for WEG drives and soft starters, staffed by three dedicated technicians.

"This enables us to do all the repairs locally, without needing to send products to our head office in Johannesburg," he says. "And it gives customers the benefit of fast and efficient turnaround times."

Greeff notes too that customers value the training that WEG Africa offers, as a service and at no cost, and the new premises accommodate a bigger training room. "With our technology advancing constantly, and our range of solutions growing, there is always considerable demand for us to train our customers' employees."

For more information visit: www.weg.net



WEG Africa's new Cape Town premises reflect how the branch has grown as has its range of solutions and services.

Compact stepper motor drives for control cabinet-free machines

The integrated ASI8100 stepper motor drive from Beckhoff's range of compact drive technology products (up to 48 V dc) combines a stepper motor, stepper motor output stage, and fieldbus connection in a space-saving design. As an EtherCAT 'secondary', it can be placed directly on the machine without a control cabinet or upstream I/O level, allowing for compact, control cabinet-free machines.

The series covers all motion requirements for stepper motors in the power range up to 250 W. Drive monitoring is indicated by integrated status LEDs. With the integrated travel path control, simple function blocks for motion applications are already pre-integrated. The standardised M8 (for EtherCAT) and M12 (L-coded, for power) connectors also provide cost-effective, industri-

ally compatible connection technology. The two additional I/Os allow drive-related functions, such as the detection of end positions or the latching of positions, to be executed efficiently.

The series starts with NEMA 17 drives (42 mm), available in two stack lengths with a 0.29 Nm or 0.8 Nm holding torque. This is followed by four NEMA 23 devices (56 mm) with holding torques of 0.75 Nm, 1.4 Nm, 2.35 Nm, and 2.5 Nm. Pre-assembled cables and infrastructure components, such as IP67 distribution box modules, are available as accessories.

For more information visit: www.beckhoff.com



As compact, fully functional motion units, the ASI8100 stepper motor drives support the control cabinet-free machine concept.



Assembly work in progress at the ebm-papst facility.

Siemens to acquire industrial drive technology business

Leading technology company Siemens AG is set to acquire the industrial drive technology (IDT) business of ebm-papst. The business, which employs around 650 people, includes intelligent, integrated mechatronic systems in the protective extra-low voltage range and innovative motion control systems. These systems are used in free-range driverless transport systems. The planned acquisition will complement the Siemens Xcelerator portfolio and strengthen Siemens' position as a leading solutions provider for flexible production automation.

Cedrik Neike, member of the Managing Board of Siemens AG and CEO of Digital Industries, said: "Ebm-papst's innovative portfolio of mechatronic drive systems and its highly qualified people are an excellent fit for Siemens. The acquisition will enable us to tap new business and customer potential in the rapidly growing market for intelligent, battery-powered drive solutions in intralogistics as well as mobile robot solutions."

IDT products are intelligent, integrated mechatronic systems, which support the automation and digitalisation of production processes. This acquisition will be a strong addition to the Siemens Xcelerator portfolio. Used in mobile robots and driverless transport vehicles as well as in the automation of auxiliary processes, such as the retooling of modern production machines, IDT products are an important lever in enabling greater flexibility and productivity. This is why high market growth is expected in this market segment.

The integration of the IDT portfolio into the existing automation portfolio and the use of Siemens' global sales network will open up new market access and generate significant business potential in the area of flexible and autonomous factory automation.



The ebm-papst facility in Lauf an der Pegnitz, Germany.

The transaction is expected to be completed by mid-2025, subject to the necessary foreign trade and merger control approvals. The IDT business of ebm-papst is located in St Georgen and Lauf an der Pegnitz, Germany, and in Oradea, Romania.

Dr Klaus Geißdörfer, CEO of the ebm-papst Group, said: "The acquisition by Siemens is a strategically significant step for us. What our industrial drive technology business had lacked until now was a global sales organisation for maximum growth. Siemens is a long-standing customer and a company with strong international market penetration and an extensive customer base. The integration that has now been agreed on will give our IDT business global market access. It will open new horizons for innovation and further growth.

"We'll use the proceeds from the sale of the IDT business to expand our Air Technology and Heating Technology divisions, to further strengthen our three regions – Europe, Asia and the Americas – and to invest in future fields of our product portfolio, such as digitalisation and sustainability."

This investment in intelligent, integrated and network-connected mechatronic systems underscores Siemens' commitment to sustainable innovation and its position as a leading supplier of systems and solutions for future-oriented, flexible production automation. □



Nidec Drive Technology's latest high-precision ABLE Series reducers: a VRS Series reducer (left) and a VRT Series reducer (right).

High-precision reducers

Nidec Drive Technology, a member of the Nidec Corporation group of companies, has added high-end

servo motor reducers to its ABLE series of reducers. The new models offer industry-leading low backlash, noise, and vibration within this group of servo motor-dedicated planetary reducers.

The latest models – the VRS Series reducer and the VRT Series reducer – newly developed by the company – adopt tooth-surface grinding gears. These are produced by grinding the gear's tooth surface with a grinding stone. Compared to other grinding methods, which include gear cutting, shaving and skiving, the tooth surface grinding method secures highest precision. This, in turn, enables the industry-leading low levels of backlash, noise and vibration.

- Backlash, which is the gap created when meshing

gears are interlocked with each other: 1 min, or 1/3 that of existing models

- Noise level: 5dB, and vibration level: 30% less than existing models, based on representative values of Model VRS-140, with a reduction ratio of 1/4.

High-end laser beam machines, machine tools, woodworking machinery, and other mechanical equipment require highly accurate positioning, and a reducer's backlash, vibration, and related factors, directly affect the precision of such equipment. Nidec Drive Technology's latest reducers, in which the tooth surfaces are ground with the newest models of Nidec Machine Tool Corporation's globally recognised gear grinders, deliver top performance levels at lower cost.

The company is committed to providing various industry sectors with high-efficiency industrial machines that incorporate its expertise on continuously variable transmission, to contribute to productivity improvements and automation. □



IRRIGATION DRIVES DRIVING AGRICULTURE

**SEW-EURODRIVE IS PROUD TO DRIVE
THE SECTOR THAT FEEDS OUR ECONOMY**

The parallel shaft gearmotors of the F37E.. series and the worm gear reducers of the S87E.. series, developed for the irrigation market, are the perfect solutions for reduced installation spaces and maintenance savings. The drives can be used in a wide variety of applications, even under the most severe working conditions.

Committed to providing technical support and customised training that will maximize equipment performance and lifespan, you can be sure of increased productivity and profitability in your application.



WHEEL DRIVE
S87E..



CENTRAL DRIVE
F37E..

**DRIVING AFRICA.
DRIVING THE WORLD.**

Ultrasonic water meters for smart water management

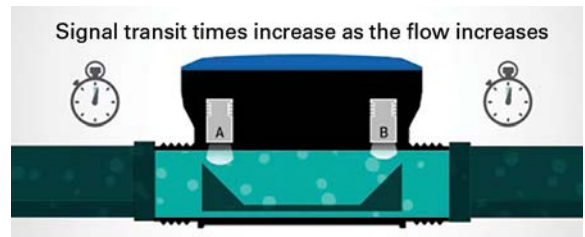
In water management, as in all other industry sectors, rapid changes in technology often mean that what used to be good is no longer good enough. Kamstrup advises that now is the time to replace traditional mechanical water meters with ultrasonic smart water meters and move towards the benefits of digitalisation.

Measurement technology based on the ultrasonic principle is one of the most reliable technologies in static metering. No moving parts ensure pinpoint accuracy without any maintenance efforts or costs. A Kamstrup solution anywhere in the world will consist of an ultrasonic meter and digital remote reading system, providing an effective and efficient smart metering solution.

How it works

The ultrasonic meter contains two transducers. Each transducer transmits and receives ultrasonic signals. When there is no flow, the signal transit times are identical. With water flow, the signals speed up in the direction of flow and slow down against the direction of flow. Signal transit times increase as flow velocity increases.

The meters are designed to allow for flexible mounting – horizontally, vertically or at an angle. They have the



In an ultrasonic meter two transducers transmit and receive ultrasonic signals to monitor water flow.

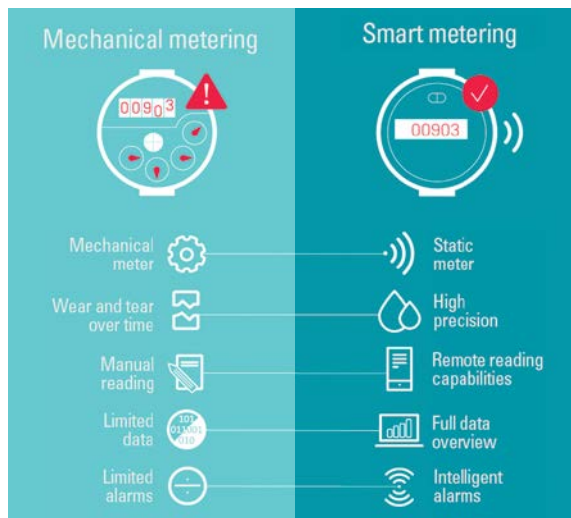
advantage of no moving parts and thus deliver high and stable measurement accuracy and they are less vulnerable to the accumulation of dirt. These factors contribute to a low total cost of ownership, with the added benefit of connected technology which allows for smart metering.

Key benefits

Mechanical meters have long been the preferred choice in water management. But digitalisation introduces an increasing need for communication and connectivity – which offer the benefits of shared information and more agile and efficient management.

Unlike mechanical meters, ultrasonic smart meters have no moving parts. This makes them more durable and ensures reliable accuracy throughout their lifetime. Ultrasonic meters provide a clear picture of network data and enable accurate billing. In contrast to mechanical meters, ultrasonic meters can also be read remotely, without any need for add-on devices. This makes data collection faster and allows for more efficient use of resources by avoiding misreading and the need for follow-ups. In this way, utilities can save time and money, which can be used to gather insightful data that empowers them to provide a better service to customers.

Additionally, intelligent alarms in ultrasonic meters enable efficient detection of leaks, bursts and reverse flows, and can thus contribute to lowering the amount of nonrevenue water in distribution networks and preventing revenue loss. This also supports utilities in improving water management and conserving water resources. □



Ultrasonic water meters offer several benefits compared to traditional mechanical meters.

The LI sensor provides for reliable detection of leakages and monitoring of point levels.



A smart alternative to float switches

With the LI level sensor from ifm, users can detect leakages and point levels reliably on a continuous basis. Offering a smart alternative to float switches, the capacitive measuring system has no moving parts. Malfunction or maintenance measures due to deposits on the mechanical parts are thus eliminated. With WHG approval (the German Federal Water Act regulations for overflow protection), the LI level sensor also ensures users comply with the legal requirements in environments where substances that are hazardous to water are in use.

The sensors are factory-set for specific media (LI21xx for oils, LI51xx for aqueous media), so they can be put into operation easily via plug and play. The teach button and IO-Link allow for the sensor to be adjusted to other media as easily. Another advantage is that the sensor detects the temperature of the medium. This is transmitted via IO-Link and can be assigned to one of the two switching outputs which are defined at the measuring point. The LI level sensors are used in applications with coolants, cleaning agents and lubricants as well as hydraulic oils.

For more information visit: www.ifm.com

Measurement solutions to serve modern manufacturing

In today's fast changing world, there is increasing global demand to minimise the environmental impact caused by industrial activities. One of the most effective ways to achieve this goal is through continuous monitoring of water usage, by-products, and potential pollutants, among other things. By proactively monitoring these factors, companies can gain valuable insights into their water consumption, identify potential environmental hazards, and take steps to mitigate them. Real-time data is an essential tool in this process, allowing for quick adjustments to ensure compliance with regulations and responsible resource management.

VEGA provides customised measurement solutions to meet the requirements of modern manufacturing. With a commitment to excellence and sustainability, the company has developed a range of sophisticated and robust instruments designed to transform the measurement industry. Its cutting-edge radiometric density measurement technology is a highlight of its portfolio. It promises to optimise efficiency and safety. In combination with instrumentation that boasts optimal IP ratings for maximum protection, VEGA guarantees high performance in the most challenging environments. Its instruments combine compactness, flexibility, hygiene, and ease of use, and set new standards for reliability.

The VEGABAR series of pressure sensors and switches demonstrate VEGA's commitment to innovation and versatility. The sensors are engineered to serve various standard pressure measurement applications. Their compact size and flexible design make them suitable for environments where space is limited. Additionally, their hygienic construction ensures product purity and simplifies cleaning procedures. Furthermore, the integration of IO-Link communication facilitates seamless data transfer and system integration.

For level measurement, VEGAPOINT level switches offer maximum flexibility and user-friendliness. The switches have an easy-to-use interface and a clear display



VEGA's pressure and level sensors are used in diverse applications across various industries.

play that allows operators to respond quickly and with confidence to any changes in the process. With their sturdy construction, they are designed to withstand the most demanding cleaning processes, further enhancing VEGA's reputation for excellence.

The company's range of sensors includes the VEGAPULS 42, an advanced and efficient non-contact level measurement sensor. This sensor is ideal for use in the food, beverage, and pharmaceutical industries, as it has been designed to be simple to use and highly effective. With its IO-Link capabilities, it can transmit digital data continuously and is easy to integrate into existing systems.

VEGA's mission is to provide advanced technology and to invest in the future. By using the potential of data and cultivating a culture of continuous improvement, VEGA helps manufacturing facilities optimise their processes, enhance safety standards, and make a significant contribution to a more sustainable future. With a history of innovation over many decades, VEGA continues to redefine industries worldwide. Through its commitment to precision and reliability, it empowers businesses to succeed in a constantly changing world, setting new benchmarks for accuracy, durability, and performance.

Manufacturing companies can move ahead confidently with VEGA's measurement technology, investing in a brighter, sustainable future for generations to come.

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

High pressure transducer for OEM applications

Instrotech, the local representative of KELLER, a Switzerland-based market leader in the production of isolated pressure transducers and transmitters, has available the KELLER 10LHP (with the low-pressure variant 10L), the flagship OEM pressure transducer in the KELLER product portfolio which exemplifies the highest standards.

The KELLER 10L and 10LHP series are available in identical dimensions and together cover pressures ranging from 0.1 to 1 000 bar. Both series are principal products in the KELLER OEM portfolio and offer optimum solutions for demanding applications.

The KELLER 10LHP series is available for pressure ranges of 0...200 to 0...1 000 bar. The compact,

high-pressure transducers, with nominal dimensions of diameter 19 mm x 15 mm, have a robust housing made of stainless steel and provide long-term stability for a range of OEM applications. They can operate in temperatures ranging from -20... 100°C. The metal diaphragm is welded on front-flush and gap-free, separating the silicon piezoresistive pressure sensor from the measuring medium. Every KELLER pressure transducer is measured over the entire pressure and temperature profile and is supplied with a detailed calibration sheet supported by calibration data via KELLER's myCalibration platform.

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

KELLER's OEM 10LHP pressure transducer offers high quality, precision and durability.



Maintaining efficient steam systems in the dairy industry

As a leading service provider of operations and maintenance for industrial steam and boiler systems, Associated Energy Services (AES) plays a key role in the dairy industry, assisting it in achieving optimum performance in energy efficiency, reliability and sustainability.

AES Commercial Director, Dennis Williams, says the company has service level agreements (SLAs) in place with several major dairy producers. These stipulate key deliverables which are central to enabling the dairy producers to realise the high demands they place on processing equipment and facilities – in terms of throughput, efficiencies and effectiveness. He notes that the sector as a whole places a strong emphasis on energy efficiency and cost management, which support it in delivering dairy produce to the market quickly and cost-effectively.

Core challenges

AES works closely with customers across a portfolio of key vertical industries – the dairy processing industry being one of these. Through its years of experience, it has developed a keen understanding of the many challenges faced by dairy manufacturers.

Williams highlights seasonality as a factor that needs to be consistently and closely monitored.

“At AES, our role is to ensure that there are no failures in the steam supply especially during peak periods when the energy plant is running at maximum capacity. We need to ensure the steam plant is well maintained and that any standby plant is ready to continue the steam supply at a moment's notice, as the manufacturer must be unable to process peak seasonal milk flows which it receives daily,” Williams says.

Seasonality also needs to be considered in the scheduling of planned maintenance as milk has a short shelf life and, when volumes have already been purchased from

farmers, they need to be processed efficiently to prevent wastage and the associated costs.

The requirement for clean, safe steam presents a further challenge to AES, as safety and hygiene are critical factors in dairy processing.

Williams says, “This means water treatment needs to be carefully considered, using only food grade chemicals. Temperature too is critical, especially in pasteurisation. Dairy processing requires constant steam pressure, to ensure that equipment such as spray driers can operate efficiently on an ongoing basis,” he adds.

Remote monitoring

As well as stipulating its performance deliverables, the service level agreements that AES has in place with clients also provide for use of its remote monitoring system (RMS). In the dairy industry, this enables clients to monitor temperatures and pressure flows in the steam supply system.

“In this way, clients can see what is happening in the system in terms of the agreed steam control parameters,” Williams notes.

“Our SLAs specifically address steam pressure requirements, as this is a good indication of the dryness fraction – and, importantly, the temperature of the steam. This becomes a key control input to the client's production process.

“Furthermore,” he says, “if clients are receiving the right control inputs, they can potentially decide to put in place components such as pressure-reducing stations. These will ensure that steam pressure is in the control range of the pasteurisers and the other equipment they are using.”

Different needs

Williams notes that each client's steam requirements and tolerances depend on the sophistication of the energy plant in use, and on the products being manufactured, which may be different at different dairies. Although some larger operations run state-of-the-art equipment and have many product lines, other smaller dairies handling a smaller product range may choose to stay with less sophisticated plant which serves their operational needs.

“A dairy that is producing only milk will have different requirements to a facility that is producing cheeses and yoghurts. In addition, the state of technology and continuous improvement practices will depend on the plant itself. A traditional dairy may be using basic technology; another may operate at the cutting edge in terms of its processes and energy operations. When we consider integrating energy



Different dairies may run traditional processing equipment or sophisticated plant – and their steam energy needs will differ.

streams across this broad spectrum, different requirements arise which make the process really interesting," he says.

Sustainability

Williams highlights that some top dairies are taking sustainability very seriously, in response to pressure from high-profile retail clients such as Woolworths and Spar.

"Until fairly recently, most dairies have operated coal boilers or relied on less environmentally friendly fuels such as heavy furnace oil, which has a high sulphur content. AES keeps a close watch on technology trends and the quality and availability of alternative fuel sources – such as biomass and biogas – to support dairy clients that are looking to use different fuels to minimise their carbon footprints."

In this regard, Williams says a major dairy in the Eastern Cape recently installed a second boiler fuelled by biomass. AES has assisted operationally in identifying areas which may require adjustment to ensure the efficiency and reliability of the system. It operates the steam plant at this dairy, including a boiler that uses biogas harvested from the facility's wastewater.

AES has also provided site-based expertise, employing an additional millwright to facilitate the generation of ultra-clean steam needed in some of this dairy's highly specialised production processes.

Asset care

Working on specific projects or operating on site 24/7, Williams says it is always important for AES to form strong relationships with its clients. He emphasises that good communication is essential, to mitigate against daily or weekly problems, and to assist with product trials when it is called on to do so.

Also essential is taking care of clients' plant and equipment. "We need to make sure our clients' assets are well maintained, because they are expensive, and they are critical to the business. Additionally – and importantly – pressure vessels, like boilers, are potentially very dangerous, so we need to make sure we operate them according to the most stringent safety regulations at all times.

"Asset management is an important part of what we do, so that, especially when it is peak season for our dairy clients, their energy plants and processing lines are in optimal condition and there is minimal risk of an outage or downtime. We also need to operate efficiently so that we are not impacting negatively on the carbon footprint of the site or using excessive amounts of fuel.

"Reliable, cost-effective energy optimisation and asset management are just some of the ways in which we ensure that our dairy clients can consistently – and sustainably – produce products that are the 'cream of the crop'," Williams says. □

For more information visit: www.aes-africa.com

PLANT MAINTENANCE, TEST + MEASUREMENT : PRODUCTS + SERVICES

Investing in training returns rewards

Ensuring that condition monitoring customers who invest in ongoing technical skills training for their maintenance staff earn significant returns from their investment is a priority for condition monitoring specialist company, WearCheck. Maintenance crew members can choose from more than 15 courses which are conducted by WearCheck's experts in various categories of condition monitoring, including general oil analysis, reliability services, transformers and wind turbine oil analysis. For most of the courses, delegates can earn valuable CPD (continuing professional development) points.

The training schedule, which has run successfully for over two decades, is overseen by Steven Lumley, Technical Manager at WearCheck.

"Technology is developing at an exponential rate, and the same is the case in the condition monitoring industry. Therefore, even experienced technicians need to brush up on new skills and learn about technical innovations as they become available on the market," Lumley says.

"WearCheck adds in new training content to the course material continually, to address the need to educate maintenance personnel about newly introduced techniques that can boost accuracy and efficiency and make a condition monitoring programme more effective. This means it's important for maintenance teams to attend the courses regularly, and not just on a once-off basis, to ensure their technical knowledge is up to date.

"At WearCheck we embrace innovation and are con-



WearCheck training consultant Jan Bakker (blue shirt) recently conducted oil analysis training courses in Gauteng and North West in South Africa.

stantly implementing new technologies. The more informed our clients are about the upgraded analysis systems, the better their return on investment in a condition monitoring programme," says Lumley.

The different courses are structured to suit several levels of maintenance crew members, from introductory levels up to the more scientific and technical levels.

WearCheck offers oil analysis courses and Mobius courses that cover precision shaft alignment, precision balancing, vibration analysis, and asset reliability training for practitioners. It delivers courses around the country and internationally, in person or online, and it offers customised training on request.

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

A new approach to testing insulation on HV equipment

In this blog post, Falk Werner in In-service Testing & Assessment at Doble Engineering Company presents new options for efficient testing of insulation on high voltage equipment.

Speed is the driving force of successful fault prevention. Early detection of insulation deterioration is key to avoiding asset failure, associated unplanned outages, and physical damage to infrastructure. The traditional testing approaches most teams rely on inhibit quick diagnosis of insulation issues, as they require a wide range of sensing methods and expert data interpretation.

High voltage equipment is especially susceptible to electrical, mechanical, and thermal stresses that can accelerate insulation deterioration and asset failure. Technology advances are helping power and utility teams create a more holistic and simplified approach to in-service testing that bridges knowledge and skills gaps. With reliable deterioration testing results easily available, teams can get ahead of asset issues before they lead to failures.

The value of partial discharge testing

Since the 1980s partial discharge (PD) diagnostics have been a powerful toolset in assessing the health of high voltage insulation systems, providing valuable insights for maintenance planning and the prevention of unplanned outages due to equipment failure. Measurement methods in the field of PD range from factory acceptance testing to various field and in-service testing applications on a broad spectrum of test objects, including transformers,

switchgear, cables and their accessories, generators, and many more.

However, significant complexity in data acquisition and analysis is associated with partial discharge measurements and assessments. Historically, there has been a need for subject matter experts, experienced or comprehensively trained personnel, to obtain reliable results and sound assessments of insulation system health based on PD testing. This need has been a barrier to the large-scale application of partial discharge measurement methods.

Electromagnetic interference diagnostics

For over four decades, electromagnetic interference (EMI) diagnostics have been a reliable method for performing asset testing on electrical power systems successfully. An EMI assessment is a test that can detect a variety of defects in generators, motors, and associated electrical system components. After the initial test, trained asset managers can walk away with actionable maintenance recommendations for further investigation. The test is very valuable, but somewhat complex for the untrained eye as the acquired radio frequency spectrum, or EMI signature, is unique for each physical location and defect present within the electrical system.

Like partial discharge assessments, EMI measurements historically required a significant degree of expertise, subject matter experts or well-trained personnel to manage effective data acquisition and analysis.

The best of both, made easy

With partial discharge and EMI diagnostics being two powerful and complementary tools for asset health assessments, new tools are emerging to detect both types of signals with one device, enabling teams to identify and address deterioration issues faster.

Doble's Spark P3, for example, is a universal PD and EMI analyser that enables teams to perform comprehensive PD and EMI insulation system diagnostics and analysis on a wide range of high voltage apparatus, including rotating machines, power transformers, instrument transformers, switchgear, and cables and accessories. With a combination of ultra-wideband, HF and UHF tunable narrowband,



New tools are being developed to make the testing of HV equipment simpler and quicker.

and acoustic emission PD detectors, paired with a CISPR 16-compliant EMI analyser, the Spark P3 offers a comprehensive suite of diagnostic tools for PD and EMI which can be applied to most test objects, sensors, and PD applications. The tool allows power and utility teams to identify characteristics of insulation system deterioration that could lead to the failure of high voltage equipment. A wide range of advanced diagnostic tools, including, but not limited to, phase resolved PD analysis, spectrum analysis, time resolved narrow band analysis, and tunable UHF detectors up to 2 GHz, equips users to detect emerging faults early and avoid outages and other damages in various assets.

Revamped in-service testing approaches, supported with technology and automation, boost team productivity and performance. Users across all experience levels can easily take measurements by means of configurable measurement templates, and perform other important diagnostic and data acquisition procedures with which they are unfamiliar or that would typically require the support of an expert. This means power and utility teams can spend more time acting on results to prevent failures, instead of getting lost in the intricacies of the measurements.

High voltage equipment failures and unplanned downtime can cause significant damage to utilities and asset



Detecting PD and EMI signals using one device, enables maintenance teams to identify issues more quickly.

owners. Quick and reliable identification of deterioration in insulation systems by using PD and EMI diagnostics can make the difference between the failure of equipment, and a simple maintenance task. □

For more information visit: www.doble.com

YOUR 24/7 SERVICE PARTNER

Repairs, maintenance and customised manufacture of all electrical and mechanical rotating machines.

ELECTRICAL SERVICES

Medium and low voltage, Ex certified, AC and DC motors, transformers, generators, alternators and ancillary power generation equipment up to 373 MVA.

MECHANICAL SERVICES

Full range of rotating machinery mechanical services. Machine shop capabilities including dynamic balancing up to 32 tons, large machining up to 40 tons, micro welding and hydraulic presses up to 1000 tons.

24 HOUR ON-SITE SERVICES

Breakdown repairs, removal, re-installation, on-site testing, dynamic balancing, alignment, vibration analysis, root cause analysis, condition monitoring, preventative and predictive maintenance, motor management programmes and maintenance contracts.

CUSTOMISED ELECTRICAL AND MECHANICAL DESIGN

Reliability improvements/enhancements, efficiency improvements, performance upgrades and root cause analyses.



Marthinussen & Coutts

A division of ACTOM (Pty) Ltd

+27 (0) 11 607 1700 | support@mandc.co.za
53 Hospital Street, Cleveland 2094, JHB

www.mandc.co.za



Wireless telemetry for widespread water networks

Water is a valuable resource, essential to life, and effective monitoring and control of water distribution networks is crucial to avoid water wastage. Wireless telemetry systems play a key role in this task, collecting data from remote locations and transmitting it to a central control station to enable real-time monitoring and control. Here Ian Loudon, International Sales Manager at Omniflex, offers some guidance on selecting the best wireless equipment for the water industry and shares some advice for system setup.

South Africa, with its vast, rugged landscapes and geographically dispersed water reservoirs and control stations, presents unique challenges to implementing wireless telemetry systems for water network management. Traditional wired communication methods are generally impractical for use in water networks because of the prohibitively high cost of cable installation over long distances.

Wireless telemetry offers a cost-effective and flexible solution to this problem, but factors such as power supply, backups, radio frequency selection and signal transmission across rough terrain require careful consideration. Overcoming these challenges requires a strategic, holistic approach.

Managing the landscape

Solar panels are often the best primary power source for wireless modules, due to the remote locations of many reservoirs. However, battery backups and redundant systems are always recommended to ensure uninterrupted power supply and enable continuing operation during power outages or communication failures.

Radio frequencies that balance transmission range with penetration through obstacles, like trees and hills, are essential. Careful antenna selection and network design, and

the use of repeaters if necessary, can overcome signal degradation caused by craggy terrain. Due to the distances involved, maintaining a clear line of sight between network nodes is a critical factor to ensure reliable signal strength.

South Africa falls into the same EMEA zone as the UK and largely follows the same radio standards. Here, 868 Mhz is the optimal licence-free radio band that ensures businesses do not incur unnecessary transmission band subscription costs. The band is also free from other radio traffic, which can interfere with and disrupt communications for managing water reticulation.

Using a managed wireless system ensures that all network data traffic is meaningful. It also enables the creation of more complex multi-point wireless network topologies, such as peer-to-peer networks where all the nodes on the network can communicate with one another, rather than a simple point-to-point primary-secondary network. Multi-point networks also allow for data to be relayed through other nodes that are in range of each other to extend network coverage.

They are ideal in applications involving multiple devices communicating over a large area, as opposed to a single device reporting to a local control station like a SCADA system. For example, a multi-point network would best suit a reservoir and pump system with several devices, dispersed across a site, that must communicate with each other.

A trusted wireless partner

Wireless telemetry specialists like Omniflex are valuable partners for South African water network operators. They have the expertise to design and implement reliable wireless telemetry systems specifically suited to the challenges of the South African water industry.

Omniflex's Teleterm range of remote terminal units (RTUs) can use licence-free radio to send signals from the reservoir to a repeater unit, which in turn uses ethernet to send signals to the final unit located at the control station.

The RTUs are robust, housed in weatherproof casing with power supply charger units and backup batteries. Furthermore, the system's low power consumption makes it suitable for solar-powered outstations at

Continued on page 23



Communications systems for remote water reservoirs often need to traverse craggy or mountainous terrain to share monitoring data with the water management control station.

Another layer of detection advances preventive maintenance

To help users identify and localise 'mechanical areas of interest' within short timeframes, Fluke – a global technology leader in the manufacture of compact, professional electronic test and measurement tools and software and represented locally by Comtest – has added a MecQ™ facility to its ii910 precision acoustic imagers. The Firmware 5.0 update helps minimise unplanned downtime and cut repair costs by enabling early identification of potential mechanical problems. Energy savings can also be achieved by carrying out repairs in good time and reducing faults.

The update was developed following extensive research involving Fluke customers worldwide. Maintenance specialists and technicians noted that their main concern was identifying issues on the potential failure curve as early as possible.

Looking at various types of conveyor systems, the research showed that non-driven bearings are often the root cause of many mechanical faults. Because these systems are integral to the overall production process, lengthy downtime can impact significantly on the factory and cause further issues along the supply chain. This applies in food and beverage production as much as it does in the logistics, electronics, automotive and mining/raw materials sectors.

Effective inspection

Despite a line going down representing a huge concern (and raising substantial, sometimes six-digit costs by the hour) for businesses, Fluke found that around 59% of conveyor belt systems are never inspected. Another 11% are checked only manually. The research showed that human sensing is the least effective way of detecting a problem, followed by contact temperature and thermography. Testing using contact vibration or airborne ultrasound also presents challenges – with ease of use being a constraining issue with the latter. Acoustic imaging was found to offer the most effective method of detecting a problem.

Customers said the ability to localise issues was essential to achieving cost savings and they needed a solution that could be widely used to help with monitoring lengthy conveyor systems (a major warehouse might operate up to 80 km of conveyor belts) or where accessibility is an issue (perhaps where conveyor guards are in place).

Using the Fluke ii910 acoustic imager with MecQ, the

process of carrying out non-contact inspection on conveyor systems is simplified considerably, with the unit immediately identifying the locality of a mechanical area of interest through sound pattern comparison. Once the issue is displayed on-screen, the maintenance professional can note it, share it with the team and address it in the maintenance schedule.

User-selectable frequencies

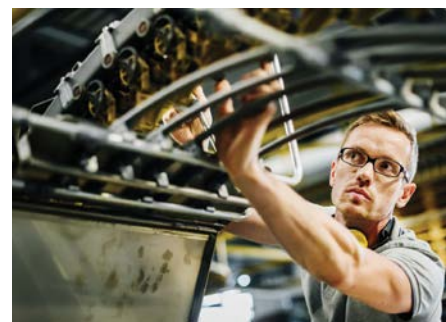
MecQ was developed to bring an extra layer of detection to the ii910, adding to the functions of taking a picture, taking a video, carrying out leak detection with LeakQ, and detecting partial discharge in PDQ mode.

Although the most common frequency for ultrasound instruments is 30 kHz, the ii910 with MecQ offers user-selectable frequencies from 2 kHz to 100 kHz and fixed multi-mode frequency bands of 15 kHz, 20, 30, 40 and 60 kHz, to check various stages of bearing deterioration. The user can choose whether to turn these pre-set frequency bands on or off, depending on the environment.

Tako Feron of Fluke says: "Any member of a maintenance team will welcome the ease of use the new MecQ facility provides with its intuitive interface and seamless integration with existing leak and partial discharge detection tools. They will also appreciate the ability to boost efficiency, maximise uptime (by reducing meantime to repair) and lower costs, as well as ensuring high safety levels through contactless inspection and eliminating hazardous situations.

"With MecQ, the ii910 enables maintenance engineers to locate a problem, annotate a screenshot, share that with the team and then schedule repairs during planned downtime. Having all these solutions which support a smooth workflow built into a single tool is unique to Fluke. The Firmware 5.0 upgrade has also simplified what could ordinarily be a highly complex and time-consuming inspection and maintenance operation."

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



The Fluke ii910 with MecQ provides a scanning solution to cover large areas quickly and visually identify localised areas of interest for follow-up inspection.

Continued from page 22
remote reservoirs.

Despite what many people think, systems as complicated and expensive as a PC-based SCADA system are not needed to visualise and monitor the network data on an ongoing basis. Omniflex's EasyView HMIs are equipped with free configuration software, they do not present ongoing costs and, crucially, are simple to use. Realistically, this approach yields savings of about 80% compared to using

a traditional SCADA system.

HDMI-capable displays, such as large flat-screen TVs, can be used because the EasyView technology offers HDMI full HD 1080 p capability. This allows the KPIs (key performance indicators) of the respective plant to be displayed front and centre at all times, keeping personnel focussed and up to date with ongoing operations. □

For more information visit: www.omniflex.com



UPS systems need to be appropriately sized and well maintained to ensure they kick into action when they are needed.

Keeping UPSs in good working order

As zero-carbon power sources account for a growing share of the electricity mix they carry many benefits for the planet, but distributed renewable energy resources (DERs) on their own produce inconsistent power outputs. Uninterruptible

power supplies (UPSs) can help sites maintain a consistent power supply during disturbances. Here Brian Preston, General Manager at CP Automation, sets out how operators can prevent downtime by selecting and maintaining an appropriate UPS system.

The 2022 Uptime Institute Global Data Centre Survey reported that power-related outages accounted for 43% of outages causing downtime or significant financial loss. The survey also reported that the biggest cause of power incidents is failure of UPSs that are not maintained, followed by failures of transfer switches and generators. In data centres and other critical applications, power disruptions carry serious ramifications,

Although diesel generators are a long tried and tested source of backup power, they can take up to 30 seconds to come online after a power loss. This is problematic in critical applications. In contrast, UPS output is always available, so it quickly kicks into action when a loss of mains power is detected. The battery power is then fed through an inverter to generate a supplementary supply.

Sizing up

When specifying a UPS system, it's important to size the system according to the power demand of the application and expected run time. UPS sizes can range from as small as 1 kVA up to 80 kVA and beyond, and correct sizing can mitigate the risk of batteries running low during operation. If a UPS has been sized to run for an hour, it should be able to run for the full hour without failure.

To start the sizing process, operators should list all the equipment and devices they want the UPS to protect, as well as the power required for reliable operation in all loaded conditions. This is then used to determine the total VoltAmps (VA), that the UPS needs to supply. The next step is to define how long the UPS should be in operation

and this will then dictate the battery requirements.

Remote monitoring

Remote monitoring and servicing features, such as low-battery alarms, can help operators monitor the status of the UPS from afar. Remote monitoring systems allow for immediate fault detection so if there is an issue with the UPS system, operators are alerted, even if it is out-of-hours. For instance, if the batteries are low, this information can be immediately displayed on a desktop device or fed into a control system via a volt free contact, enabling the operator to intervene and, where practical, to pause operations until the batteries are fully functional again.

Some UPS systems such as the ARC-CORE single phase system include an automatic start-up, ensuring maintenance-free operation even after the unit has been switched off after an extended mains failure. Automatic diagnostics can ensure that components and parameters are controlled without user interference and can be monitored remotely. Using remote monitoring, the operator can identify any issues and rectify them before they escalate to the point where a specialist is required.

Maintaining the system

To ensure the UPS will operate when needed, it is critical that operators maintain the unit on a regular basis. Basic servicing on smaller, single-phase systems can usually be done in-house. However, with three-phase UPS units, because of their complexity and size, a maintenance specialist such as CPA should be called in to service the units, at least on an annual basis.

As the number of zero-carbon power sources continues to grow, the need for supply contingencies is crucial, so UPS systems will always have an important role to play in data centres and other facilities where uninterrupted power supply is essential. Selecting the right system and regularly maintaining it are important, enabling operators to avoid unplanned outages and the potential ramifications.

For reference, CP Automation has an online sizing tool that can help data centre operators and others choose the correct UPS for the respective application. □



Michael van Niekerk, CEO of ASP Fire.

Ensuring fire safety in renewable energy installations

As more renewable energy systems, including solar panels and battery energy storage systems, are being installed in the commercial and industrial sector as well as residentially, caution must be raised about the potential fire risks posed by lithium-ion batteries.

Michael van Niekerk, CEO of ASP Fire, notes that lithium-ion batteries, commonly

used in energy storage systems, pose unique fire hazards due to the flammable electrolytes in the batteries.

Unlike traditional lead acid batteries, lithium-ion batteries can experience thermal runaway, leading to intense fires that are difficult to extinguish. The risk is compounded by the emission of flammable gases during

Continued on page 25

Local lubricants for wind turbine maintenance

A single wind turbine requires 600 to 800 litres of lubricant per gearbox, which means selecting the correct product for reduced maintenance and increased lifespan can make a significant difference. At the exhibition staged alongside the recent African Energy Indaba held in Cape Town in March, FUCHS Lubricants South Africa showcased its RENOLIN UNISYN XT 320 which is used to maintain wind turbines at wind farms.

This is an innovative polyalphaolefin (PAO). Whereas normal PAOs require an oil change at intervals of about five years, the FUCHS product allows for oil changes every nine to ten years. With the normal lifespan of a wind turbine being about 20 years, this means an oil change is required only twice during the turbine's lifespan, and that translates into reduced costs and downtime.

Ernst Bekker, Specialist Technical Sales, Lubritech Division at FUCHS highlights: "If customers choose to change to using RENOLIN UNISYN XT 320, it is important to note that the product is compatible with esters and mineral oils, among others."

A proudly BBBEE Level 1 company, FUCHS also manufactures RENOLIN UNISYN CLP 320 locally. This is a synthetic, PAO-based industrial gear oil with increased ageing stability, good load carrying capacity, and high wear protection. It features high micropitting resistance, a good air release, and good filtration behaviour.

Modern wind power plants need to operate at optimum levels to generate electricity efficiently. Machine elements are designed to achieve this over a plant lifetime often exceeding 20 years. Minimising friction in the entire system is critical, and avoiding wear is especially important. Once the moving components such as roller bearings or gear wheels show initial signs of wear, this is irreversible, and impacts severely on the service life of components.

In particular, the pitch and yaw bearings in wind power plants present high tribological requirements due to the environmental conditions in which they must perform. Conventional greases do not provide adequate wear protection here.

The use of solid lubricants has proven to be effective in isolating running surfaces and rolling elements from one another during static and mixed friction phases, thus



Selecting the right lubricant for wind turbines provides for reduced maintenance and longer service life.

preventing wear. Due to their high physio-mechanical pressure resistance, these solid lubricants, unlike oils and simple greases, remain between and isolate the surfaces of the components, even under high surface pressures.

Giles Cutter, Export Divisional Manager at FUCHS says, "We have developed speciality lubricants for this purpose, which contribute to reducing the wear on equipment and thus significantly reduce maintenance needs and expenditure. They support smooth generation with no loss of energy and with optimal frictional wear protection."

The range of speciality lubricants recommended for use in wind turbines includes:

- a synthetic lubricant that provides a high level of wear protection for pitch and yaw bearings, even under critical operation conditions like vibration and small oscillations under high load, which are typical in wind turbines;
- a synthetic high-performance grease with a wide operating temperature range, high mechanical stability, and high load-carrying capacity, ideal for the lubrication of the main rotor bearings;
- a white adhesive lubricant with reactive solid lubricants which is used for machines and machine components operating under difficult conditions and subject to extreme temperature fluctuations and environmental influences;
- and a soft lubricating grease with a synthetic hydrocarbon base oil and a temperature-resistant polyurea thickener that provides high wear protection, even at fluctuating speeds and temperatures, and performs well in generator bearings. □

Continued from page 24

thermal runaway, which can result in explosions if ignited.

Van Niekerk emphasises the importance of implementing adequate safety measures for solar PV plants and battery energy storage systems (BESS). He recommends the construction of two-hour fire-rated rooms to house lithium-ion batteries. Proper ventilation and gas detection systems are essential to manage the off-gassing phenomenon associated with these batteries. In addition, fire dampers are recommended to contain potential fires within designated areas, minimising the risk of a fire

spreading to larger structures.

Although large-scale energy storage systems, such as those installed by electricity utilities, may adopt different risk management strategies, van Niekerk underscores the importance of considering safety precautions in all installations.

He says it is important to consult a professional for the design, installation and certification of renewable energy systems. Proper integration and monitoring of components, along with adherence to safety standards, significantly reduce the risk of fire incidents. □



Zanélle Dalglish,
Schneider Electric.

New in education and training for industry

'Spark your interest' – online course attracts youth

The free, interactive online training course, *Spark Your Interest in Electricity*, has, since its launch more than a year ago, seen about 1 700 students from English-speaking Africa enrolling for the programme and completing one or more sub courses. To date, most of the enrolments have been from South Africa, Kenya and Nigeria.

The *Spark Your Interest in Electricity* course, which was designed and launched by a partnership between Schneider Electric and multimedia giant Trace, is available on the Trace Academia app from both the Google Play (Android) and Apple iStore (iOS) platforms.

"Schneider Electric is leading the way in providing training for the youth. With the world becoming increasingly digital and virtual, we've ensured that our training approach keeps up with these evolving trends," says Zanélle Dalglish, Global Leader: Training & Education Affairs. Dalglish was instrumental in establishing the course with Trace Academia.

"*Spark Your Interest in Electricity* provides an introduction to electricity for those young people who are described as NEET (not in employment, education or training) as well as anyone who is interested to understand the basics of electricity. The course was designed and developed by a team of experts from South Africa and the curriculum is carefully designed to include the important modules required to 'spark your Interest in electricity'," says Dalglish.

The course has been developed in line with Trace Academia's criteria for course certification, which includes a rigorous approval process, and aims to provide 'virtual

hands-on' training in the field of electricity. It also serves as a precursor to encourages youth to take the next step; enrolling in an electricians' or related course provided at a tertiary or vocational institution.

To obtain a *Spark Your Interest in Electricity* certification, which serves as an introduction to electricity, students must complete the entire course syllabus which includes eight modules:

- Discover the magic of electricity
- Electrical sockets and light fittings
- Connecting wires
- Principles of electricity
- Discover circuit breakers
- Understand series and parallel circuits
- What are electrical hazards
- What Is an earth leakage device.

"Our aim with the course material is to spark students' interest, laying the groundwork for future studies in the electrical trade. Module 1 of the course delves into the magic of electricity, including its formation, movement, and storage, and another module, for example, provides insight into understanding series and parallel circuits, which is fundamental to any electrical work," says Avin Ramjeeth, Projects & Offer Manager at the Schneider Electric Academy.

Carina van Zyl, Corporate Citizenship Leader for Anglophone Africa, Strategy and Sustainability comments: "The Schneider Electric *Spark your Interest in Electricity* course is one of many education and training initiatives that are central to the company's commitment to Youth Impact through Learning."

For more information visit: www.se.com

A new training centre in Lephalale, Limpopo

In line with the company's stated aim of expanding its roots, extending its services to offer all forms of training and skills development, and making a sustainable difference in reducing unemployment – the Dekra Institute of Learning (IOL) has opened a branch in Lephalale (formerly Ellisras), a regional hub just east of the Waterberg coal-mining district in Limpopo.

Here, there is an urgent need for an accredited provider of skills training programmes, industry-related qualifica-

tions, and occupation-focused adult-based education to serve the local coal mining, agricultural, power generation and commercial sectors.

DEKRA IOL Head of Training and Consulting, Christopher Mörsner says, "We are filling this void by offering much-needed QCTO-accredited safety, First Aid and other occupational and skills training.

"DEKRA IOL is the only training provider in this regional centre offering business and operational training with a strongly client-centric approach. This is the right time and place for us to collaborate with and support the local training industry."

He adds: "The strategic decision to open this branch stems from our commitment to localising our services – and in this way addressing the specific safety and occupational training requirements of the businesses and sectors operating in the town, and in the wider region. These include the mining, power generation, renewable energy, agriculture and petrochemical sectors.

"Choosing Lephalale was driven by its status as
Continued on page 27



Members of the DEKRA IOL and DEKRA Industrial management team at the Lephalale branch opening.

Transitioning from the NQF to OQSF – the deadline is June 30, 2024

Roland Innes, Group Chief Executive Officer at DYNA Training

South Africa is at the threshold of a significant educational and vocational transition as it shifts from the National Qualifications Framework (NQF) to the Occupational Qualifications Sub Framework (OQSF) managed by the Quality Council for Trades and Occupations (QCTO). The CEO of the QCTO, Vijayen Naidoo, has highlighted that the transition is imminent and existing qualifications will not be re-registered. Long anticipated and now close to implementation, the shift carries substantial implications for industries, employers, and training providers now referred to as Skills Development Providers.

Qualifications once readily available under the NQF but slated for discontinuation soon in the OQSF framework will present a challenge for companies accustomed to providing specific training programmes. The repercussions extend beyond individual learning journeys to the business world, impacting BBBEE scorecards. This makes it important for organisations to reassess their training portfolios to ensure alignment with the new OQSF framework, or to seek suitable alternatives for discontinued qualifications, skills programmes, or short courses. Here, training partners will have a critical role to play in facilitating the transition.

The displacement of qualifications

One of the main challenges in this shift is the misalignment between existing NQF qualifications and the available programmes in the OQSF. Several key qualifications, such as Generic Management Levels four and five and Process Manufacturing Level four, lack equivalents in the QCTO. This creates a dilemma for organisations that had planned to enrol learners in these programmes, as the deadline for new enrolments is set for 30 June in 2024. The implications of missing this deadline are significant, and learnerships and qualifications that were once standard may no longer fit within the QCTO implementation strategy. This has a cascading impact on workforce planning, learner progression, and organisations' skills development scorecards. Failure to adapt to the new landscape in time could result in penalties, negatively impacting a company's overall scorecard and its ability to achieve its skills development goals.

Taking the initiative

The approaching deadline is a call to action. Even as questions arise as to whether government will extend the deadline, re-register a few qualifications, or allow for continued use of existing learnerships, the ensuing uncertainty only highlights the need for organisations to take the initiative. They need to explore alternative pathways within the OQSF, even if they deviate from

their traditional areas of focus. For instance, if a preferred qualification has no OQSF equivalent, considering alternative programmes within the available options becomes the only option. It may be an office management qualification for manufacturing employees, for example, but in the absence of suitable alternatives to the generic management level four and five or the process manufacturing qualification, other routes need to be chosen to ensure continuing skills development.



*Roland Innes,
DYNA Training.*

The teach-out period

The teach-out provision, allowing learners to complete their learnerships until 30 June in 2027, is a lifeline for those who enrol before this year's deadline. However, the key is getting learners on board by 30 June 2024. The potential tax benefits associated with learnerships remain uncertain and may be subject to changes that organisations will need to track closely.

In responding to the transition, training providers should engage with clients, identify gaps in qualification alignment, and present viable options. Communication is key and training providers should guide their clients through the transition, ensuring they are aware of the risks and opportunities presented by the OQSF.

Towards a robust workforce and economic growth

While the transition may impact every sector, the degree of impact varies. Organisations across industries will need to recognise that this is not likely to be a seamless process. Delays, uncertainties, and changes in decision making will be part of the transition.

Managing the risks of this shift is now crucial for all involved. The QCTO will be central to ensuring a skilled workforce, driving economic growth for South Africa's national development. Its efforts to standardise, develop, quality assure, and promote lifelong employability are essential for building a resilient and adaptable workforce that can navigate the challenges and opportunities of the fourth industrial revolution and beyond.

Supporting transformation

The transition from NQF to OQSF cannot be ignored, and the 30 June 2024 deadline marks the point of no return in this journey. Organisations need to act now, either by enrolling learners in existing programmes or by exploring alternative pathways within the OQSF.

For more information visit: <https://dyna-training.co.za/>

Continued from page 26

a regional hub where all these sectors – as well as other commercial businesses – have growing requirements for a QCTO-accredited training provider with a quality approach to adult-based education," he says.

In addition, DEKRA Industrial will be offering its non-

destructive testing and inspection services to the same sectors that DEKRA IOL will be serving: "We will be able to develop client relationships from an adult-based education and training – and an NDT and inspection – perspective," Mörsner says.

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

Industrialisation starts with focused R&D

One of the core objectives of the CSIR (Council for Scientific and Industrial Research) is to improve the competitiveness of high-impact industries to support South Africa's reindustrialisation by collaboratively developing, localising and implementing technology.

Among other things, the CSIR supports the inclusion of small, medium and micro enterprises (SMMEs) into the economy by improving operational efficiencies and increasing competitiveness. It promotes the adoption of advanced technology, commercialisation of CSIR intellectual property and the incubation of new SMMEs with improved access to high-end equipment and infrastructure. In its latest annual report, 2022/23, it presents (among many other projects) some examples of the SMMEs it has supported.

CSIR Cannabis Hub

The CSIR has set up a cannabis research hub for SMMEs in the cannabis sector to de-risk early phase research, development and commercialisation. Supported by government departments such as the Department of Science and Innovation, Department of Small Business Development and the Gauteng Department of Agriculture, Rural Development and Environment, the CSIR is already assisting 23 SMMEs and industry players to develop and market high-quality, regulatory-compliant, safe and effective products that can compete in local, regional and international markets.

The cannabis-based products under development include herbal remedies, cosmetics, nutraceuticals and food products. Through such interventions, the CSIR is helping with skills transfer, as well as the quality, safety and efficacy of products – thereby providing strategic support to the cannabis industry in the region. Services offered at the hub include cannabis extraction, using supercritical carbon dioxide extraction, as well as process and method development for various cannabis strains. The extraction method is environmentally benign and considered the gold standard

for cannabis/hemp oil extraction. Purification services include winterisation and decarboxylation steps for the removal of lipids and conversion of phytocannabinoids into active molecular forms to increase oil quality and value.

In respect of training, services include access to a facility for integrated learning for current and prospective workers in the cannabis and natural products industry in South Africa and the sub region. The focus is on chemistry, engineering and pharmaceutical training via internships and workplace training for students and entrepreneurs. Product and process development services centre on taking an idea from proof of concept, through development and optimisation, to pilot-scale manufacturing of products.

Cape Aloe Project

The CSIR handed over market-ready samples and product information files for six cosmetic products, based on Aloe ferox (Cape Aloe), to three enterprises in the Eastern Cape. The laboratory-scale cosmetic product prototypes include a face wash, body lotion, hand cream, hand wash, hair food and hair spray.

CSIR biotechnologists validated the processing of the Aloe ferox material and tested the ingredient quality to ensure regulatory compliance. This means the plant material can be processed and produced at commercial scale close to source.

In addition to the training of communities and the development of SMMEs in the area, the CSIR also developed high-quality stabilised Aloe ferox gels for the cosmetic industry. Nozulu Aloe Cooperative, Karibu Construction and General, as well as Ziyanda Enterprise benefitted from the opportunity to produce a stable gel and associated cosmetic products, which have undergone industry evaluation, passed quality tests and now adhere to regulatory standards.

The research and development work and subsequent technology transfer advance agro-processing technologies and the commercialisation of cosmetics made with natural ingredients, such as Aloe ferox, to the benefit of local enterprise development. The project was funded by the Department of Science and Innovation, through the Technology Innovation Agency, under the Agriculture Bioeconomy Innovation Partnership Programme.

Using TV white spaces to provide rural connectivity

The CSIR has made great strides in deploying its novel television white spaces (TVWS) technology, which makes it possible to provide affordable broadband wireless internet connectivity to underserved rural and township communities by using TV bands for broadband access.

In collaboration with the United Nations Development Programme (UNDP), the CSIR has facilitated the deployment of the technology to support 13 youth- and women-owned SMME network operators. These operators have implemented affordable broadband network infrastructure



Cannabis-based products under development with support from the CSIR include herbal remedies, cosmetics, nutraceuticals and food products.

in underserved communities in the Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and the Western Cape.

In one project, as part of a partnership between the CSIR, the UNDP, AL Baraka Bank and AdNotes, a high-tech computer laboratory has been set up at Olwandle High School in Gamalakhe, located outside of Port Shepstone in KwaZulu-Natal. The initiative benefits learners in a resource-limited context, enabling them to gain exposure to the digital age for the first time.

To further support ICT-based SMMEs owned by youth and women, the CSIR has signed a Memorandum of Understanding with SEACOM South Africa Ltd, a prominent global internet service provider. The collaboration will offer direct internet access, national private lines, co-location services and cloud solutions to the beneficiaries.

In other projects supporting local industrialisation the CSIR highlights the work it is doing with Eskom, Transnet Engineering, and in developing digital twin technology for trackless mobile machinery.

Improving durability in power generation components

The CSIR and Eskom are collaborating in the development of laser shock processes for the South African power generation sector. In a first outcome of the partnership, engineers developed a prototype laser shock processing platform. Using this platform, they applied laser shock process technology to the attachment area of a turbine blade, known as a fir-tree root. Low pressure steam turbine blades are about one metre long, and rotate at about 3 000 revolutions per minute in a wet steam environment at around 42°C. The highly stressed area around the blade attachment can become susceptible to failure factors such as fatigue and stress corrosion cracking. Conventionally, beneficial compressive residual stresses are introduced by mechanical shot peening. Laser shock peening has emerged as an attractive technology for cases where shock peening may be inadequate. It provides for the lifetime of the metal components to be extended and the resilience to failure improved. Extending the lifetime of components, which are costly, means they require less frequent replacement. The process thus offers advantages over the current mechanical shot peening process.

The breakthroughs in laser shock processes enable significant advances in critical turbine infrastructure operations, in turn contributing to improved energy generation and reduced operational costs.

Condition monitoring for locomotives on track

The CSIR has been working with Transnet Engineering since 2015 to develop a condition monitoring system to track the performance and health of locomotives. In March 2023, the research team delivered 30 production units to Transnet Freight Rail.

As part of the collaboration, the CSIR provided Transnet Engineering with data packs, equipping the state-owned



Based on development work done with the CSIR, Transnet Engineering aims to become an original equipment manufacturer of locomotive condition monitoring units for the industry.

company to manufacture its own locomotive condition monitoring units. The data accumulated by the locomotive monitoring systems helps to predict when the locomotive and its equipment will require maintenance and to identify any potential issues before they become critical. Transnet intends to become an original equipment manufacturer of the products used in the locomotive condition monitoring system, leading innovation in the railway industry. The collaboration is guided by a Memorandum of Agreement between the CSIR and Transnet. Under this agreement, future upgrades to the system are planned, ensuring that the technology remains cutting-edge and adaptable to evolving industry needs. The partnership extends its focus beyond the current systems to the joint development of other ground-breaking systems.

Digital twin technology for trackless mobile machinery

The CSIR has developed a near real-time digital risk prediction tool to help prevent collisions of trackless mobile machinery in the mining industry. The tool has been developed with industry inputs to reduce and potentially eliminate vehicle accidents, which have been the second largest contributor to fatalities in the South African mining industry for over a decade. The tool uses fourth industrial revolution technologies such as big data analysis, artificial intelligence, machine learning and digital twin technology to evaluate the risk associated with vehicle interaction. The tool provides data-driven insights into driver behaviour and existing control measures to enable the continuous improvement of trackless mobile machinery safety and productivity and thus to develop possible scenarios for optimised mining operations.

The CSIR made significant progress during a pilot study of the technology at a South African open cast mine. The study contributed to safety improvements through optimised mining traffic management plans and operational efficiencies by generating insights into vehicle performance data. The organisation is collaborating with the mining industry to determine a commercialisation approach for the successful uptake of the tool in the industry.

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

Turning the browser into a security endpoint

As a consumer application, the web browser has long created security challenges for enterprises. Patrick Evans, CEO of SLVA Cybersecurity, says the enterprise browser is set to change that.

It is ironic, Evans says, that the browser has become the most commonly used application in the enterprise, considering that the consumer browser was never designed as an enterprise application. It lacks the core elements any enterprise needs to work safely and productively, forcing businesses to surround it with layers of additional security and management tools.

With basic governance, visibility and security all lacking, it seems the browser itself is perhaps the single biggest security challenge for businesses. The answer to this problem lies in turning the browser into the solution – and this has led to the creation of the enterprise browser.

Evans, having been in the industry since 1992, was surprised to discover the benefits of the enterprise browser and the impact it is expected to have in the next decade. These were presented at a conference he attended last year and, he says, “I believe this is one of the most exciting ICT developments in a number of years”.

Gartner defines an enterprise browser as a standalone web access application with integrated security, centralised policy management, visibility, reporting, productivity and collaboration tools. Essentially, the enterprise browser ensures that security extends everywhere it is needed, without getting in the way of work.

This is key, as the consumer browser is the most commonly deployed application, with around five billion consumers using it today. Companies have therefore been forced to protect everything around it with an endless security stack, DNS filtering, endpoint security, proxies, sandboxes, secure web gateways and more. This creates an additional issue in that many of these tools come with agents, so the user needs countless agents on the endpoint. And all of them require careful configuration and administration,

adding to the burden of ICT teams.

However, with the enterprise browser, the user has access to all the typical consumer browser features as well as the additional enterprise requirements that provide the control needed to work securely.

High uptake anticipated

Gartner suggests that by 2025, enterprise browsers or extensions will be featured in 25% of web security competitive situations, up from less than 5% in 2023. By 2026, 25% of enterprises will be using managed browsers or extensions, up from less than 10%. By 2027, the enterprise browser will be a central component of most enterprise super-app strategies as productivity capabilities drive adoption. And by 2030, enterprise browsers will be the core platform for delivering workforce productivity and security software on managed and unmanaged devices, for a seamless hybrid work experience.

Today, so much is being done through the browser that it could be considered the new endpoint. Evans notes everything from Gmail to Salesforce, from SAP to Workforce, is a browser-based tool, as are all the new financial apps.

Furthermore, employees who use standard consumer browsers also all use consumer products – their phones, laptops or desktop devices – add to the overall challenge of maintaining a strong security posture. He highlights that about 75% of cyberattacks today occur via the browser, which is the single most common point of entry into the business environment.

Solving the security challenge

How does the enterprise browser solve such challenges? To begin with, users need to authenticate themselves to the organisation's identity platform (IDP). Through the IDP, the company can establish that you are who you say you are, and what your specific role is. In understanding the individual's role, the system can determine which applications the user has access to, and which policies to apply.

The system is equally effective for non-employees, such as contractors who enter the environment but adopt the bring-your-own-device (BYOD) principle. In such instances, the enterprise has no control over that device. However, by controlling access to applications and resources through an enterprise browser, it can ensure that its data is protected and contractors have only the access required for their work.

Evans emphasises that for the enterprise browser to succeed, the user experience must be good. He says the next three years are likely to be critical for adoption – and adoption will come down to key use cases that demonstrate how the enterprise browser can eliminate unnecessary complexity and expense in current security systems.



The enterprise browser is expected to have a big impact in changing the way cybersecurity is structured in the workplace.

For more information visit: <https://slva-cs.com>

The energy sector is in focus globally and locally, with a number of events happening in Africa and South Africa now and going forward through the year.

Enlit Africa 2024

Enlit Africa will run from 21 to 23 May at the CTICC in Cape Town. Bringing together government and industry leaders from across Africa, it aims to catalyse action driven by the Pan-African energy conversation, to ensure every country on the continent benefits from sustainable energy and water, aligned with local conditions and geared to drive growth. The event seeks to lead the African energy conversation from within, ensuring decisions around the future of the continent are made by those who live on it.

"Enlit Africa provides a forum for speakers, thinkers and decision-makers to talk together about the reality of Africa's energy and water challenges, and to make their own choices around these core resources and their future," says Chanelle Hingston, Event Director at the Vuka Group. "The goal is to drive measurable change for the continent across these two key priorities – water and power."

This aim is reflected in the agenda and underscored by the attendees and speakers confirmed. They include well-known decision-makers and thought leaders who can provide relevant and informed answers to current questions. This will allow for clear forward planning and will ensure the networking and conversations at the event facilitate real and relevant change. Some of the key names include Geordin Hill-Lewis, Executive Mayor, City of Cape Town, Barry MacCall of the USA-based Electric Power Research Institute (EPRI), and Sabine Dal'Omo, CEO of Siemens South Africa. Representatives from Eskom, GE, Actom, SAPVIA, the DMRE and Western Cape government will also be there. Among the utilities that will be represented are: Botswana Power Corporation, Cenored of Namibia, *Electricidade de Mozambique* (EDM), Electricity Company of Ghana, Lesotho



Enlit Africa 2024 brings together some 250 exhibitors, 180 speakers and 25 utilities from over 62 countries.

Electricity Company, NAWEC of Gambia, Transmission Company of Nigeria and Zambia's ZESCO.

South Africa's Minister of Mineral Resources and Energy, Gwede Mantashe is due to deliver a keynote address and other speakers recently confirmed include:

- James Mackay, Chief Executive Officer, Energy Council of South Africa
- Dan Marokane Group Chief Executive, Eskom, South Africa
- Calib Cassim, Chief Financial Officer, Eskom, South Africa
- Mandy Rambharos, VP: Global Climate Cooperation Markets, Environment Defence Fund (EDF), United States
- Rethabile Melamu, Chief Executive Officer, SAPVIA and Board Member, Global Solar Council
- Paul Wambugu, Investment Manager, KenGen, Kenya.

For more information visit: www.enlit-africa.com

Energy efficiency in focus

Also in May and running 21 and 22 May in Nairobi, Kenya, is the IEA's 9th Annual Global Conference on Energy Efficiency. This will bring together global leaders in government, business and civil society – from around the world – to accelerate policy action on energy efficiency.

The 9th Global Conference is co-hosted by IEA Executive Director Fatih Birol and Kenya's Minister of Energy and Petroleum Davis Chirchir. This is the first year in which the event is being held on the African continent, and reflects the IEA's strengthening partnership with Kenya, which recently joined the

IEA family as an Association country.

The event will serve to consolidate progress and drive momentum towards the global goal of doubling energy efficiency between now and 2030 – a key outcome of COP28. Energy efficiency is an essential aspect in addressing climate change, as well as energy affordability, security and access, and the conference will seek to boost ambitions on efficiency to improve the lives and livelihoods of citizens across the globe.

For more information visit: www.iea-events.org

Africa Energy Forum 2024

This year aef will be held from 25 to 28 June 2024, in Barcelona, Spain. Organiser of the event, EnergyNet UK, has chosen Barcelona due to its vibrant atmosphere and strategic location as the European country closest to Africa. Spain's government prioritises Africa politically and strategically, as evident in collaborations and agreements focusing on Northern Africa, its active participation in the African Development Bank and a \$2 billion investment commitment to South Africa's energy transition.

Alongside other sponsors such as the International Finance

Corporation, the African Development Bank, British International Investment, the European Investment Bank, Standard Bank, Nedbank CIB, engie, TotalEnergies, Red Rocket, Globeleq, Sun Africa and more, South Africa-based Pele Green Energy and Juwi Renewable Energy have also recently confirmed their commitment to the event as sponsors. Other participants include 3E, Tetra Tech, Innovation Norway and South Africa's Industrial Development Corporation.

For more information visit: www.africa-energy-forum.com

Battery system bridges power outages to secure water supply

Among African countries, South Africa is the only member of the G20 on the continent, and it is a founding member of BRICS, together with China, Russia, India and Brazil. Rich in mineral resources, it has one of the three highest GDPs in Africa. Yet, its domestic economy is under strain due to inflation, high unemployment and, in particular, the country's power shortage, which has a negative impact on business activities and broader economic development.

As is well known, the national utility's mostly ageing power plants result in unplanned blackouts from time to time and scheduled load shedding is ongoing. This has also affected water supply facilities, with a significant impact on people's lives.

In 2023, NEC XON, a subsidiary of Japanese information technology company NEC, based in South Africa and operating across sub-Saharan Africa, undertook a project to install an emergency battery energy storage system (BESS) at the Clapham Pumping Station in Limpopo. The pump station is operated by the Lebalelo Water Users Association (LWUA), a public-private joint water utility established in 2002. LWUA has been operating the water supply infrastructure in this area for more than two decades. Its planned 100-kilometre pipeline will supply water throughout the Sekhukhune District Municipality and Mogalakwena Municipality, some 300 kilometres northeast of Johannesburg.

The main industry in the region is mining, and water from the Clapham pumping station plays an important role in mining operations. Once completed, the pump station and distribution pipelines will also supply domestic water to some 380 000 people in more than 100 municipalities. Water from the pumping station is essential to the day-to-day life of communities and industry in the region.

The Clapham BESS started operations in July 2023. The 3.4 MWh containerised BESS solution supplied by partner in this project, Solar MD, includes 1 MW AEG inverters and 630 kVA transformers as well as variable frequency

drives for the 500 kVA pumps. Now the pump station is self-sufficient in electricity for up to four hours a day. This is key to ensuring operational continuity during load shedding.

By eliminating real-time power shortages with the BESS, this initiative mitigates the disruption of water pumping operations, ensuring a stable supply of water to local communities and commercial users.

A significant responsibility

Herman Viljoen, General Manager of Renewable Energy and Energy Storage at NEC XON said, "We have a huge responsibility, as an NEC company, to ensure the success of this project. Social infrastructure directly influences people's lives and, in South Africa, water is a critical resource."

As well as serving the mining sites, water in future will be delivered to other areas, reaching agricultural land, educational and recreational facilities, and more he said, adding: "So this project is really a lifeline for the communities, providing water security."

LWUA Chairperson Prakashim Moodliar said the water delivery programme will lead to economic growth in the region, expressing hope that "this model will be a catalyst for many similar infrastructure programmes."

South African Minister of Water and Sanitation, Senzo Mchunu, has also recognised the project as a major milestone in the country's development, saying: "This partnership represents a new era in water service delivery. It represents a leap in the qualitative transformation in South Africa and we are proud of it."

In addition to the BESS programme, NEC XON has participated in a school infrastructure project at Kwata Primary School in Limpopo, where, with other companies it is helping set up facilities for water supply and Internet access at the school. NEC XON built an integrated solar power and energy storage solution to support the energy needs of the school.

The need for infrastructure across Africa

Considering the concerns about power shortages also in countries neighbouring South Africa, NEC XON aims to expand its energy storage business to other African countries as part of its effort to help communities on the continent with the provision of critical infrastructure.

"The battery energy storage solution solves many problems," says Viljoen, "and these problems are present not only in South Africa but elsewhere on the continent too. There is a huge social responsibility to deliver the basics for communities throughout Africa."

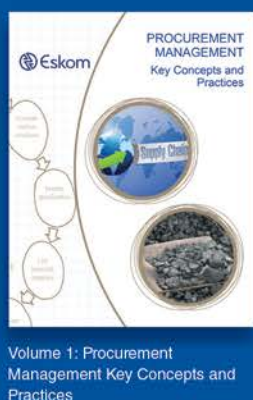
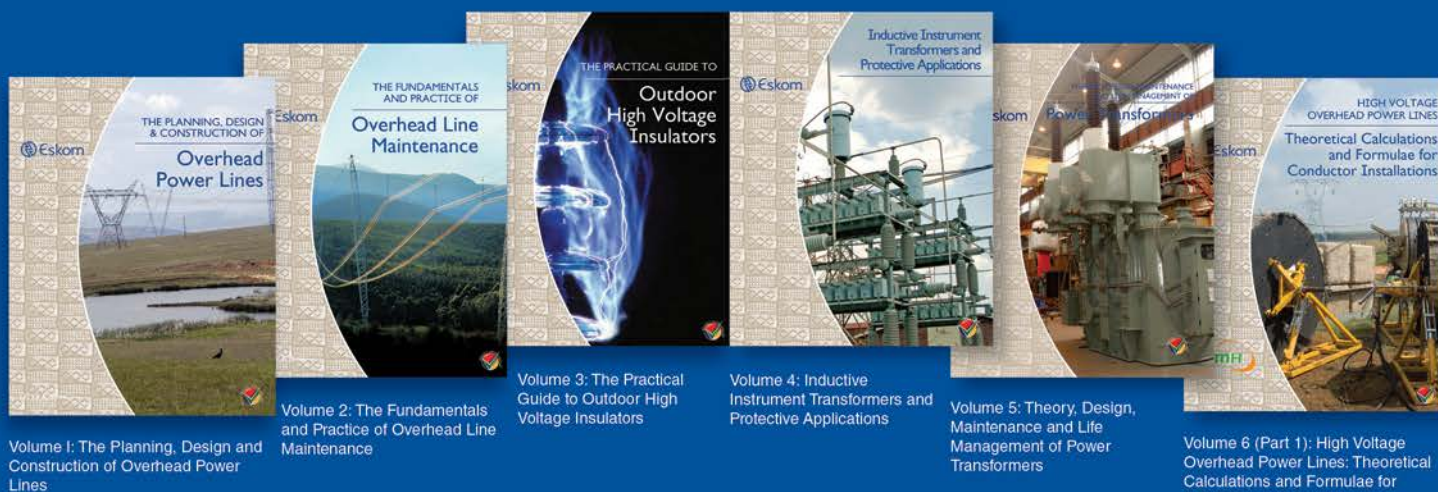
He says NEC XON aims to increase its global competitiveness and drive the supply of infrastructure in Africa: "We want to expand our international capability and be a major player on the African continent for the supply of energy and battery storage solutions."

For more information visit: <https://www.nec.africa/>



The containerised battery energy storage system at the Clapham Pumping Station in Limpopo.

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



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

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



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

Contact: Sanjeev Bisnath

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

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

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



Temperature to IO-Link module

*Detection of even the smallest
variation in temperature*



ifm – close to you!

www.ifm.com/za

