FEATURES:

- Control systems + automation
- Drives, motors + switchgear
- Measurement + instrumentation
- Safety of plant, equipment + people

E-RTTM
pipeline leak detection

Pipeline Management Solutions
for smart monitoring and
protection of your pipeline

KROHNE

07/2023

ELECTRICITY + CONTROL

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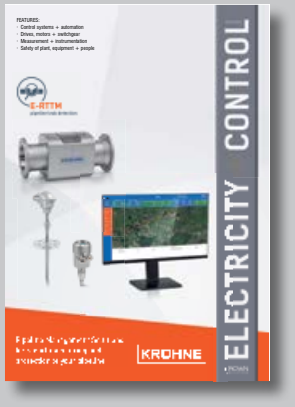

With a shift from fossil-fuel based systems to renewable energy sources also comes a shift in their transportation and for pipelines transporting gas, the shift applies for leak detection systems too. *(Read more on page 3.)*

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The tone at the top

When we consider what makes our industry operate effectively, it is evident that it is how we manage and lead the activities on the plant.

Now managing the plant is not only a human function – and in this context I am not for one moment suggesting that we'll all be replaced by AI or automatons! Rather, it is pertinent to remind ourselves that it is also about how we control and automate the plant; how we measure and sense status and processes – and how we convert the data from the plant into information that allows us to optimise operations. And then, of course, how we make the plant work 'better'.

Reflecting on this, it is clear all the features in this issue are profoundly interlinked.

However, I want to pause for a moment and return to the role of people in all of this – in the way we manage and lead in a broad sense.

You may well have heard this couched in the phrase 'the tone at the top'.

So, given the richness and relevance of the topics this month, what leads me to see a need to reflect on the tone at the top?

Firstly, I doubt any reader of this magazine feels that the policy environment in which we operate is conducive to success and real economic growth. My sense is that the policy environment is well intended, but poorly linked to any real commitment to releasing the will, skills and competencies that we still have to make a difference and see the economy thrive. Instead, we find growth stifled – and lawmakers apparently unaware of why this is the case.

(I cannot resist again making a point I have often made in the past – but I seem to add one or two items as time passes: education is far too important to be left in the hands of the state. The same can be said of safety and security – and now we can add the economy, energy, logistics and so on. Healthcare obviously features too. These are deeply saddening observations; but unless you have been on another planet, they are admissions that need to be made.)

The other day I found myself driving parallel to a railway line for a few hundred kilometres – a line in this country (but for now, let's leave it at that).

Now I should not have been surprised, and I should certainly not have been shocked, but my heart broke as I saw the condition of the line and the infrastructure supporting it. It was a wreck – and no doubt a wreck, the process of wrecking it having served the interests of a few individuals. Of course, one should never guess at this, but surely someone was selling stolen metal and other metals; and no doubt there is a real business opportunity to truck goods rather than rail them across the country.

However, this is pure conjecture. Maybe it was simply vandals taking stuff down and throwing it into the bush around the track? Who knows …?

In some conversations it has been made clear to me that stopping this sort of thing is 'very hard'. I have no doubt it is. But consider your own careers. Anything worth doing tends to be hard. 'Hard' is what we do. So how dare we be told that 'resolving these problems is hard'. Of course it is.

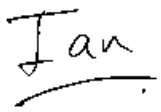
The point is we need to DO SOMETHING. Instead, I worry that we sit on our hands and apologise, or wring our hands in despair.

The tone at the top applies in any organisation – yours and mine included, and across industry too. Let's never shirk doing the hard work; and let's never pretend that we do not see the problem.

Seeing the problem is halfway to solving it.

Look about your plant and ask how you can set a tone for a better plant, a more efficient plant – and ultimately a more successful plant.

Set the tone at the top.



Ian Jandrell

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FSAAE FSAIEE SMIEEE

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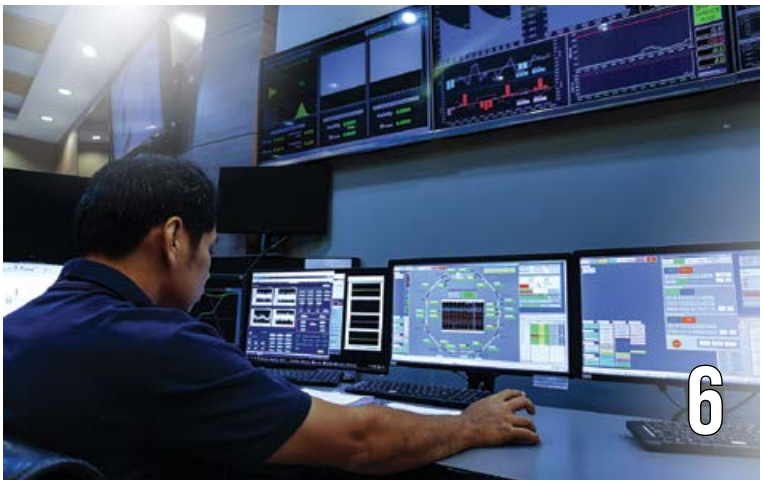
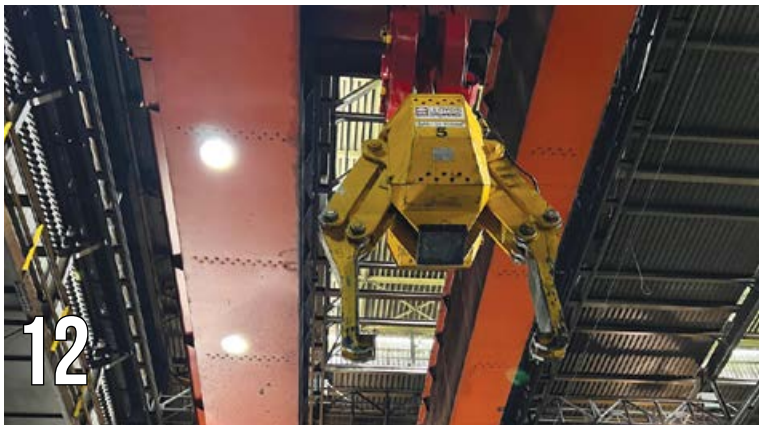




Leak detection for the energy transition

With a shift from fossil-fuel based systems to renewable energy sources also comes a shift in their transportation. The shift applies for pipeline leak detection systems too.

Some pipelines transport 100% hydrogen and others a blend with natural gas. CO_2 can be transported as gas, liquid or in supercritical state. The leak detection system needs to be able to work with these different mixtures and phases.

For classical leak detection systems, this is a problem. Negative Pressure Wave leak detection systems are affected due to damping in gas. Classical statistical systems are affected due to compressibility and linepack changes. This leads to long detection times or high thresholds. The systems will react with a loss of sensitivity or, in the worst case, with false alarms.

This is a typical application for RTTM-based systems, which try to accommodate all the different products and pipeline properties in their calculations. However, if the fluid cannot be accurately modelled by the system, it will present false results.

In the Extended Real-Time Transient Model technology (E-RTTM) developed by KROHNE, these disadvantages are compensated for by signature analysis. This makes the system less sensitive to inaccuracies in RTTM calculations. Thus, challenging pipeline conditions, product parameters or mixtures such as hydrogen blends leading to inaccuracies, become less important. In KROHNE's PipePatrol the RTTM is used for filtering purposes and leaks are detected by pattern recognition techniques.

Principle of E-RTTM

As a manufacturer of measuring technology and established supplier of systems to the pipeline industry with more than 35 years of experience in leak detection and localisation systems, KROHNE developed E-RTTM. The Extended-Real Time Transient Model extends a feature generation module with leak signature analysis using leak pattern detection.

An E-RTTM leak detection system creates a virtual image of a pipeline and uses standard process instrumentation for flow, temperature and pressure measurements. The hydraulic profiles along the virtual pipeline are calculated from the measured pressure and temperature values. The model compares the calculated flow values with the actual values from the flowmeters. If the model detects a discrepancy, the leak signature analysis module determines whether it was caused by changing pipeline operation, an instrument error, or a leak.

Leak detection for hydrogen

The leak detection system was installed on a power-to-gas project which was the world's first demonstration plant for storing wind energy in the natural gas grid. As the leading leak detection system provider in Germany, KROHNE was recommended by an independent third-party authority to supply the leak detection system. The E-RTTM technology was selected due to its ability to measure leaks even in small quantities. This was the first power-to-gas application equipped with a PipePatrol leak detection system, in 2013. Since then, PipePatrol has been installed on more hydrogen pipelines.

Max Ihring, MSc, Product Group Manager, Pipeline Management Solutions, KROHNE.

Daniel Vogt, Dipl-Ing. (FH), MSc, Business Unit Manager, Pipeline Management Solutions, KROHNE.

Leak detection for carbon capture

Natural gas from the Gorgon gas field contains around 14% naturally occurring CO_2. Before converting the natural gas to LNG, the CO_2 is removed. To minimise the environmental footprint, the separated CO_2 is injected in a storage formation. A seven-km long pipeline transports the CO_2 from the LNG liquefaction plant to the CO_2 injection wells. The requirement was to provide a pipeline leak detection system that provides timely and accurate leak information for the pipeline-segments between the LNG plant and drill-centres.

KROHNE provided the E-RTTM-based leak detection system. The project involved unique conditions, such as the properties of CO_2 in supercritical phase and flow measurements done using orifice plates with limited rangeability.

Summary

KROHNE's PipePatrol E-RTTM, is a leading technology for monitoring pipelines. It can be adapted to the different requirements of applications and thus produces better overall results. Signature analysis makes the system less sensitive to inaccuracies in the process and modelling of the fluid. The technology is industry-proven for liquid, gas and slurry applications. The smallest detectable leak rates are typically 0.5% or lower. Leaks are detected within seconds, confirmed within minutes. It also has an exceptionally low false alarm rate due to optimisation. Leak localisation is best-in-class. □

Changes in energy sources and transportation pipelines require a change in leak detection systems too.

For more information contact KROHNE South Africa.
Visit: https://za.krohne.com/en

Werner Engelbrecht, Works Manager Mechatronics at SEW-EURODRIVE.

A portfolio of automation solutions

Already installed in the automated factories of leading South African car manufacturers, SEW-EURODRIVE's Maxolution® has significant potential to raise efficiencies in various sectors of the local economy. Werner Engelbrecht, Works Manager Mechatronics at SEW-EURODRIVE, highlights how Maxolution® can help businesses automate their processes and make the most of their machinery's capabilities.

In addition to the automotive industry, applications extend to sectors as diverse as distribution warehousing, packaging, airports and the food and beverage sector. Engelbrecht points out that as well as supplying specific products for customers' applications, with the Maxolution® portfolio SEW-EURODRIVE has become a solutions provider.

"Maxolution® gives us the ability to combine all aspects of production automation, including the hardware, software, application know-how and service," he says. "By doing this, we can maximise the efficiency and output of customers' production facilities."

He adds that SEW-EURODRIVE has applied this internationally established system in South Africa for a decade and has the experience to understand the requirements of a range of industries. With this expertise it can offer advice on factory design and production automation to customers.

"Programming and start-up are much easier with our pre-defined application modules that have evolved through years of experience," he says. "With the specialised software, we can simulate material flow in industrial systems, helping customers to achieve greater efficiency through the integration of multiple systems."

Engelbrecht says a challenge faced by many companies that want to automate their machinery is that they spend years developing the software and trying to apply it. This route often requires costly research and development and carries a number of risks related to the implementation of what they have developed.

Automated solutions can include Automated Guided Vehicles (AGVs).

"We can help customers to reduce the development timeframe considerably, and save costs," he says. "We can also remove the risk that customers face when they enter this relatively unknown territory, as we can apply our global experience from many diverse sites."

Adaptability for product variations

One of the benefits that Maxolution® can offer is cost-effective adaptability for product variations in a production line. This is achieved through easily programmable application modules. As customers' products change, the machines that make them can be adapted quickly using Maxolution® as a modular and versatile system to adapt to product lifecycles.

"With traditional fixed cam systems, for instance, it can take several hours to effect a product change on manufacturing machinery," says Engelbrecht. "However, with the MOVIKIT® MultiMotion camming software module, this can be done in a matter of minutes – simply by changing the programming."

This has the immediate benefit of saving time and money, and provides for the machines to be more productive over the long term. SEW-EURODRIVE can work with customers on the planning and commissioning of their automation projects, he says. With its comprehensive local support capability, the company is also available to ensure that the installed system works consistently to expectation. In addition, SEW-EURODRIVE can conduct training for customers' staff at its new Drive Academy in Gauteng.

"With the Maxolution® portfolio, all applications in a customer's factory can be incorporated into a single network," Engelbrecht says. "This allows for a complete system that works synergistically – creating the opportunity to integrate new systems and allowing for existing systems to be adapted to the added systems and product changes."

In this way, Maxolution® offers customers a route to automating their facilities with adaptability built into the system.

Different elements for different applications

In the automotive industry, for example, the automation solutions for the final assembly phase are inductive skillet conveyor systems, which provide for ergonomic working heights at different assembly stations. Other solutions in-

clude electrified monorail systems for light and heavy loads, floor track systems, skid conveyor technology, rotary tables and transport vehicles for payloads of up to three tons.

For the automation of factories, the Maxolution® portfolio includes conveyor lines, individual storage and retrieval systems and automated guided vehicles incorporating safety technology. SEW-EURODRIVE also provides solutions for vertical and horizontal form-fill-and-seal machines, palletising, grouping applications, synchronised handling and robotics.

"Our engineering software contains application modules that allow for standard installations to be easily realised," Engelbrecht says. "MOVIKIT® software modules are used for individual applications that can be parameterised directly on our inverters, with no hard programming – and the MOVIRUN© software platform is used with the controllers for complex integrated systems that are freely programmable."

He also highlights Maxolution® DriveRadar® as an innovation with considerable potential locally for condition-based maintenance forecasting for the automotive and industrial sectors. This system allows scope measurements from MOVIFIT® devices to be monitored from a single location, he says.

"With DriveRadar®, customers can monitor the drive's current, voltage, temperature, and brake status," he says. "It can also be used to monitor encoder communication values and provide information about barcode quality and conductor rail condition."

DriveRadar® is a condition monitoring solution to facilitate maintenance forecasting.

Adding to the value of this comprehensive portfolio are a range of energy-saving solutions from SEW-EURODRIVE's energy management systems, as well as from energy-efficient IE4 and IE5 mechatronic decentralised solutions and motors.

"With our years of experience and the expertise we have developed, SEW-EURODRIVE is not only an equipment supplier but also acts as a partner to its customers in project planning, commissioning, after-sales service and support requirements," Engelbrecht adds. □

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

Automation system for a new lithium refinery

Valmet is contracted to deliver a Valmet DNA automation system to a lithium project run by Sibanye-Stillwater subsidiary Keliber, in Kokkola, Finland. Construction of the lithium refinery started in March 2023.

"Battery chemicals present an interesting process area and there is a lot of potential in this field," says Arto Mäkinen, Sales Manager, Automation Systems at Valmet. "Automation plays an important role in process reliability, usability and performance. We are happy that Keliber trusted us and chose Valmet DNA as its main automation system."

"The Valmet DNA automation system suits the demanding new industry of battery chemical production," says Juha Kerttula, Electrical and Automation Manager at Keliber. The technical capability of the distributed control systems and Valmet's digital services meet our expectations for this type of novel and demanding process particularly well. The modern user interface and high usability of the system support production efficiencies to achieve targeted outputs. Additionally, Valmet can support our long-term operations, sustainability, and efficiency targets by offering optimisation and simulation opportunities as well as local and remote customer service."

Valmet's delivery includes the Valmet DNA User Interface with a redundant system. The delivered fieldbuses will be set up with Valmet I/O. Motors are delivered through PROFNET and substation protection relays to IEC 61850.

Valmet will also deliver a virtualised solution for Windows workstation, as well as condition monitoring, a field device manager, a Valmet DNA historian, a separate demo system, an application simulation system and a training simulator interface. To ensure proper running of the operations, user training is included in the project scope.

Producing battery-grade lithium hydroxide

Keliber is an advanced lithium project that aims to be the first European producer of battery-grade lithium hydroxide from its own mined ore reserves. It is a subsidiary of the South African multinational mining and metals processing group Sibanye-Stillwater, with its second largest shareholder being Finnish Minerals Group, a state-owned company developing the value chain of lithium-ion batteries.

For more information visit: www.valmet.com

3D image of the lithium refinery in Kokkola, Finland. [By Birgitta Hjelm-Luontola/Sweco]

Designing distributed control systems to industry standards

Best practice for the design of distributed control systems includes pursuing a standardised approach to configuring any DCS. For DCSs used to control sophisticated processes in many industries, the three most important factors to consider can be summed up as: standards, standards, and standards.

A distributed control system (DCS) serves as the hub of a processor's operations and controls and monitors key variables such as flow, applied temperatures, pressure, level, and material conveying/handling. The human machine interface (HMI) of the DCS collects all the data from the production equipment and presents it in a user-friendly way for the operator.

However, there are also multiple variables related to the type of equipment in use, the material being processed, the operator's actions, and the control system. The DCS therefore needs to be designed to handle common, expected disturbances as well as unexpected anomalies in a predictable way.

Designing a DCS application from scratch is like starting with a blank sheet of paper; it can be configured in almost any way imaginable. The important focus should be to design a robust system that delivers precise and predictable control.

There is of course the risk for poor configuration – and this only accentuates the need to follow established standards and best practices in DCS design. A number of professional organisations and associations define the standards and best practices for process control systems. However, most provide only general guidelines that can be applied to any distributed control system.

Robert M Ard, Director of Applications Engineering at Valmet, says there are many other ways to achieve a level of standardisation in the programming and design to create a robust DCS. Valmet is a leading global developer and supplier of process technologies, automation systems, and services for the pulp, paper, energy, marine, and other process industries. In January 2023, the company completed the acquisition of the D3 Control System from NovaTech Automation.

"Standardisation begins with a commitment to a shared design philosophy, adoption of best practices, and the use of tools and techniques that reduce programming complexity and time for similar processing equipment," Ard says.

Start with a well-defined design philosophy

He suggests that every application configuration should begin with a well-defined design philosophy. Most DCS applications are created and maintained by teams of engineers, so they should all be rowing in the same direction.

"The best results can only be achieved when all contributors to the overall process control application follow the same best practices and techniques," he says.

When this is not the case, it will result is unintended process errors and a system that is difficult to maintain.

"Every engineer contributing to the application should strive to write their logic in the same way. The standard practices used should be well documented and taught to everyone responsible for the control system," Ard adds.

He says it would be an appropriate indication of a well-designed DCS application if control systems engineers cannot identify the specific programmer by looking at the program logic or by observing its execution.

One specific area of DCS design that illustrates the benefit of an established, shared philosophy is alarm management. In process automation, an alarm is defined as an audible and/

The Valmet D3 interface displays real-time process information in a customer-oriented graphical HMI.

A well-designed DCS can deliver robust and predictable control, providing constant monitoring of process conditions.

A DCS serves as the hub of a process operations and controls, monitoring key variables.

or visible means of indicating to the operator an equipment malfunction, process deviation, or abnormal condition requiring an operator's response.

Poorly designed and maintained alarm management systems can overwhelm operators with chattering and nuisance alarms under normal conditions and debilitating alarm floods when abnormal states emerge. When this occurs, it can be difficult for operators to ascertain and act on the most critical alarms, contributing to abnormal situations, lost production, and sometimes serious accidents.

Recently, organisations like ANSI (American National Standards Institute) and ISA (International Society of Automation) have released updated guidelines related to alarm management. The ANSI/ISA 18.2 standard addresses the entire lifecycle of alarm management, from design and configuration through performance monitoring, auditing, and enforcing for the life of the control application.

"Basically, what the ISA committee determined was that an alarm should only be used if it requires an operator's response," Ard highlights. "And that is probably the number one factor that most processing plants violate. The tendency is to use alarms for all kinds of notifications, alerts, and reminders."

Leading process automation companies like Valmet have incorporated more of a standards-based approach to application development, focusing on differentiating alarms that require immediate attention from less urgent notifications, alerts, and messaging.

Ard says Valmet's D3 DCS is designed to meet or exceed the requirements outlined in the ISA 18.2 standard, albeit with slightly different terminology. This includes limiting alarms, supporting alarm prioritisation, ordering alarms by classification, and allowing dynamic alarm management.

Standardisation of the HMI

To facilitate operator monitoring and control, the DCS uses human machine interfaces (HMIs) to provide a visual overview of process systems and to monitor critical status and control information.

The Valmet D3 interface, for example, displays real-time process information in a complete customer-oriented graphical HMI. With standardisation top of mind, even seemingly minor details in the design of the presentation of the information have been considered in the high-performance HMI layouts. Examples include consistent alarm notification terminology and phrasing, location on the screen, and colour-coding.

"A well-designed graphical user interface improves situational awareness, reduces workload, and enables the operator to view the entire process at a glance so they can focus on mitigating any abnormal situations that may arise," says Ard.

Although the best practice for any control system has at its core a standardised approach to configuring the application software, the challenge of designing a system from the ground up can be daunting.

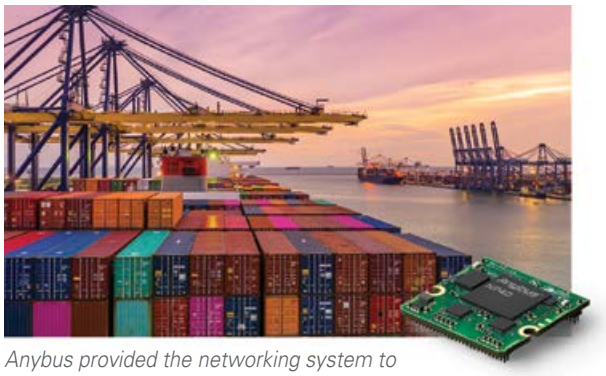
Ard is writing a comprehensive guide for control system design to assist processors in this endeavour; it is due to be published in Q4 of 2023. As well as presenting general guidelines control system engineers should know or consider when tackling any DCS project, the book elaborates on the critical role of standardisation and includes examples of programming specific to the Valmet D3 DCS.

"It is clear that a properly designed DCS can deliver robust and predictable control with constant monitoring of process conditions, clear and concise communications with operators, and smart alarm management – as long as we keep in mind the three most important factors: it's all about standards, standards, and standards," Ard emphasises. □

For more information visit: www.valmet.com

Network connectivity in automated container ports

The drive to increase the efficiency of international shipping relies on high-performance cranes to transfer containerised cargo quickly and safely from ship to shore. Dutch company BTG specialises in developing, producing, and installing position measurement systems for cranes and vehicles in automated container ports. Much of the company's work is based on providing sensors to enable cranes to move cargo from ships to automated guided vehicles (AGVs). But the networking is complex and demanding. The cranes and AGVs often use different industrial networks, yet they need to transfer real-time data in harsh environments. That's where Anybus, from HMS Networks, proves its purpose. Anybus handles the networking to enable BTG to focus on the position measurement systems, and together they help to increase the efficiency in automated container ports.



Anybus provided the networking system to support BTG's position measurement systems used in cranes and AGVs to increase efficiency in automated container ports.

A specialist in position measurement systems

BTG has over 25 years' experience in its field and its products are in use in all the main automated container ports around the world. One of BTG's key products is the IRM400 range of measurement systems. It is designed to control sway, skew, and inclination and thus provide accurate position control of the crane's spreaders and their valuable cargo.

Designed as a series of modular elements, the IRM can be configured for many different types and sizes of cranes. The system consists of an infrared transmitter and a high-resolution receiver unit. The transmitter is mounted on the spreader of the crane, and the receiver is mounted perpendicular to it, above the transmitter. The system constantly measures the sway angle of the load in flight, in all directions. It also measures the spreader skew angle and optionally, the trim and list angle.

To achieve this level of dynamic control of multi-ton loads travelling in three dimensions at high speed, data must be collected from several sources in real-time and processed instantly so that the exact position and velocity are always known and can be adjusted as needed.

Daan Potters, Chief Operating Officer at BTG, says, "We have a lot of experience and knowledge with position measurement systems in tough industrial environments, but we are not experts in industrial networks. That's why we turned to Anybus for this application."

BTG's IRM Spreader Measurement Sensor consists of a transmitter and a receiver. The Anybus CompactCom B40 was embedded into the receiver.

Networking requirements

BTG needed a networking technology that could be embedded into the IRM sensor, allowing the sensor to communicate over PROFIBUS, PROFINET, and CANopen networks. As BTG is a global company and different networks are dominant in different parts of the world, it also needed to accommodate the possibility to cover more networks in future. In addition, the networking solution needed to be compatible with legacy equipment, tough enough to handle marine environments, and fast enough to process real-time data communication.

Any network

Anybus CompactCom from HMS Networks is a product brand that specialises in connecting industrial devices to any major industrial network. There is a CompactCom product for the integration of any major Fieldbus or Industrial Ethernet network, including PROFIBUS, PROFINET, and CANopen networks.

The CompactCom is embedded into the relevant device; in this case, the sensor's receiver. The embedded design provides several benefits. It makes CompactCom simple to install and therefore reduces the time to market for new products. It allows for the reuse of legacy equipment, so BTG could retrofit new electronic control systems to existing cranes. Furthermore, the CompactCom can be embedded in an IP67-rated enclosure, ensuring that the equipment can handle the harsh conditions found in marine environments.

The Anybus CompactCom provides high-performance data exchange that can handle the most demanding synchronised motion applications – up to 1 448 bytes of process data in each direction.

Daan Potters comments: "We chose the CompactCom B40, and we're pleased we did. The CompactCom B40 solves all our networking needs, it's compatible with all the required networks, and it provides the real-time communication essential in position measurement systems. Anybus also provided excellent support to help us to implement the CompactCom B40 quickly."

HMS Networks is represented in South Africa by IDX Online.

For more information contact IDX Online.
Phone: +27 (0)11 548 9960
Email: sales@idxonline.com
Visit: www.idxonline.com

Increased efficiency in metal panels handling

ifm's OPD100 profile sensor reliably detects the number of panels placed in the handling process.

In the automotive industry, alongside the continuous drive to ensure cost efficiencies, electromobility and environmental concerns are transforming the sector, driving improved efficiencies in in the use of resources, raw materials and components.

One of Germany's leading automotive manufacturers uses various vision systems in its factories in order to implement more efficient transport routes on a continuing basis. Using ifm's OPD100 has helped it to increase efficiency in its handling of metal panels to achieve a 50% saving in material handling costs at its manufacturing plant.

In the BIW (body-in-white) assembly lines of automotive manufacturing plants, high material handling costs arise in the supply of semi-finished products from the stamping facility to the production line. For example, about 4 000 door panel components per day need to be transported by truck. The capacities of the trucks and the load carriers used to transport the doors have an influence on the number of required transport runs and thus directly on the logistics costs. In addition, free space is needed close to the production lines where parts can be stored before being fed into production.

Hence the capacity of each load carrier offers the potential to keep logistics overheads and storage space to a minimum. In this instance, the aim was to reduce material handling costs and ensure production quality was maintained. The idea was to have the load carrier transport twice as many door panel components. This would save 50% in material handling costs and 50% in storage costs – in terms of the required space. However, as the robot in use was not capable of safely unloading each panel piece by piece from the load carrier, an additional sensor system was needed.

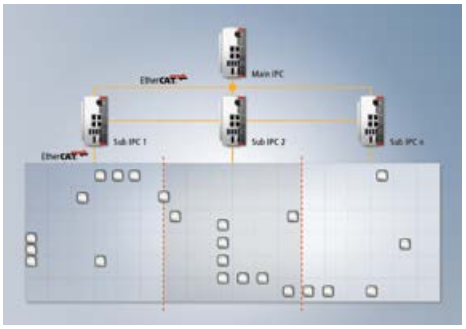
ifm's OPD100 profile sensor provided the solution. It could be set up quickly, and it safely detects when two panels instead of one have been placed on top of one another.

With its OPD100 profile sensor, ifm has closed the gap between the quite simple and low-priced distance sensors and the complex and sometimes very costly vision systems. The profile sensor provides a solution for many quality control and position detection applications. It offers customers a robust solution that works reliably under extraneous light and with differently coloured objects. Objects can be positioned flexibly and at varying distances within the laser line, and the sensor can be set up within minutes, simply using its three push buttons and without any need for additional software.

Having tested the sensor successfully in one facility, the automotive manufacturer chose to add it similarly to other production systems. Overall, with a small investment it has achieved an improvement in production efficiencies and cost savings.

For more information contact ifm South Africa.
Tel: +27 (0)12 450 0400
Email: info.za@ifm.com, visit: www.ifm.com

Floating planar product transport at extended scale



Modular expansion via XPlanar multi-computing opens up new dimensions in maximum system size.

The Beckhoff XPlanar planar motor system for floating product transport with up to six degrees of freedom was launched onto the market in 2018. Since then, its functionality has been continually expanded. The new multi-computing functionality, available through a simple software update, now enables modularisation of the overall system – and thus a greater number of tiles and movers per system – to handle applications on an extensive scale.

With XPlanar multi-computing, the overall system can be divided into individual subsystems, each controlled by a sub-IPC, to implement particularly large, modular XPlanar systems. This allows computationally intensive tasks to be distributed optimally to the corresponding system segments. The dynamic handover of a mover between two subsystems is ensured by the communication between the sub-IPCs, and the superordinate main IPC controls the operation of the entire system. It is also centrally responsible for application programming and diagnostics – using the familiar functionalities of TwinCAT 3 XPlanar (TF5890). Access from the application to the subordinate sub-IPCs is not required for this, nor is it necessary for the mover transfer during segment changeover, which makes creating applications and system operation as simple as before.

With XPlanar multi-computing, the number of XPlanar movers and tiles within an overall system can be increased to a practically infinite number. Beyond the basic system enlargement, further optimisation possibilities result from a modularisation of the machine, with the ability to couple new subsystems mechanically to the existing system if required. What's more, the subsystem can be easily integrated into the overall system process by simply adjusting the program in the main IPC.

For more information contact Beckhoff Automation.
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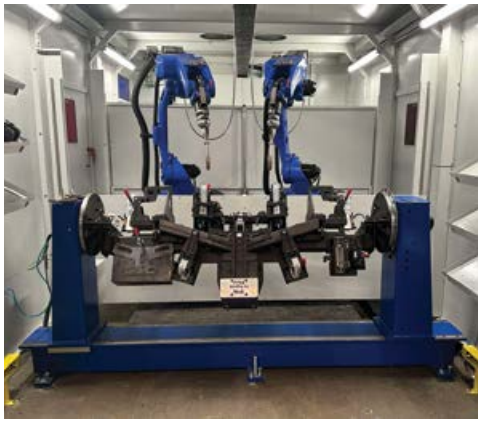
Email: danep@beckhoff.co.za
Visit: https://www.beckhoff.com/en-za/



In each welding cell, two GP25 robots run in synchronised motion with a set of positioners, all housed in a protective enclosure.

Automated welding in towbar manufacturing

Brink Towing Systems is a global leader in developing and manufacturing towbars. Since the end of the Covid-19 pandemic, many of the car brands it supplies have been ramping up production to keep up with rising demand. For Brink, this means finding new ways to fulfil customer orders, which already see the towbar specialist manufacture more than 160 000 towbars per year for South Africa and markets in the UK, Europe and Thailand.

The company's towbar manufacturing facility in Pietermaritzburg is equipped with a number of Yaskawa robotic welding cells. Each cell comprises two stations where there are two GP25 robots running in synchronised motion with a set of positioners, all housed in a protective enclosure.

For operators, using the system is simple, says Devon Prinsloo, National Project Manager at Yaskawa Southern Africa: "Load the part, press the button, and the doors will close. Brink runs the two stations in parallel so there is always an 'active' part getting loaded and unloaded. This reduces the cycle time in the long run."

Since the system was installed, Brink has seen a substantial increase in production, helping it meet demand that was otherwise unattainable before the introduction of automated cells to assist in running the operation. And car production rates indicate that demand for Brink's towbars will continue to grow. The company has recently installed its fifth cell from Yaskawa – and will soon install the sixth.

Designing and installing customised solutions for niche manufacturing operations is not easy, but Yaskawa has a history of problem-solving and optimising production lines to integrate robots. "Brink uses a water-cooled torch welding system," says Prinsloo. "The booth itself was designed by one of our suppliers, Dynamik, but for the most part, we set up the entire system, including writing the PLC program and robot program."

In this case, Brink is also well-versed in the robot system, so it handles live programming on-site with extensive use of MotoSim. Overall, the system is controlled using PROFINET, EtherNet IP and PROFIsafe. PROFINET is an open Industrial Ethernet solution based on international standards. It is specifically designed for collecting data from and controlling equipment in industrial systems with a particular strength in delivering data under time constraints.

With the re-emergence of high demand across different sectors in the global economy, manufacturers are pushing the boundaries of how automation can add accuracy, efficiency, productivity, and return on investment for their operations by partnering with experts like Yaskawa.

For more information contact Yaskawa Southern Africa.
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Visit: www.yaskawa.za.com

Leading the way in product coding and marking

Leibinger, a global innovation leader in coding and marking systems, introduced the world's first intelligent coding and marking system – the IQJET – in early May just ahead of the interpack trade show in Düsseldorf, Germany.

The IQJET is designed for the direct coding and marking of products and packaging. It can be used in the food and beverage and fast-moving consumer goods (FMCG) sectors, as well as for applications in other industrial sectors. It promises 'plug and print' performance and, as a result, unrivalled availability with consistently high print quality – without the need for cleaning. The IQJET does not require scheduled maintenance for a full five years from installation. It promises manufacturers 'a fresh experience' when working with Continuous Ink Jet (CIJ) printers for coding and marking. Operating costs can be reduced by as much as 30% compared to those of conventional systems and the IQJET also supports sustainability.

(Source: Paul Leibinger GmbH & Co. KG)

The new IQJET provides reliable marking on a wide range of materials.

The new IQJET incorporates four assistance systems: the SMART.OS operating system, IQPRINT technology, the SMART.EFFICIENCY assistance system, and the intelligent SMART.CARE function. These support easy integration into the production line, reliable printing performance and consistent print quality, cost efficiency, and minimal maintenance.

For more information visit: www.leibinger-group.com

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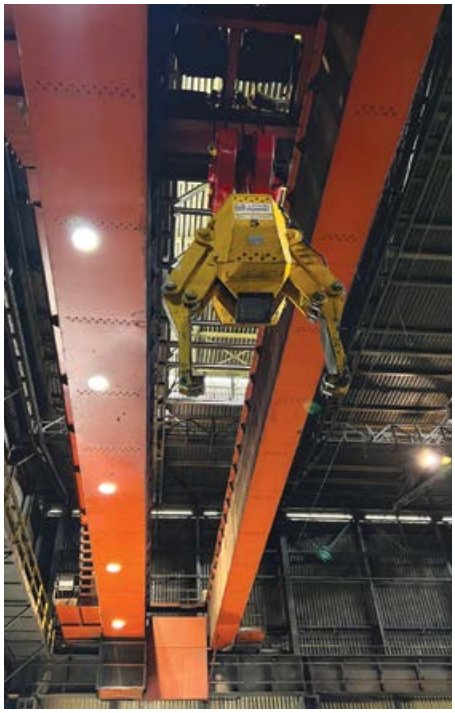
Crane system upgrade

In industrial facilities today it is not uncommon to find overhead cranes that are more than 80 years old still in operation. However, this gives rise to a range of complex operating issues as well as concerns around safety and reliability. This case study sets out how crane control specialist, MH Automation International and crane parts supplier, CP Automation worked together to upgrade the crane control equipment of an overhead travelling crane operating at a south Wales steelworks.

Overhead cranes have been used since the first industrial revolution to move heavy and oversized objects in a range of applications. The original equipment manufacturers (OEMs) of the cranes designed the structural components of these material handling powerhouses to withstand mechanical forces far greater than those encountered in day-to-day operations.

However, with the slow speeds and limited ratings of early cranes, old equipment may not be able to meet the needs of modern material handling applications. Manufacturing facilities today need to maintain a constant flow of materials to remain competitive and any disruption can result in production losses and associated costs, which can escalate by the hour. Site managers are therefore always looking to minimise downtime and maintenance expenses as well as energy costs.

Where older equipment is not adequate to meet current material handling demands, the operator has three options to improve the system's performance: invest in a new crane, refurbish a used crane, or upgrade the existing one. Rather than scrapping an outdated crane which is still structurally sound, it is often more cost-effective to upgrade and modify the control system of an existing crane to meet current operational and safety needs.



The crane in action.

A leading UK steel manufacturing company chose to follow this route in upgrading several cranes across its operating sites. In the latest of four similar retrofit projects spanning a ten-year period, the steelworks sought to increase the reliability, safety and productivity of its obsolete legacy equipment. The company turned to MH Automation, a Cardiff-based specialist in electrical crane control system upgrades and refurbishments, to undertake this upgrade project on a Joseph Booth & Bros ten-tonne electric overhead crane.

Joseph Booth & Bros equipment is well-known in the steel industry. Although the company is no longer in operation, it merged with several other well-known crane manufacturers in the 1900s, creating the newly established Wellman Booth name. Today, this brand is part of the Clarke Chapman group of companies, which still counts companies in the nuclear and steel industries as some of its biggest customers.

Improved control

The crane that was due for upgrade has three motions: hoisting, cross travel and long travel, driven by DC Series wound electric motors. The crane was used to move product at the steelworks where about 400 000 tonnes of tin, chrome and polymer coated steels are manufactured per year for the packaging industries.

MH Automation set about designing a new main hoist drive panel to control the primary hoist mechanism provided for lifting and lowering the rated load. In addition, the long travel and cross travel motions were upgraded to provide safe and effective location of the gantry and trolley. A regenerative power module (RPM) was provided for the regeneration of braking power into the mains supply to improve efficiency. This assisted the company with its drive for sustainability. The equipment had to have a high specification for environmental conditions, as steelworks are particularly dusty environments. In addition, protection against water ingress was required in this application.

The crane control specialist called on CP Automation's experienced engineers to assist with the specification. They recommended the Magnetek Omnipulse™ DDC Series 2 to convert the crane's outdated dc controls to state-of-the-art efficient DDC (digital dc) Series 2 drives. Employing semiconductor technology, which provides more advanced control of motor speed and torque than costly and inefficient DCCP control, the new drive control system improved control and safety dramatically. (Direct current constant potential (DCCP) control technology dates back to the late 1800s.)

An ideal 'drop-in' replacement for traditional electro-mechanical control, the DDC Series 2 was also chosen for its compact modular design. Its footprint is 33% smaller than typical motor controls and it is nearly 50% smaller by volume than typical contactor controls, reducing its space requirements and weight on the crane.

John Mitchell, Global Sales & Marketing Director at CP

Automation notes: “This control system was designed with comprehensive firmware that provides for advanced customisation and allows for agile parameter changes to meet current production needs. These parameters allow the drive to compensate for the mechanical timing of the crane or dc application, increasing brake life and plant efficiency.”

Uncompromised safety

Safety is paramount in material handling applications. The British Code of Practice for the Safe Use of Cranes (BS7121) establishes recommendations for the safe use of cranes in a work environment and is widely recognised as best practice in any industry.

To ensure compliance with the code, MH Automation also ensured that the drive system provides key safety functions. These include continuity checks at start, motor series and field loss detection, loss of speed input, emergency power loss shutdown, and fail-safe pre-charge circuit design. In addition, system integration allowed for safety improvements in the control system as a whole, with compliant emergency stop circuitry among other functions. Four quadrant motor control – forward and reverse braking and forward and reverse motoring – also improves safety and eliminates the need for directional contactors and speed control resistors. This allows regenerative energy to be used by other dc components on the grid, improving the efficiency of the process and industry sustainability overall.

Testing and performance

Despite supply chain challenges, the project was completed in May 2021. As well as commissioning the system, designing and installing it, MH Automation conducted factory acceptance testing (FAT) before the equipment arrived on site and undertook site surveys post-installation to ensure the new system was operating safely and optimally.

“The FAT testing helps assure all parties that the new system complies with all contractual specifications,” says Robin Evans, Managing Director at MH Automation. “It provides for any functional issues that may arise to be addressed before the equipment arrives at the installation site. We specialise in control upgrade projects specifically for the crane sector, so we’re experienced in managing projects like this from the initiation stage to successful installation and commissioning.”

Expert crane control upgrades give material handling equipment in specialist industrial environments a new lease on life. Opting for a retrofit solution, plant managers can improve the reliability and performance of their equipment at a cost-effective price point and ensure safety. □

For more information visit: www.cpaltd.net

Pieter de Villiers, Gqeberha Branch Manager for Zest WEG.

VSDs can help industry deal with loadshedding

From mines and process plants to factories and workshops – almost every industrial enterprise in South Africa relies on electric motors – and electric motors are seriously affected by loadshedding. Zest WEG's Pieter de Villiers here highlights how variable speed drives can be used to bridge the gap between grid electricity supply and backup power during loadshedding.

Variable speed drives (VSDs) are generally considered as essential contributors to energy efficiency, but they also have features that can reduce the operational disruptions caused by loadshedding.

De Villiers, currently Gqeberha Branch Manager for Zest WEG – and formerly the VSD Service Manager at the company – says, "Any industrial operation that relies on electric motors will face severe challenges to continuous workflow when loadshedding strikes. Much of the disruption is related to the process of starting up machinery again after a power loss. The startup often entails a series of sequential actions that an operator must oversee and implement."

De Villiers notes that many motor users are not aware of the usefulness of WEG VSDs in automating and controlling the startup procedure. WEG VSDs can be programmed to initiate a sequence of actions, so that this does not have to be done manually by the operator.

A simple example to illustrate this would be where water is being pumped through pipelines and drains out during loadshedding. In most cases, the pumps cannot simply be started up again at full speed in a 'dry' condition without the risk of cavitation and other damage.

"In cases like this, the WEG VSD can be programmed to start the pump at a lower speed until the pipeline is again full of water, after which it could resume full pumping duties," de Villiers explains. "Similarly, in a mining operation, for safety reasons, it is important for a siren to be sounded before a conveyor system is re-activated after the start of loadshedding. Here, the WEG VSD can be programmed to automate the re-start process, and it initiates the siren to warn staff that the conveyor will start running again."

He highlights that the full range of WEG VSDs have built-in PLC capability, which allows for them to be programmed in this way; there is no need for PLCs to be added to the system.

These WEG variable speed drives can prevent equipment from tripping out during loadshedding.

WEG variable speed drives with built-in PLC capability can be used to restart motor-driven processes smoothly.

Another function of VSDs that makes them valuable assets in times of loadshedding is that they can serve to prevent equipment from tripping out. This can happen when there is too much 'dead time' between grid power turning off and a backup generator kicking in.

"If the dead time lasts more than a few seconds, many motor-driven applications can trip out and then require a restart, which can be time consuming and labour intensive. A common way that the VSD stays live during this dead time is through the stored energy in its capacitors, allowing it to re-accelerate the motor when the generator kicks in," he explains. "It is also possible to set up the drive to use the inertia from the load and therefore power from the motor itself – essentially using the motor briefly as a generator to keep the VSD alive."

WEG VSDs also play a useful role when energy users want to harness renewable energy sources like solar power. In a hybrid power system where a motor is connected to both the grid and to a solar panel system, a VSD can use the best source to feed the motor. If there is sufficient sunlight, the system will detect the power flowing in from the panels and optimise that power source.

"On the other hand, the VSD will switch to grid power at night or when it is cloudy," says de Villiers. "This allows for motors to be kept running – and at the same time reduces the energy costs as well as the user's carbon footprint." □

For more information visit: www.zestweg.com

Calibration is key to safe global food supply

Fluke has developed a range of solutions – including temperature calibrators – that focus on food quality and safety.

As tools for testing food safety become more accurate and portable it is important to ensure that all measuring devices operate at maximum efficiency and provide a traceable calibration record.

Fluke Calibration, a global leader in the manufacture of compact, professional electronic test and measurement tools and software and locally represented by Comtest, highlights that calibration will play a key role in the world's ability to produce enough safe food to feed nearly eight billion people.

In light of World Metrology Day – marked on 20 May 2023 – and its focus this year on 'Measurements supporting the global food system', Fluke Calibration emphasises how food testing laboratories can save lives by ensuring the equipment they use delivers accurate measurement results every time. Accurate measurement is essential in the food industry, to enable the provision of sound nutrition information to consumers, and to ensure food security for a growing population.

Increasing demand

As the world's population continues to grow, the food industry needs to increase food supply. At the same time, many countries are strengthening their focus on food quality and safety, which increases demands on measurement and measurement tools. According to the World Health Organisation, about 600 million people worldwide (nearly one in 10 people) suffer from food-borne illnesses, with an estimated 33 million healthy life years lost each year. Some 420 000 people die worldwide each year from unsafe food, and 125 000 of them are children. Additionally, this raises medical and other costs, often for low- and middle-income families, that could be avoided.

Food quality needs to be monitored and controlled on an ongoing basis and on an extensive scale. Typical factors measured to ensure food safety relate to temperature, pressure and humidity, mass and volume. And these apply throughout the food value chain. Food can deteriorate quickly if measured levels exceed or fall short of accepted standards. For example, humidity needs to be controlled closely to minimise mould growth and extend the life of dry goods, and checking the pressure in storage tanks is essential to prevent microbiological contamination during the homogenisation process of various foodstuffs. Of course, the same applies if temperatures stray above or below stipulated thresholds.

Traceable calibration

To ensure the accuracy of every measurement taken – especially as measurement is increasingly happening away from laboratories and out in the field with the use of portable and handheld tools – all measuring devices need to be calibrated and should have a traceable calibration record.

As measurement instruments are becoming more accurate, Fluke Calibration has developed various solutions – such as temperature calibrators – that can cater to these changing demands. Fluke Calibration tools can reduce downtime and boost productivity by ensuring faster calibration. They are designed to deliver results of the highest accuracy within minimal timeframes.

Managing food production and supply systems and improving efficiencies relies on accurate measurements. However, measurements can quickly become meaningless if the measurement instruments are not calibrated. When it comes to securing the future food supply, Fluke Calibration is committed to playing its part in ensuring food safety. Calibration is the key.

For more information contact Comtest.
Tel: +27 (0)10 595 1821
Email: sales@comtest.co.za, visit: www.comtest.co.za

Digital pressure gauge for mobile applications

WIKA's CPG1200 digital pressure gauge.

The WIKA model CPG1200 digital pressure gauge enables convenient, flexible setting of operating pressures, the readjustment of pressure switches, and pressure monitoring – for leak testing during product transport, for example.

The battery-operated CPG1200 has been designed specifically for use in mobile applications. With a durable plastic case and optional protective case cap, the instrument is robust and easily withstands vibrations and shocks in use.

The proven measurement technology covers all common ranges from -1 ... 1 000 bar (- 14.5 … 15 000 psi) (gauge pressure) with an accuracy of down to 0.25% FS. Depending on requirements, the measuring rate can be set to 1, 3, 4 or 10 measurements per second.

The CPG1200 also has an energy-saving mode. In practice, it can be used for operating periods of up to 4 000 hours without changing the battery. Additionally, a data logger for up to 1 million data points can be integrated as an option. The stored measured data is read via an integrated USB interface, which also supplies the instrument with power. Alternatively, the values can be transmitted wirelessly via Bluetooth®.

For more information contact WIKA Instruments.
Tel +27 (0)11 621 0000
Email: sales.za@wika.com, visit: www.wika.co.za

Around the world for clean water

Endress+Hauser employees around the world are celebrating the group's 70th anniversary this year in a wide range of events – and at the same time committing to a good cause in a special way. As part of the Endress+Hauser Water Challenge, employees collected donations for a water project in Vietnam through running and other physical activities. The campaign is now heading into a second round.

The Endress+Hauser Water Challenge was launched in 2019. With this initiative, employees cover a predetermined distance by running, cycling, swimming or taking part in other sports activities and donate a specific amount that goes towards providing people access to clean water. The company matches each of the donated amounts. Endress+Hauser is thus extending its corporate commitment to a safe, economical and sustainable water supply to the non-profit sector.

Goal achieved, goal doubled

For this anniversary year, the Endress+Hauser employees established a special goal: aiming to circumnavigate the globe in 70 days through various team activities. The 40 075-kilometre mark was reached in only five weeks. "This success reflects a tremendous team effort. The Endress+Hauser Water Challenge is mobilising our employees around the globe," says CEO Matthias Altendorf. The campaign is now heading into extra time with the goal of circumnavigating the earth a second time.

Clean water for 1 000 people

This year the Endress+Hauser Water Challenge is supporting a project in Vietnam – in Kon Tum province in the Central Highlands region near the border with Laos and Cambodia. The project will support the availability of clean drinking water for a small village of 90 families which has little infrastructure and is situated roughly 10 km from the main road. "With this project, we can improve the lives of more than 1 000 people, sustainably," Altendorf emphasises.

Endress+Hauser employees commit to the good cause at the Reinach, Switzerland campus run.

Hand in hand with local partners

The donated funds will go towards the construction of a water house in the centre of the village, where groundwater will be transported with pumps, then filtered and cleaned through reverse osmosis. Solar panels will generate the required electricity during the day. In addition, the village square will be redesigned and the access road renewed, as part of the project. Endress+Hauser Vietnam will implement the project together with local representatives NK Engineering and Plan International Vietnam, an aid organisation. The first Endress+Hauser Water Challenge project in 2020 was also completed in Vietnam.

For more information contact Endress+Hauser.
Visit: www.endress.com

Robust miniature pressure controllers

The IQ+FLOW series of miniature mass flow and pressure meters now includes instruments with media-isolated pressure sensors.

Bronkhorst's IQ+FLOW® series of miniature mass flow and pressure meters and controllers is widely used by equipment manufacturers in the analytical, biotechnology and life sciences sectors. With the use of chip sensors and mini-valves, the footprint of single-channel instruments is only 20 x 40 mm. This is a great advantage for manufacturers of desktop equipment, who are always looking for optimal space efficiency.

The IQ+FLOW product line has recently been extended to include pressure instruments with media-isolated pressure sensors. The sensor chip is protected by a stainless-steel diaphragm and oil-filled compartment. With this new option, the instruments can handle a wider variety of media than before, including thin gases such as hydrogen and helium. In line with the requirements of the sectors noted, the instruments have low outgassing and clean wetted parts.

The IQ+FLOW series is available in three configurations: single-channel versions for either inline or top-mount integration and multi-channel versions. Compact 2- or 3-channel instruments can be configured on customer specification to measure or control the mass flow and/or the upstream or downstream pressure in a system.

MECOSA (Pty) Ltd is the sole business partner for Bronkhorst in Southern Africa.

For more information contact Mecosa.
Tel.: +27 (0)11 257 6100
E-Mail: measure@mecosa.co.za
Visit: www.mecosa.co.za

Data security via the VEGA Tools app

When a level or pressure sensor is taken out of service and replaced, it takes countless sensor settings and data with it into retirement. However, the settings and measured values are not lost, because a new VEGA software tool saves everything that matters.

Today, smartphones and tablets are standard equipment in industrial plants. Almost 40% of all VEGA sensors for level, point level and pressure are parameterised, read out and serviced via Bluetooth® and the VEGA Tools app. To be sure, a lot of 'real work' still has to be done on site, but the adjustment of sensors in hazardous zones or hard-to-reach measuring points is made considerably easier using these wireless tools, as it can be performed from a safe distance of up to 50 metres.

Wireless is now the standard

Even in less demanding 'standard applications', wireless operation via app is increasingly being used. VEGA Product Manager, Philipp Ketterer says, "Industry 4.0 needs fast, continuous data communication and, besides the continuous transmission required by IIoT, wireless operation offers more convenience and greater speed. The same factors that favour personal and private use of wireless technologies apply for Bluetooth in industry. It saves an enormous amount of wiring and time, and saves costs."

Backup and restore

Universally accessible process data is one of the most important prerequisites for reliable, cost-effective production. Sensors monitor the status and quality of individual production steps and store important information on settings, diagnostics and the status of machines and systems. The users of the sensors need the certainty that they have access to all sensor parameters at all times, and that backup solutions are available if a worst-case scenario occurs.

To provide support for users, VEGA offers an innovative cloud solution. Backup & Restore is the new software tool that VEGA customers can now use, free of charge; it offers customers the option of backing up and restoring their sensor data.

Wireless connectivity is increasingly being used to manage sensors, other instruments and operational data flows in industrial applications.

Easy access to this service is provided by the instruments' DTMs (device type managers) and the VEGA Tools app. With the app, VEGA sensors can be controlled and adjusted via smartphone or tablet. Under 'Instrument adjustment' is the 'Backup & Restore' function. All backup data can be called up and reinstalled if required.

"The number of backups is not limited, so customers can access all their data ever collected," says Ketterer. "This free service brings significantly more efficiency to automated processes."

More than storage

In the industrial environment, flexible backups and quick restores are important for ensuring valuable process data is available for immediate reinstatement of device settings, diagnostics, or process analysis. With the Backup & Restore software tool, VEGA has solved the problem many companies have of keeping enough storage space available for ever-larger quantities of data. All parameters can be saved securely in the VEGA cloud at regular intervals. For medium-sized and small companies, as well as others, this is an ideal option to secure complex and ever-growing data flows, permanently.

For more information contact VEGA.
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Visit: www.vega.com

New partnership enhances pumps and valves

Leading South African manufacturer of valves and pumps, Paltech, recently announced its strategic distribution partnership with Schneider Electric Global, the well-known French multinational company that specialises in digital automation and energy management across various sectors.

Effective from 1 May 2023, Paltech has become the sole official original equipment manufacturer (OEM) distributor of Schneider Electric's automation instrumentation in the sub-Saharan African region. As an OEM, Paltech is committed to providing exceptional quality and service to its customers, in the oil and gas, mining, water treatment and other industry sectors. The new partnership extends beyond its South African operations to include Paltech's sister companies, Paltech Ghana and Mwendo Engineering based in Mozambique.

Schneider Electric's state-of-the-art automation instrumentation will enable Paltech to integrate automation capabilities into selected valves, such as its well-regarded Pal-T. By leveraging Schneider's innovative products and instrumentation, Paltech will enhance its offerings, providing cutting-edge solutions to its clients in South Africa and beyond.

As part of the distribution partnership, Paltech will stock and offer a range of selected Schneider Electric products and instrumentation, ensuring customers have access to a comprehensive portfolio of world-class solutions for their automation and energy management needs.

Team members from Paltech, its holding company, the 2Roads Group, and Schneider Electric at the launch of the partnership.

The Paltech-Schneider Electric distribution partnership was officially launched on 25 May 2023 at Paltech's Kempton Park premises, east of Johannesburg.

For more information contact Paltech.
Tel: +27 (0)11 328 1600
Email: marketing@2roads.co.za
Visit: https://www.paltech.co.za/

Ratio pyrometers for high-temperature applications

Instrotech, the local representative for Optris, has introduced the CSvision series of ratio pyrometers to the South African market. With a range from 300°C to 3 000°C, the pyrometers make it possible to measure the temperature of metals, melts or ceramics without contact, safely and reliably from different distances.

Infrared pyrometers must meet high demands, especially in metallurgy where they are often used under harsh conditions, and they must always deliver reliable results. In high temperature environments, smoke, steam, or dust often impede a clear view of the measured object and affect the measurement signal. In these conditions, ratio pyrometers provide stable measured values, compared to single-channel pyrometers, even with dirty optics or objects that move within the measuring field, such as metal rods or wires.

The new CSvision is equipped with the innovative Smart Ratio Mode (SRM) which enables it to master especially challenging applications with variable emissivity ratios. The built-in video sight and motorised focus, which can be operated via software or app, allow for the pyrometer to be focused on the selected object. The switchable two-stage brightness reduction filter ensures optimum viewing conditions, even with very hot, bright objects. Together with the crosshair laser, which is also standard, this ensures simple sensor alignment under all conditions.

The CSvision R1M offers an optical resolution of up to 150:1 and a measuring range of 600°C to 3 000°C with a spectral range of 0.8 to 1.1 µm – in harsh industrial environments with temperatures up to 65°C without cooling. The R2M has an optical resolution of 75:1 and a spectral range of 1.45 to 1.75 µm. This allows temperatures to be measured from as low as 300°C to 1 400°C in environments at up to 60°C without cooling.

The CSvision series offers an easy-to-use solution that can be set up quickly. The infrared thermometers have an interface to the IRmobile Android app and CompactPlus Connect software, allowing for easy video alignment and real-time process monitoring. Two analogue outputs are available for process integration and digital interfaces, such as RS485 or Modbus RTU.

The OPTRIS CSvision non-contact ratio pyrometers are designed for high-temperature applications.

For more information contact Instrotech.
Tel: +27 (0)10 595 1831
Email: sales@instrotech.co.za
Visit: www.instrotech.co.za

Intrinsically safe ICCP systems

Cathodic protection systems are used around the world to protect critical infrastructure projects from corrosion. Although designing CP systems can often be a simple task, Ian Loudon, International Sales and Marketing Manager at Omniflex, points out that it becomes much more complicated if the system is to be used in a hazardous environment where there are volatile materials on site and any excessive voltages or currents could spark a serious explosion. All systems designed for such areas must be intrinsically safe and comply with the relevant safety standards.

Here, Loudon outlines best practice considerations for safety in cathodic protection (CP) systems in hazardous environments, presenting the example of Sunrise Energy in South Africa.

Located in Saldanha Bay on South Africa's west coast, Sunrise Energy is Africa's largest open-access Liquified Petroleum Gas (LPG) import terminal. By enabling the import of LPG in large quantities, it advances the Western Cape's oil and gas sector, boosting regional energy security and downstream competition.

On large-scale LPG projects like this, CP systems are essential to protect structures against corrosion. Normally, once they are installed, CP systems are left to operate and are monitored manually only periodically. This is particularly the case when they are used on structures that are underground or submerged in water – and it is the case at the Sunrise Energy site, which houses up to 5 500 metric tonnes of explosive LPG, stored in underground 'bullets' that are protected using impressed current cathodic protection (ICCP).

Because of the hazardous nature of the operating environment, the ICCP system used must be intrinsically safe, complying with IEC 60079 standards. Furthermore, because the storage bullets are stored underground and difficult to access regularly for inspection, the system must include remote monitoring capabilities to ensure ongoing protection for the facility.

At Sunrise Energy, some 5 500 metric tonnes of explosive LPG are stored in underground 'bullets' that are protected using impressed current cathodic protection (ICCP).

Safety first

CP systems operating in hazardous areas have to be intrinsically safe because of the risk of explosions. Intrinsically safe systems provide the assurance that electrical equipment can operate safely in these settings – they limit the amount of electrical and thermal energy available as a potential ignition source. Only low voltages and currents are used in the hazardous areas and no significant energy storage is allowed.

At the Sunrise Energy site, where large quantities of volatile LPG are stored, the importance of having intrinsically safe CP systems cannot be overstated. In such an environment, a single spark from a power leak could be the ignition source for a major explosion that could endanger lives. In South Africa, the IEC 60079 series of standards define the requirements for electrical equipment in explosive atmospheres. All CP systems used in the hazardous area must conform to these standards, as a minimum requirement.

The IECEx international standard governs the safety qualities of electrical equipment used in explosive atmospheres – and all equipment located in hazardous areas must comply with this system. All Omniflex's systems are manufactured at its IECEx certified factory in Durban, South Africa. This offers customers the assurance that the company understands the challenges associated with designing CP systems for use in hazardous areas and the requirement that all electrical equipment designed for use in these areas must be intrinsically safe.

Remote monitoring

Where it is difficult to monitor the CP systems in use physically, remote monitoring can be used to check performance and system integrity. Remote monitoring of CP systems offers several key benefits for customers. Firstly, as regulations continue to evolve, data accessibility and transparency are becoming increasingly important, and cloud-based remote monitoring platforms provide businesses with a single, easy-to-access repository for all live and historical data.

Secondly, by automatically monitoring and recording

data relating to asset performance and system status, any abnormal events, like power outages or system failures, can be reported directly to all relevant personnel without delay. This enables site managers and engineers to act immediately – and, as well as preventing unnecessary downtime, leads to significant reductions in maintenance costs.

Thirdly, ongoing maintenance costs are lower for enterprises that use remote monitoring technologies to monitor their CP systems. This is because difficult-to-access systems, such as on underground LPG containers, don't need to be inspected physically and engineers do not have to be paid to conduct routine on-site inspections. Furthermore, the duration of any on-site inspections, where they are needed, is reduced because preliminary testing can be done remotely before the site visit. Consequently, overall maintenance costs and any disruptions caused by inspections can be minimised.

The solution Omniflex provided for Sunrise Energy includes regular automatic testing, long-term cloud-based data logging and alarm condition alerts via SMS and email. It was installed in field marshalling panels, with the HMI panel located in the control room allowing full system visibility, monitoring and testing. □

For more information visit: www.omniflex.com.

Functional safety over EtherCAT

HMS Networks has introduced a new version of the Ixxat® SafeT 100 module providing for users to implement safe I/Os for FSoE – Functional Safety over EtherCAT. Previously available for PROFIsafe and CIP Safety, the new version supports Functional Safety over EtherCAT according to ETG 5100 V1.2.0.

The Safe T100 is designed to work together with Anybus® CompactCom, also from HMS Networks. Anybus CompactCom handles the standard non-safe communication with the EtherCAT network and the Safe T100 handles the safe communication, in this case using FSoE.

With the full implementation of the safe protocol and application layer in Ixxat Safe T100, device manufacturers and machine builders can add functional safety capabilities to their equipment. The solution is typically used in the safe emergency stop function for automation equipment such as drives, robots or process controllers.

The Ixxat Safe T100 is pre-certified by TÜV Rheinland, and its conformance to the FSoE standard ETG 5100 V1.2.0 has been confirmed in the ETG test lab. This enables users to benefit from significantly reduced development time, cost, and risk when designing safe devices and systems.

When coupled with Anybus CompactCom, the solution ensures a device or machine that provides safe and non-safe functions via one communication interface. This simplifies configuration and project planning of the overall industrial automation system.

The Ixxat Safe T100 module features three two-channel inputs which can detect external wiring errors, and one two-channel output. The inputs and outputs all operate with 24 V signals.

All service and process data interfaces required for FSoE in the EtherCAT layer are available in the Anybus CompactCom module, such as control of the network and status LED, or transmission of the safe configuration data.

As an additional safety feature, the interface between the Anybus CompactCom module and the Ixxat Safe T100/FSoE is galvanically isolated. Other internal safety features include integrated temperature monitoring and shutdown to a safe state as well as channel-granular error signalling and error handling.

Ixxat® Safe T100 allows device manufacturers and machine builders to implement configurable, safe inputs and outputs in applications up to SIL 3 and PLe Cat.4.

Scalable for FSoE, PROFIsafe and CIP Safety

The internal communication between the non-safe Anybus CompactCom and the Ixxat Safe T100 module is done according to the 'black-channel' principle. This clean separation between the safe and non-safe communication layers allows for customers to support all the three major safety protocols – FSoE, PROFIsafe and CIP Safety – with just one hardware design, a feature that adds to the scalability and efficiency of the solution.

Customisation for OEM solutions

Supplied with comprehensive implementation guidelines and user documentation, the Safe T100 module can be implemented by device manufacturers and machine builders themselves. However, HMS also supports customers with implementation services, as well as porting and certification services.

For specific requirements regarding, for example, form factor, plugs or number of I/Os, HMS can develop customer-specific versions of the module.

For applications where it is not possible to integrate the Safe T100 – due to limited space within safety encoders, for example, or when already existing safety hardware limits design flexibility – HMS also offers protocol stacks for Functional Safety over EtherCAT (FSoE), CIP Safety over EtherNet/IP and CIP Safety over Sercos, all pre-certified by TÜV.

For more information contact IDX Online.
Tel: +27 (0)11 548 9960
Email: sales@idxonline.com
Visit: www.idxonline.com

Dr Andrew Dickson, engineering executive at CBI-electric: low voltage.

Preventing the hazards of unearthed electricity

Dangerous contact with electricity resulted in 34 accidents on South African construction sites in 2022, leading to the death of one person and four being permanently disabled. Dr Andrew Dickson, engineering executive at CBI-electric: low voltage, says such accidents can be prevented.

"Companies need to ensure that their staff are protected from potentially lethal shocks by installing appropriate earth leakage devices. In case of accidental electrical contact, these products are designed to limit the amount of electrical current that enters the human body to under 30 milliamps – anything above this can be fatal."

In the context of Health and Safety at work, Dickson says that all too often, injuries and deaths associated with electrocution occur if companies take short cuts on electrical installations and do not comply with SANS 10142, the standard for all low voltage electrical installations. He highlighted, however, that this year, the Occupational Health and Safety (OHS) Amendment Bill will be signed into law, enforcing stricter consequences for non-compliance with health and safety standards. "Going forward, all employers will need to ensure that no employee is permitted to do any work or operate any machinery unless precautionary measures have been taken – or they may face a fine of up to R5 million and/or five years of jail time."

Dickson adds that the country's mining industry – another environment where electricity poses a danger – can also expect tougher penalties for health and safety violations, with the tabling of the Mine Health & Safety Amendment Bill. "This could see non-compliance costing companies up to 10% of their annual turnover, and potentially being held criminally liable for corporate manslaughter."

He points out that many electrical or electrocution accidents on construction sites and mines occur as a result of employees bypassing the earth leakage. "Workers often run extension cords to power their tools from a single point of supply. But construction, mining and other industrial sites are quite rugged and dusty, and tools are often damaged. Consequently, there are many opportunities for the earth leakage to trip, causing irritation and delays. Although the protective device has performed its function correctly, this is not always fully appreciated, and a conscious decision may be made to bypass the earth leakage. This can lead to a dangerous and potentially lethal electrical supply as contact by any person on site to the electrical network, or to a connected power tool or machinery could result in a severe or even fatal shock.

"On mines, faulty machinery usually precipitates an electrical accident," Dickson adds. "Leakage currents are often an indication that there is a fault with a machine which will then need to be switched off and repaired. Sometimes, as employees are usually measured on output, they avoid flagging the issue and instead bypass the earth leakage to keep operating the machine. One of two scenarios will likely then occur: at some point in the future the machine will break down causing longer downtime, or an electrical accident will occur, which could be fatal and will cause lost production time. Both are avoidable catastrophic consequences – for the employee and employer."

He highlights that, with the introduction of the Health & Safety amendment bills, employers will be forced to be more aware of operating practices and their electrical installations. Failure to ensure compliance and secure valid temporary connections could result in a fine or imprisonment. He acknowledges that proactively ensuring compliance will have an upfront cost, but he says there are no acceptable options.

"Although the penalty is imposed on the company, it may be the employee that bypasses the protection without the knowledge of their superior, and this must be avoided. Employees need to understand the very real value of an earth leakage device. South African businesses must therefore educate their staff about the risks and pitfalls of bypassing the earth leakage. This will contribute to upholding employees' right to a safe and healthy working environment and it could save lives," says Dickson. □

In commercial and industrial facilities, all low voltage electrical installations must comply with SANS 10142 to ensure safety.

For more information visit: https://cbi-lowvoltage.co.za

Reducing electrical risks in commercial and industrial buildings

Circuit breakers play a key role in reducing the risks associated with overload, short circuit and potential arc flash incidents.

Eaton has published a new white paper to help professionals responsible for electrical systems in commercial and industrial buildings to maximise protection against faults that can endanger workers, damage property and disrupt business continuity.

The white paper – *Protecting people, assets and profitability from electrical faults in commercial and industrial buildings* – examines the crucial role of circuit breakers in reducing the risks associated with overload, short circuit and potential arc flash incidents.

Following a detailed study of industry trends and regulations, experts at Eaton concluded that even adherence to established international standards governing circuit breaker specifications and their use may not be sufficient to eliminate the associated risks, especially those that are out of our ambit of control. For instance, with South Africa's electricity challenges persisting, minimising power-related risks brought on by potential power surges has become essential to maintaining the highest levels of fire safety in commercial and industrial buildings.

In low voltage switchgear, short circuit currents can reach many multiples of the rated current of the protective devices. Arc flashes at temperatures of over 10 000°C can be generated, which raises the risk of damage to equipment, downtime and stoppages. Arc flashes also endanger the lives of personnel, particularly when a cabinet is opened for maintenance or servicing work.

Devan Reddy, Field Product Manager - Industrial Control & Protection Division and Power Distribution Components at Eaton South Africa says: "In order to protect people, assets and business continuity fully from the destabilising effects of short circuits and overloading, as well as reducing the severity of arc flash, it is critical to ensure circuit breakers meet regulatory standards and that best practice is applied in their fitting and maintenance. However, residual risks remain and to ensure the highest possible protection, specifiers and engineers may need to consider advanced digital circuit breakers with functionality that goes beyond the requirements of the standard."

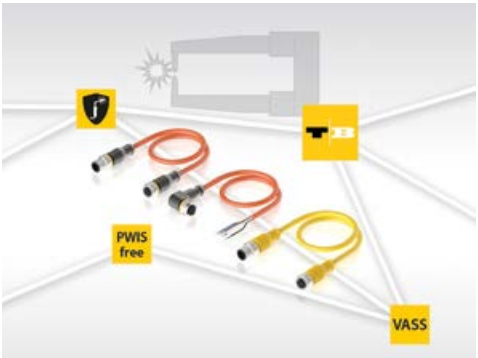
The requirements for circuit breakers have been well-articulated and the introduction of digital trip devices enables today's circuit breakers to perform functions that expand on the levels of protection specified in the relevant standards.

The newest generation of circuit breakers uses electronic tripping systems, which operate with greater precision than thermal-magnetic trip units and offer superior performance by reliably switching operating current, overload and high short-circuit current. In addition, the current status of the circuit breaker and the electrical data of the circuit can be communicated to enable a more efficient approach to predictive maintenance and energy monitoring.

The latest circuit breakers, such as Eaton's digital low voltage NZM range, afford economies in several ways: they reduce maintenance expenses, prevent downtime and increase system efficiency, as well as eliminating the outlay required for separate measuring devices.

For more information contact Eaton South Africa.
Visit: www.eaton.com/za/en-gb.html

Welding spark resistant connection technology



Turck Banner's TXO3701 and TXY3713 series cables meet the rigorous requirements for use in welding applications.

Turck Banner has increased the welding resistance of its TXO and TXY connector series, ensuring the TXO3701 and TXY3713 series cables meet the rigorous requirements for use in welding applications.

Specifically, the thickness of the cable jacket was increased to achieve greater resistance to welding sparks. The cables are also highly flame resistant and are suitable for use with drag chains. They meet the requirements of the North American UL FT2 standard as well as IEC 60332-1 and IEC 60332-2-2. With these enhancements the cables also meet the latest requirements of major automobile manufacturers for use in welding applications.

The PUR cables are available as 4- or 5-pin variants, with straight or angled connectors, and with or without LEDs. The user can choose between standard cable lengths for connection or extension cables with M12 connectors. The cables are available in orange or yellow as standard and special lengths, custom jacket colours or cables with M8 connectors can also be implemented on request.

Key benefits

- High process safety for welding applications
- Fast commissioning with quick connectors
- Wide acceptance of the VASS standard means the connectors are suitable for international use
- They can be supplied with angled or straight cables and with or without LEDs.

For more information contact Turck Banner.
Tel: +27 (0)11 453 2468
Email: sales@turckbanner.co.za
Visit: www.turckbanner.co.za

Corrosion-resistant flameproof junction box

Pratley, well-known for its innovative electrical termination products, has developed and launched a ground-breaking new product, the Flameproof Ex d Envirobox®. This is claimed to be a world first: a polymeric, corrosion-resistant, direct-entry, flameproof junction box.

Sven Breedt, Electrical Research & Development Manager at Pratley, says, "It's a new product unlike any other in the world and one of Pratley's most innovative electrical inventions."

Flameproof equipment is designed to prevent internal ignition within a flammable atmosphere from transmitting outside the protective enclosure. However, all traditional direct-entry flameproof junction boxes made from steel, cast iron or aluminium materials can be prone to corrosion over time and when used in very harsh environments. Special attention needs to be given not only to the overall climatic conditions of the area where the enclosures are installed, but also to the material and design of the equipment.

Pratley's new Flameproof Ex d Envirobox® junction box, made from a specially formulated, robust engineering polymer, is designed to withstand severe environmental conditions. This makes it ideal for use in areas where there is a high risk of corrosion, such as on offshore oil platforms, in underground mines, and in petrochemical plants.

"The need for a lightweight and corrosion-resistant flameproof junction box is evident in the current, ever-changing mining environment," Breedt says. "Over a decade's worth of research and development went into the design and development of this junction box."

The specially formulated, robust engineering polymer is unique to Pratley. The material has exceptional mechanical properties: in strength, stiffness, creep, dimensional stability and more. These attributes ensure that the Flameproof Ex d Envirobox® can withstand 2 x 20-joule impact tests in a -40°C environment – and it has been third-party tested to a 4 000-kilopascal internal pressure. Additionally, it is IP66/68 certified for continuous underwater depths of up to 300 m; this means it is water- dust- and gastight.

The flame path in the lid and base is accurately machined. Breedt notes, by contrast: "The flame path surface of traditional Ex d junction boxes is coated or greased to prevent corrosion. However, this is not a long-term solution as the coating can wear off and greases would need to be reapplied periodically."

The engineering polymer of the Envirobox® ensures that the flame path, with its machined surface, is completely corrosion resistant. This renders the junction box safe, easy to use and maintenance-friendly in surface and underground mining applications. The lid is fastened down with eight stainless steel A2-70 Allen head screws, also contributing to the corrosion resistance of the junction box, and it carries Pratley's signature red Ex identification band for quick Ex equipment identification.

Pratley's new Flameproof Ex d Envirobox® junction box in an underground mining application.

The junction box is supplied standard with 4 x M25 entries but can be supplied with M20 entries or smaller entries on request. The box can accommodate Pratley Ex d flameproof cable glands and accessories. It is thus particularly versatile. Each box is supplied as a standard two-way box with 2 x flameproof blanking plugs.

It can safely accommodate terminals, connectors, relays, and any other non-energy storing devices. The internal bosses are drilled and tapped to provide an earthing point for terminal mounting rails or earth lugs. These are electrically connected to the box entries providing complete earthing continuity.

Boxes can be fitted with an N35 terminal rail, a Pratley patented Cranked rail, an inverted Cranked rail, or Piggyback rails. Pratley Kwikblok® terminals and pre-cut lengths of cable with glands can also be factory fitted to customer requirements.

It has an optional external earthing point and is supplied with 4 x M6 nuts and washers as well as a 1 x M6 spring washer. The box has threaded mounting M5 holes and can accommodate an indexable mounting plate that can be purchased separately if required.

The Flameproof Ex d Envirobox® is fully certified to SANS, EN and IECEx Standards for use in surface and underground mining applications (Ex db I/IIB+H2 T6..T5 Mb Gb, Ex tb IIIC T85..T100 Db) in Zones 1, 2, 21 & 22 and an ambient temperature range of -40°C to +55°C.

Pratley's Flameproof Ex d Envirobox® sets a new standard in junction boxes in the electrical industry.

"I am confident that what Pratley has produced is a product that meets our policy statement of producing products that outperform all others on the world market. Our goal was to produce the only direct-entry junction box that is corrosion-resistant, and the new Pratley Flameproof Ex d Envirobox® certainly achieves that goal," Breedt says.

For more information contact Pratley.
Phone: +27 (0)11 955 2190
Email: sales@pratley.co.za
Visit: www.pratleyelectrical.com

Sharing insights on collision avoidance systems

Where a mine has identified significant risk from the movement of mobile mining equipment, there is a good reason to institute an effective proximity detection system.

South African company Booyco Electronics participated in the recent Collision Avoidance Forum in New South Wales, Australia, where it became clear that global mining majors are leading from the front in the application of proximity detection systems (PDS) in mine safety strategies. As a speaker at the event, CEO of Booyco Electronics, Anton Lourens, reminded delegates that applying PDS is as much about people as it is about technology.

"Some of the world's largest mining companies were at the forum to present their approaches to leveraging PDS technology in their quest for zero harm," says Lourens.

Hosted by the Minerals Council of NSW and the New South Wales Resources Regulator, the Collision Avoidance Forum attracted some 300 delegates from around Australia and the world. Lourens points out that this reflected the high level of interest in PDS and its value to the industry, with delegations from mining companies, OEMs and PDS suppliers in attendance.

"Although Australia has not regulated the use of PDS – as has recently been done in countries like South Africa – there is nonetheless an industry-wide commitment to addressing significant risk," he says. "Risk assessments are well entrenched in the mining sector, and these provide the foundation for applying collision avoidance strategies and technologies effectively."

The central message from the event, he noted, is that plenty of progress had been made – in the development and the on-site application of PDS systems. For those companies still thinking about embracing these systems, there is therefore no need to reinvent the wheel. At the same time, there is a growing incentive for mines to apply PDS where a significant risk from the movement of mobile mining equipment has been identified.

Lourens highlighted in his presentation that collision avoidance solutions do not function in isolation. Successful applications rely on a clearly defined scope of work that integrates a range of factors: from risk assessments and traffic management plans together with traffic flow analysis, to the different OEM and technology capabilities, and stakeholders' awareness and buy-in.

Practical project execution on mines relies on commitment and availability from the engineering and mining teams, and managers need to understand stakeholder acceptance as well as the overall project costs in relation to capital and ongoing operational expenditure.

"Within the range of technologies available, the user has to select the solution that best suits their application," Lourens says. "This is where the years of work done by the Earth Moving Equipment Safety Round Table (EMESRT) on roadmaps and processes is also helping mines to implement collision avoidance strategies more quickly and effectively."

By approaching the implementation process in a guided and disciplined way, mines can follow roadmaps that ensure best use of time and resources. He highlights that these sequential processes take account of critical areas such as change management, behaviour, operational and technology readiness.

For more information contact Booyco Electronics.
Visit: www.booyco-electronics.com

Overspeed protection for rotating machinery

The SIL-2 rated Istec SpeedSys 200 provides quick and dependable speed and acceleration protection.

South African company Prei Instrumentation is a leading supplier of the Istec SpeedSys 200 overspeed control system.

SpeedSys 200 is a (safety integrity level) SIL-2 rated overspeed detection system for rotating machinery. It provides a standalone layer of protection that delivers quick and dependable speed and acceleration protection, adhering to industry standards.

With its small technical footprint and low-impact installation it provides advanced protection for various applications. The simple and robust design offers easy maintenance and long proof test intervals. Furthermore, SpeedSys 200 is easy to install or retrofit because it is compatible with all sensor types and applicable in diverse environments. It can be installed in field enclosures and control rooms and industry-standard inputs and outputs allow for simple integration.

The Istec system architecture is designed to be adaptable. For example, a single module can provide a dependable and cost-effective solution for overspeed protection. Redundancy and voting structures can also be created for more demanding applications or increased availability.

Typical applications include, among others, micro and wind turbines, compressors and pumps, aero-derivative gas turbines, marine applications, and gas and steam turbines.

For more information contact Prei Instrumentation.
Visit: https://prei.co.za

Rhys Evans, MD at ALCO-Safe.

Simplified testing for alcohol in the workplace

ALCO-Safe is a leading provider of alcohol and drug testing equipment for use in the workplace. The newest version of its alcohol testing system, ALCONTROL Smart Connect, is an unmanned breathalyser which can be mounted onto a turnstile that controls entry of employees, or onto a wall as a self-test breathalyser for employees to test themselves prior to entry into their workplace.

"For industries where repeated positive results on alcohol testing impact work performance, and can result in job losses, voluntary alcohol testing is an important safety measure," says Rhys Evans, MD at ALCO-Safe. "Voluntary alcohol testing is for employees who occasionally overindulge, so, if they get a positive breath alcohol result, they have the choice to go home and avoid endangering themselves or their colleagues."

Easy to install

"Where previously it may have been difficult to get a technician out to remote mining locations to install test equipment, ALCONTROL is simple to install, and this can be done by almost anyone with basic technical skills," Evans notes.

This new version also addresses the challenges experienced in the past with integrating the breathalyser device, the biometric system and the turnstile. "We have introduced Wiegand, RS485, LAN, Wi-Fi and Bluetooth connectivity and a new communication protocol, which makes the device easily compatible with any of the existing biometric employee identification and access control systems that companies may already have in place," Evans says. Hence the name ALCONTROL Smart Connect, which reflects its easy integration and connectivity.

Employee performance monitoring

The ALCONTROL unit includes an option for camera installation, which can be used for identity verification, and with the new RS485 communication port, the system can be easily integrated with facial recognition technology. All these features make it easy for companies to track positive alcohol test results in order to monitor for absenteeism and abuse of the voluntary testing system. They also support the streamlining of HR disciplinary processes related to the company's alcohol and substances abuse policy.

"With this new version of ALCONTROL, we have addressed a number of challenges experienced with the previous model launched in 2017, ensuring that the instrument is now easy to install, service and calibrate. The new features and connectivity updates mean the testing system can be integrated easily with other workplace technologies, such as biometrics and access control systems, simplifying the enforcement of company substance abuse policy and contributing to a safer, alcohol-free workplace," Evans says.

For more information contact ALCO-Safe.
Tel: +27 (0)12 343 8114
Email: rhys@alcosafe.co.za, visit: www.alcosafe.co.za

Additional QCTO accredited courses at Dekra IOL

Dekra Institute of Learning (Dekra IOL) has introduced a number of additional courses to its range of industry-related skills and training programmes, recently accredited by the Quality Council for Trades and Occupations (QCTO).

As a QCTO-accredited educational institution, Dekra IOL trains employees and professionals across various sectors from power generation, oil and gas, construction, petrochemicals, manufacturing and fabrication, to pulp and paper, rail, mining, steel and foundries, in South Africa and pan-Africa. Through its global parent company Dekra Industrial – a leader in inspection services, non-destructive testing (NDT), material testing, laboratory services, advanced NDT, and asset integrity services – the institute draws on 98 years of experience.

At the recent A-OSH Expo in Johannesburg, Dekra IOL presented the tree as a symbol of education, learning and growing to nourish people and the economy.

Dekra IOL Head of Training and Consulting, Christopher Mörsner, says the institute's portfolio includes QCTO-accredited skills programmes and industry-related certificate, diploma and degree qualifications.

"We deliver online learning to public and private sector organisations, at different levels of competency to meet clients' needs, focusing on HSE (Health Safety and Environment), ISO (International Standards Organisation) and CPD (Continuing Professional Development) aligned qualifications – from the factory floor to the boardroom," Mörsner says.

He adds that in line with its parent company Dekra's industry experience and its membership of EcoVadis – the globally recognised provider of business sustainability ratings – growing people through skills and occupational training and development and being a good steward of the environment are priorities for the IOL. They are reflected in its 2028 vision to offer all forms of training and skills development, and to make a sustainable difference in reducing unemployment.

"Education is the key to confronting and reducing poverty and unemployment and, at the Dekra Institute of Learning, we are committed to working with individual learners and with industry, offering the skills and education which will have a positive impact on the economy and society as a whole," he concludes..

For more information contact Dekra IOL.
Visit: https://dekranewbeta.co.za/wp/

Safe energy chains for jib cranes

Energy and data cables hanging from jib cranes often present a risk in the industrial environment. Careless movement of loads, forklifts or other slewing crane systems in the immediate vicinity can cause them to become entangled or torn off. To overcome this concern, igus has developed the guidelok swing, reportedly the only energy supply system of its kind in the world. It can be installed directly in the T-beam contour of the crane, and a specially designed rocker system allows for it to be used for long beam lengths cost-effectively with little wear. This significantly increases operational safety.

Jib cranes are widely used in industry. They transport workpieces of all kinds – to loading ramps, processing machines and assembly stations. However, failures can always occur – for instance, when hanging cable loops are damaged by a forklift during workpiece unloading. The result is downtime, unplanned repair costs and potential production delays.

"To increase system safety and productivity, we developed a new energy supply system called the guidelok swing," says Theo Diehl, Head of Industry Management Cranes at igus. "With its slim, space-saving design this energy supply system ensures that energy and data cables no longer hang in the air but move within the jib crane's girder contour. They stay out of the reach of lifted loads, industrial vehicles or other jib cranes."

Technical design ensures fail-safe operation

The energy and data cables are fitted in an energy chain made of high-performance plastic. The lower run rests on the T-beam flange and is connected to the trolley. The design differs from traditional chain applications in that the guidelok swing moves the lower run. The upper run is held above the trolley by the guidelok swing's rocker elements. A classic energy chain movement would normally involve the upper run gliding on the lower run. Here, however, igus has introduced a clever intervention: every 800 millimetres, rockers are screwed to the T-beam crossbar. When the upper run passes, the chain radius pushes the rocker flaps up and engages. In the opposite movement, the flaps open like a trapdoor and release the upper run again. The advantage is that the upper and lower runs never touch. This reduces wear, extending the service life of the energy supply system.

The igus guidelok swing energy supply system increases crane system reliability and productivity.
[Source: igus GmbH]

"Another advantage is that the guidelok swing eliminates the need for a guide trough, since the e-chain is held in position by the rockers and cannot break out sideways," Diehl adds. He notes too that the energy supply system is cost-effective, as it costs about as much as classic festoons. And existing systems can be converted more quickly because there is no guide trough.

The first users

SEW-Eurodrive is the first to use the new guide system. At its new plant near Johannesburg in South Africa, the German drive technology manufacturer has equipped an indoor crane with the guidelok swing. The crane moves components for chemical cleaning with a high-pressure cleaner.

"Initially, the engineers considered working with classic festoon systems," Diehl says. "But Sales Manager Marius Ferreira from our partner Stahl Cranes and Hoists explained to them that the new guidelok swing guide system reduces the risk of accidents and increases crane reliability." As well as preventing collisions with forklifts or other moving equipment, the system is chemical-resistant and corrosion-free and requires no maintenance or external lubricants.

Like SEW-Eurodrive, another industrial company in South Africa, Barloworld is enthusiastic about the solution. Barloworld will work with Stahl Cranes and Hoists to gradually convert the jib cranes in its workshops.

For more information contact igus SA.
Tel: +27 (0)11 312 1848
Email: ihewat@igus, visit: www.igus.com

Battery energy storage with built-in fire protection

At the smarter E Europe trade fair in Munich in May this year, Tesvolt and Denios joined together to present an all-in-one solution that combines a battery storage system and fire protection – reportedly the only one of its kind in the world. The Power Safe product line also meets the most stringent safety requirements for commercial and industrial settings, for example in operations located in water conservation areas or regions at risk of forest fires, or as required by some insurers. Products in this line feature cases with F90 fire resistance rating and are available in various sizes, from small-scale 80-kWh solutions to large energy storage systems with several megawatt hours.

Markus Boberg, Business Development Manager at Denios says, "For years now we have been engaged with the safe storage and handling of hazardous materials. Tesvolt provides high-performance, durable energy storage systems and has some of the safest battery storage technologies on the market. In some cases, however, safety requirements are particularly strict, for example in countries with special environmental regulations or specific requirements from insurers. Together we have developed a technical solution that can meet the strictest

Continued on page 28

End-of-line testing of a battery module at Tesvolt's Gigafactory.
[Source: Tesvolt]

Safety first, learning always

Louise Woodburn, General Manager of KBC Risk Solutions, a division of KBC Health & Safety, says promoting an attitude that prioritises safety in the workplace requires a commitment to continuous learning. By fostering a culture of ongoing education, businesses can address their safety risks proactively. Additionally, using emerging technologies, companies can equip employees with the training and knowledge that empowers them to handle safety concerns and maintain a safe working environment.

To shift behaviour and gear the workforce towards safety, a top-down approach is best, says Woodburn. This means ensuring the leadership group is aligned with the thinking and committed to promoting a culture of safety. It requires continuous learning at all levels and it is much easier for businesses to achieve when they work with an experienced, reliable Occupational Health and Safety (OHS) service provider.

Safety in a production environment

Continuous learning is critical to ensure that workers develop a habit of awareness in their roles and responsibilities to do a job safely. When frequent training is involved, it becomes habitual to work safely. When safety becomes habitual, it becomes easier to create a safe production environment. Organisations that invest in facilitating the ongoing growth of their employees through continuous learning, fuel the enterprise's ability to transform as necessary, to anticipate and exploit opportunities as they arise. Safety creates a competitive advantage, enabling the business to move forward confidently, knowing its risks are minimised, Woodburn says.

Technology supports continuous learning

Technology can be used to enhance employees' awareness of the dangers in the work environment and can increase the speed of communication between teams. With remote working capabilities, technology also brings safety into environments previously hard to access. The Virtual Safety Officer (VSO), for instance, can offer teams access to advisory services without needing someone present on site. In addition, technology takes continuous learning outside the training classroom, extending the learning opportunities through digital formats: from online training and virtual assessments with a facilitator to accessing contextual hazard guides and safety refreshers in the working environment, for example.

Reinforcing learning

The most important point is for businesses to recognise that safety matters, says Woodburn. And it is essential for any business where there is a health and safety risk, to keep reminding the workforce of the dangers faced in the workplace. For regular messaging to be effective, it must be relevant to the business and different strategies and platforms should be used to deliver the initial information and to follow up with regular refreshers. In such a continuous learning cycle, mistakes can become lessons for growth and improvement. In this way, we can make safety part of the workplace culture. A positive safety culture is invaluable in supporting agility, innovation and productivity at all levels.

For more information contact KBC Health & Safety. Visit: www.kbcsa.co.za

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safety requirements, by enclosing the battery storage system within an additional fire-safety case."

In the Power Safe product line, storage systems are supplied in a spatial system with dual-frame construction classified as REI 90 or REI 120 fire protection. The system can withstand fire, either internal or external, for at least 90 minutes, fulfilling the standards for safety certification demanded by approval authorities. This reduces complex approval processes significantly. The safety certification also allows for the system to be installed without a minimum clearance between it and adjacent buildings. Furthermore, Denios offers round-the-clock remote monitoring and will alert the operator immediately in the event of a problem with the system. An aerosol-based extinguishing system is also available for the spatial system.

Certified safety

Simon Schandert, CTO and Co-Founder of Tesvolt says, "Tesvolt storage systems already meet particularly stringent safety requirements. We have a multi-level safety concept and our storage systems are certified by the TÜV Rheinland testing institute. We can now also offer our commercial customers a technical solution for highly sensitive environments. With this advance we have cleared another hurdle on the path to universal availability of clean energy."

The exceptionally high safety levels of Tesvolt storage systems are driven partly by the design of the battery cells: prismatic cells are considered to be the safest lithium-ion cells. At the system level, Tesvolt's battery management system also monitors the voltage of each individual cell. This means the whole system is subject to constant monitoring. If the normalised range is exceeded, the system automatically switches to a safe state.

Power Safe spatial systems with fire protection are supplied with European Technical Assessment (ETA) and associated CE labelling. This offers an advantage for planning and legal security for country-specific approval processes. Power Safe battery storage systems are primarily sold through Denios, but on request they can also be processed through Tesvolt.

For more information visit: www.tesvolt.com

Upskilling African girls in ICT and work readiness

Siemens has partnered with United Nations (UN) Women Germany in an upskilling programme that will reach more than 600 young African women in South Africa, Kenya, Rwanda, Senegal, and Uganda. The joint initiative was launched in April 2022 and the first round of workshops has started. A hybrid event, hosted by Siemens South Africa on 31 May 2023, kicked off the African Girls Can Code (AGCCI) coding camp and, in parallel, the SieMent EmpowHer mentorship programme.

The UN Women – African Girls Can Code Initiative (AGCCI) will train young women between the ages of 17 and 25 in digital literacy, programming, and work-readiness skills. The objective is that they will be empowered to become programmers, coders, and designers so they can take up studies and pursue careers in the ICT and allied technology sectors. South Africa started the coding camps in June, after the kickoff event, and they will follow similarly in Rwanda, Kenya, Senegal, and Uganda. After the initial two-week curriculum, the EmpowHer Africa programme begins, which includes coding as well as further digital and work readiness skills in specific workshops. The learning content ranges from cybersecurity, to career options in IT, to low coding. The programme is further supported by Siemens' SieMent EmpowHer mentorship programme.

At the kick-off event, Sabine Dall'Omo, CEO of Siemens Sub-Saharan Africa, said the programme offers enormous potential to bridge the ICT gender gap on the African continent by training beneficiaries in five countries. "We are pleased to partner with UN Women Germany to undertake concerted and systematic action to create development opportunities, particularly for girls and young women, and to address some of the disadvantages they face. I am confident that this programme will help break down the barriers to entry on the continent, facilitate access to education and technology, and respond to the call to address gender inequalities," Dall'Omo added.

Elke Ferner, President UN Women Germany said: "We are thrilled to have partnered with Siemens to invest in the education and empowerment of girls in Africa – a crucial driver of sustainable development on the continent. By working together, we can enable young women to develop future-oriented competencies in a protected environment and empower them with the skills needed to succeed at national and international levels. Most importantly, we raise awareness that taking a stand for women's rights and educational equality is a social duty for all of us."

Siemens has made €780 000 available to enhance employability and is providing laptops to all participants to support the coding camps.

In addition, Siemens South Africa has designed a new mentoring programme: SieMent EmpowHer, which will work hand in hand with the AGCCI. This mentoring programme will connect experienced women mentors, from different Siemens locations around the world, with the 600 young women participating in the AGCCI. "With the introduction of SieMent EmpowHer, we will help bridge the gap between academia and the workplace. By empowering and upskilling young women through mentorship across the African continent, we aim to improve their employability, equipping them with a set of skills that will enable them to generate an income, develop resilience, and contribute to the reboot of transformative growth in Africa," Dall'Omo commented.

Above: Natalia Oropeza, Chief Cybersecurity and Chief Diversity Officer, Siemens AG.

Left: Sabine Dall'Omo, CEO Siemens Sub-Saharan Africa, at the kick-off event.

Through the SieMent EmpowHer programme coupled with the coding camps, the young women will be offered training and workshops in robotics, cybersecurity, animation, 3D printing, gender equality as well as women's empowerment, leadership, work readiness and communications.

Natalia Oropeza, Chief Cybersecurity and Chief Diversity Officer of Siemens AG, said: "I am proud to see our company's continued commitment to the development of young African women who don't necessarily have access to skills development opportunities like these. For a country like South Africa and many others in sub-Saharan Africa, youth unemployment remains a barrier to progress in the region. Teaming up with UN Women on this initiative is helping us to enable young women to gain access to technology, while indirectly addressing the issue of inequality," she added.

For more information visit:
www.siemens.com and www.unwomen.de

Crisis management is central to ransomware resilience

Boland Lithebe, Security Lead at Accenture in Africa

Ransomware is not solely a technology or security problem. A ransomware attack is far more significant than a technology breach, as it can affect an entire business. If an organisation is struck and existing recovery strategies tuned to traditional business continuity plans prove insufficient, it should, in the aftermath of the attack, adjust mindsets around the role of security for technical and business decisions.

Accenture research has found that attacks are on the rise and that 20% of costs associated with all incidents are attributed to brand reputation damage. Its recommendation is to get the balance right between security efforts and alignment with the business strategy. Overall, a modern ransomware and extortion response should be treated as a business risk, prioritising effective crisis management across the enterprise.

Key challenges

There are a number of challenges that highlight the need for greater alignment between security and the business before, during and after a cyber crisis event.

Traditional crisis response plans need to evolve

Ransomware attacks represent a business risk, not simply a security problem. Security teams' current approach to incident response typically involves solving the technical investigation aspects of an attack. However, the incident response also needs to consider critical business processes and how they impact recovery priorities. Prioritising and stabilising essential operations and systems can help prevent additional downstream financial, reputational, operational and physical impacts.

Organisations should extend traditional business continuity and incident response approaches and develop one cohesive plan that identifies the priorities for the whole business, problem-solve the big picture and better prepare for swift and inclusive business recovery. By adopting a robust communications plan, leaders can tackle a ransomware attack for what it is – a crisis that needs to be handled in a business-focused manner.

It's important to align security efforts with the business strategy to ensure effective crisis management in the event of a cyberattack.

Transparency and agility in crisis communications

Ransomware incidents are disruptive and need an effective communications plan. Regular updates shared with internal and external stakeholders are essential to get ahead of any unfolding story. Understanding the unique demands of an industry, its regulations and notifications and disclosures that apply are fundamental.

Organisations must be open and honest about what has happened and what happens next and collaborate with security professionals, legal teams and the organisation's broader ecosystem to ensure a structured approach and that they act transparently. Key questions to address include: what happened when it happened, what we know, who was impacted and how, what are we doing about it, and what is next.

Ransomware impacts the enterprise and stakeholders

Ransomware has become a persistent threat, with law enforcement and governments becoming increasingly involved. Threat actors have developed tactics such as stealing data and extorting individual people by threatening to disclose stolen data. Today, attackers can buy access and malware and execute a ransomware attack by becoming an 'affiliate' of a ransomware-as-a-service (RaaS) program available on criminal forums. The compressed transformation has often extended the attack surface, evidenced by the triple-digit increase in attacks observed in 2021. Therefore, any crisis response strategy should consider the stakeholders affected, such as customers, corporate subsidiaries, suppliers, trusted third parties, financial investments, and merger and acquisition targets.

The CEO and Board need to be on-board

Testing and validating attack prevention, detection, response and recovery is part of business for most organisations. Nonetheless, drawing on the CEO and Board can enhance this practical step. Tabletop exercises are generally undertaken by security personnel. By extending such practices to include executive-level simulations, organisations can test their defences against a typical ransomware attack and introduce the risk and adrenalin of a 'real-life' attack scenario. For example, executives may be told three lines of business are down due to an attack where a threat actor asks for US$10 million. Executives are asked to determine in real-time which business should be recovered, how they communicate their response and who is responsible for making those decisions.

To make the process easier, Accenture has developed the following ransomware response and recovery approach to handling cyber crisis communications.

- Triage and prepare: Identify impacted parties and ➤

Free trade can help end the continent's energy crisis

Mervyn Naidoo, Group Chief Executive Officer at ACTOM and Chairman of the Manufacturing Circle

Mervyn Naidoo, Group CEO at ACTOM, Chairman of the Manufacturing Circle.

With Africa in the midst of an energy crisis as a result of several factors, African manufacturers have the potential to play an important role in helping to provide a solution. This will depend though on whether the right environment is created to help them expand operations and pursue cross-border investment opportunities.

Underinvestment in infrastructure, a lack of access to affordable and reliable sources of electricity, a lack of investment in renewable energy and a lack of coordination between the public and private sectors have all contributed to the state of energy poverty that most nations on the continent find themselves in today.

Compounding the problem is the fact that many African countries face political and economic challenges. This has hindered the development of energy resources and has contributed to the exit of skills with many African countries losing crucial skills and expertise in energy generation.

African manufacturers can help to remedy the continent's energy crises by developing innovative solutions for energy storage and access. By creating products that are tailored to the needs of the African context, manufacturers can help reduce energy poverty, increase energy efficiency, and spur economic growth.

Economies of scale

However, this can only be accomplished when manufacturers achieve economies of scale. There is currently very little economic growth across many parts of the continent due to a lack of investment in expanding manufacturing capacity.

Hence, Africa needs to leverage mechanisms such as the African Continental Free Trade Agreement that has given rise to the African Continental Free Trade Area (AfCFTA), which was established in 2018 and encompasses most of the continent.

Under the agreement, AfCFTA members commit to eliminating tariffs on most goods and services over several years, with the aim of increasing socioeconomic development, reducing poverty, and making Africa more competitive in the global economy. Long-term objectives include creating a single, liberalised market, reducing barriers to capital and labour to facilitate investment, and developing regional infrastructure.

Along with many other countries on the continent, South Africa could benefit greatly from the African Continental Free Trade Agreement. Although the country is one of the most industrialised economies in Africa, South African manufacturers have not ventured into other African countries on a significant scale, with companies in the retail space making up the majority of cross-border investments and expansion.

Huge scope for infrastructure build

The continent presents huge scope for the construction of energy (and other) infrastructure, and an increase in investment in this space would drive local manufacturers to expand into various regions on the continent. It is expected that the African Continental Free Trade Agreement would accelerate this process and pave the way for shared progress, in the vertical integration of the mining of minerals such as vanadium and lithium into the manufacturing of energy storage products, for example.

In East Africa, some multinational companies are bringing their resources together to create manufacturing hubs as a way of expanding their operations and establishing a foothold in new markets. These industrial hubs are vehicles for technology transfer, job creation and a way for African companies to access and contribute to the economies in the region. Additionally, such projects can bring companies' technical expertise and maintenance capabilities closer to their customers, enabling the creation of tailor-made solutions for specific regions.

At the same time, solving Africa's energy crisis requires the collaboration of the public and private sectors. For instance, in South Africa, the government's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has created a platform for private sector investment, and further reforms in the electricity sector – removing licencing requirements for private renewable energy production, for example – have increased the scope of public-private partnerships. However, certainty of policy remains the key to encouraging the private sector to work with the public sector to address the energy crisis.

Africa's energy crisis can be tackled effectively only if the continent's manufacturers are empowered to exploit the depth of their manufacturing capability. The African Continental Free Trade Agreement is a step in the right direction, inviting South African manufacturers who have been reluctant to go beyond the country's borders to extend their reach. As well as helping to solve the energy crisis, investment in manufacturing would create more employment, especially as Africa has the youngest population in the world.

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

- align on reporting objectives, tone, timing, audience, and notification requirements.
- Develop and approve: Develop messaging aligned to the communications strategy, identify mediums for each stakeholder group and obtain approvals.
- Posture and deploy: Reinforce messaging, train employees, set up monitoring and deploy a vertically integrated communications task force.
- Monitor and evaluate: Employ an agile approach to evaluating and iterating through updates based on defined metrics, sentiment analysis, media outreach, and financial and brand impact.

So, ask yourself, are you ready? With more agile, robust and transparent crisis management capabilities, organisations can handle ransomware events better and improve overall cyber resilience.

For more information visit: www.accenture.com

WtE: the solution that begs to be implemented

Dr Zwanani Titus Mathe, CEO of SANEDI.

Following the impact of Covid-19, the push towards economic recovery has opened up opportunities across various sectors and in the energy sector specifically – to build energy generation that is green, clean, resilient and inclusive. With this in mind, South Africa's energy and policy researchers are considering the potential of waste-to-energy (WtE) as a resource as the country transitions to a sustainable smart energy system. CEO of the South African National Energy Development Institute (SANEDI), Dr Zwanani Titus Mathe, sees WtE as the solution that begs to be implemented.

According to the World Bank, the amount of municipal solid waste disposed of in world cities – already more than 2 billion tonnes – is expected to increase to 3.4 billion tonnes by 2050. Moreover, it is estimated that waste generation rates will more than double over the next 20 years in lower-income countries, especially in Africa.

Over 70% of South Africa's waste currently goes to landfill, resulting in a loss of resources to the economy and serious detrimental impacts on human health and the environment. A 2017 study concluded that the waste sector contributes to more than 4% of the national greenhouse gas (GHG) emissions. At the same time, South Africa is seeing a large-scale shift towards low-carbon energy sources and solutions, while continuing the drive for universal energy access to help alleviate poverty in the country.

Despite all these drivers, none of the country's existing policies at national or local level explores the opportunities that lie at the intersection of waste, climate change and renewable energy supply.

Responding to this gap, SANEDI, in partnership with the Department of Science and Innovation (DSI), the National Research Foundation (NRF) and the Council for Scientific and Industrial Research (CSIR) South African Research Chair in Waste and Climate Change at the CSIR and University of KwaZulu-Natal, has been developing a Waste-to-Energy (WtE) Roadmap for South Africa with the aim of charting the potential to include waste-to-energy technology options into municipal planning.

The WtE opportunities at municipal level are numerous and compelling. Depending on the technology employed, municipal solid waste (MSW) and other waste types can be processed to produce biogas, biofuels, synthetic gas or bio-oil, all of which have applications in electricity generation, heating or as fuel for vehicles. In all instances, fossil fuels can be replaced and greenhouse gas emissions avoided. Of at least equal importance is the economic and job creation potential in building the waste-to-energy sector. Developing and operating processing facilities require skilled labour, engineering expertise and maintenance services. Additionally, the production of energy from waste would contribute to energy security, reduce waste management costs and create revenue streams through the sale of electricity, heat or biofuels.

The primary motivation for the development of the WtE Roadmap is the current lack of a specific institutional framework to guide the various governmental sectors and decision makers in the successful implementation of a waste-to-energy sector in South Africa. While there are many position papers and policy proposals for developing WtE, they tend to contradict waste and energy institutional frameworks, which makes successful implementation virtually impossible. For instance, the Municipal Finance Management Act limits contract terms to three years, whereas some off-takers require 10- to 15-year commitments to become financially viable.

In addition to overarching policy frameworks, municipalities need decision-making tools to help them select the WtE strategy that best achieves sustained waste reduction, resource recovery, the reduction of carbon emissions and job creation in their particular jurisdiction. Currently, landfill is still seen as the best solution to waste management due to the ease of disposal it offers and the low gate fees. In the absence of full-cost accounting assessments, this barrier will continue to deter WtE energy projects as the solution for waste disposal.

With rapidly developing WtE technologies, solving two of the world's greatest challenges – waste and energy – in one solution is no longer a pipedream. Waste valorisation, which is the process of extracting value or useful resources from waste materials rather than simply disposing of them, is gaining traction around the world. The goal of valorisation is to reduce waste, conserve resources and create economic opportunities – three important goals shared by almost all societies.

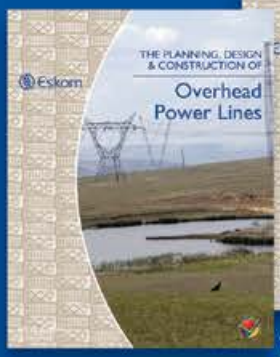
However, despite WtE technologies maturing, implementation is slow. In South Africa, the National Waste Management Strategy (2020), focuses on long-term waste management practices, and the National Biogas Strategy, presents a set of guidelines for the insertion of biogas-to-energy projects. However, we still need a specific WtE management framework, developed in consultation with all levels of government and relevant stakeholders through an open and deliberated process.

The principles at play are understood and largely agreed upon, but the nuts and bolts remain unresolved. South Africa needs a focused and detailed WtE policy, along with clarity on matters such as plant size, minimum waste material volumes and the costs and timelines involved in meeting licensing requirements. Without this, developers will remain, understandably, reluctant to commit to waste-to-energy plants in South African municipalities, condemning public-sector WtE to a metaphorical landfill.

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

Eskom

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



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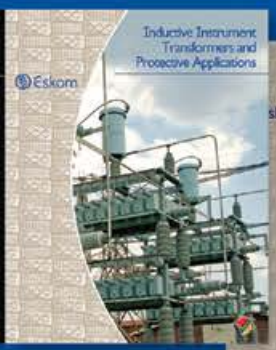

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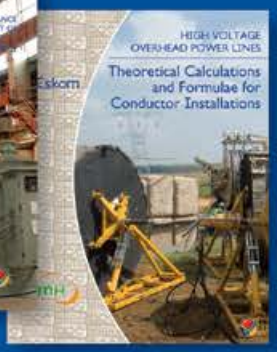

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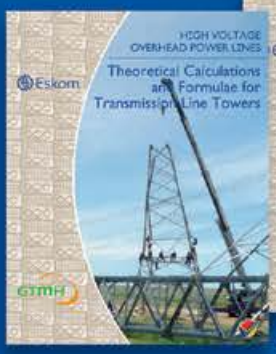

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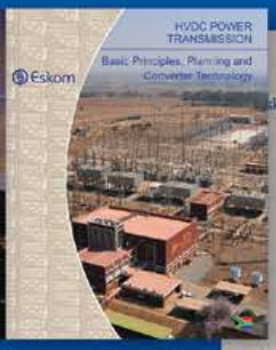

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The Eskom Leadership & Management Series was introduced by Eskom at the request of readers and stakeholders of the Power Series who felt that the series should be expanded to include non-technical topics. These topics are often not well understood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

Volume 1: Mentorship and Coaching

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

Volume 1: Procurement Management Key Concepts and Practices

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

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

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