

100



2023

100 Years of passion for Technology and Innovation!

FEATURES:

- Industry 4.0 + IIoT
- Energy management + the industrial environment
- Measurement + instrumentation
- Safety of plant, equipment + people

ELECTRICITY + CONTROL

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New Automation Technology

BECKHOFF



Celebrating its 100th anniversary, Phoenix Contact has evolved from a commercial agency for industrial products founded in Essen, Germany, into a global manufacturing company serving the electrification, networking, automation and other sectors.

(Read more on page 3.)

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Making best use of the energy we do have

Although the issue of energy management may seem well worn – particularly at times like this – it remains critical.

To start on a rather blunt note, energy management has become almost synonymous with simply keeping the lights on while all those around us are going off. In a moment I want to challenge you to step back and ask what we can continue to do to better manage our energy usage – no matter the source of that energy, or indeed how dire things may feel.

In this edition of *Electricity+Control* we cover the topics of Industry 4.0 + IIoT, Energy management + the industrial environment, Measurement + instrumentation, and Safety of plant, equipment + people. As in each edition, the topics are interrelated.

The development of Industry 4.0 and the IIoT implies that we are now better equipped to have a handle on everything we do on our plant. The link between the IIoT and measurement is clear, and we all know that 'what gets measured gets done'. If we consider plant safety, I note a broader interpretation of this has emerged as a consequence of loadshedding – and that is that some systems do tend to fall over, even if temporarily, and during that moment some interesting things can happen ...

But returning to the issue of energy management; I recently found myself in a conversation regarding how to ensure the resilience of an energy supply system in the face of ongoing loadshedding. And this is certainly an important consideration. It speaks to how we can manage loads and manage the inflow of alternative energy sources – and optimise the use of these.

Essentially, so much of what we need to consider relates to how to keep the lights on in the most efficient way while the utility power is not available. So, we tend to find ourselves trying to figure out how to configure our networks (on both the MV and the LV sides) to ensure we can serve the critical parts of the plant with emergency supply (often for many hours a day and now more commonly referred to as our backup supply) in order to have the least disruptive effect on operations during loadshedding.

One of the aspects of this is: how can we manage the loads remotely, or even automatically, to ensure we do not trip the supply. In

addition, backup systems need maintenance – and it becomes critical that the machines are taken out of service for sufficient time to be checked and maintained as necessary to keep them in good working order.

What we have tended to push to the back of our thinking has been the fundamental question of energy management, with a view to optimising how we run the plant whether or not we are using the utility supply.

This is the opportunity to remind ourselves that, irrespective of the source of our energy supply, there remains a need to look critically at how we use the energy we have.

Some years back energy efficiency and energy management were major points of focus – and it is a pity that the current crisis we face has detracted from that fundamental objective: to manage our energy usage in order to minimise our costs and increase plant efficiency.

In the conversation I refer to, it was agreed that we need to think about the best way to manage the loads in the plant, whether we are running on backup or utility supply – and to look again for the best energy mix and options of how to supply our needs. To think about the technologies we use – if it is heating we need, is there a better way? And so on.

I recall the remarkable activity in industry around energy efficiency, the use of alternative forms of energy (for instance, capturing heat energy from a process to reuse, as it were, in the process), combining gas and even solar for water heating on the plant. Some great strides were made in industry, and I recall Eskom rewarded those that made significant inroads regarding these initiatives.

My concern is that unless we remain focused on optimising our energy usage, we will tend to be caught in an inefficient system that serves only to keep the lights on in a time of crisis – and we will regret that on the days when things return to 'normal'.

I urge you to consider these issues. In my view it is a far more positive thing to do than simply continue to fight the crisis that is loadshedding. Let's make every effort to come out of this in a better state than when we went into it. □

Ian

Ian Jandrell

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CONTENTS

FEATURES

INDUSTRY 4.0 + IIOT

- 4 Migrating to the cloud? beware of the hurdles
Benjamin Coetzer, Routed
- 6 Setting tomorrow's battery industry in motion
CLPA - Europe
- 7 Products + services

ENERGY MANAGEMENT + THE INDUSTRIAL ENVIRONMENT

- 10 Power plant OEMs can help address SA's electricity crisis
Thava Govender, Babcock Engineering
- 12 Regulating solar system providers
Werner Fortuin, SolarAfrica
- 14 85% efficiency in trigeneration plant
Stephan Ziegler, Beckhoff Automation

- 15 Products + services

MEASUREMENT + INSTRUMENTATION

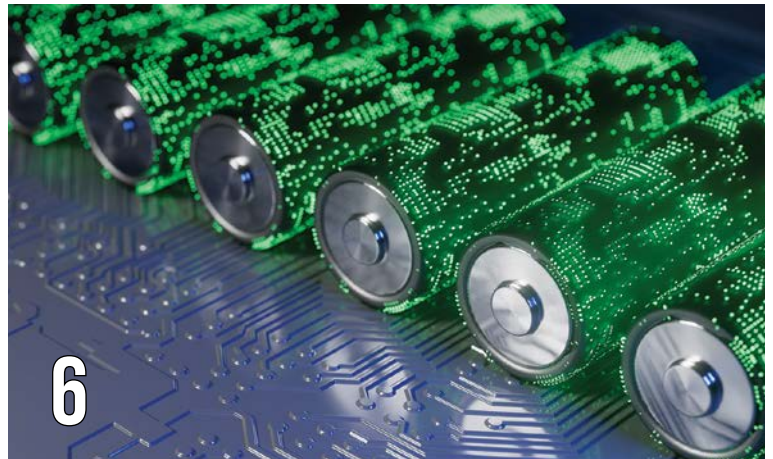
- 19 Products + services

SAFETY OF PLANT, EQUIPMENT + PEOPLE

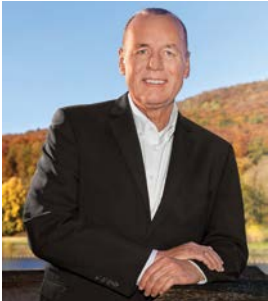
- 25 Products + services

REGULARS

- 1 Comment
Making best use of the energy we do have
- 3 Cover article
Phoenix Contact is celebrating its 100th anniversary
- 29 Reskilling, upskilling + training
Africa needs more engineers to advance its gains on SDGs
- 30 Engineering the future
Empowering local energy communities in clean energy transitions
- 32 Write @ the back
Remote monitoring of water reservoirs in rhino sanctuaries



Phoenix Contact is celebrating its 100th anniversary



Phoenix Contact CEO, Frank Stührenberg.

A century full of passion for technology and innovation: in the past 100 years, the family-run company Phoenix Contact has evolved from a commercial agency for industrial products founded in Essen, Germany, into a global manufacturing company. With products and solutions for the electrification, networking, and automation of all sectors of the economy and infrastructure,

Phoenix Contact continues to drive all this forward – together with a commitment to the sustainable development of habitats and economic spaces on our planet.

“We have achieved a great deal over the years together, remaining true to the values and culture of our family business even as we have grown and evolved. This anniversary is a special moment for us. We have built the foundation on which we can continue on our path into the future. Together with our customers and business partners, we will drive forward solutions for the energy revolution that are the basis for a sustainable world,” said Phoenix Contact CEO Frank Stührenberg, describing the significance of the 100th anniversary.

Connections between people and technologies

Good connections are more than an elementary feature of Phoenix Contact products. They were also the basis for transforming the idea of businessman Hugo Knümann into a globally active industrial company. With the founding of Phönix Elektro- und Industrie-Bedarfsgesellschaft in Essen in 1923, the company initially started out as a sales company. In 1928, the business connection to RWE led to the invention of the first terminal block on a DIN rail. This gave Knümann the idea of separating the blocks and arranging them individually to form terminal blocks on a DIN rail. Another far-reaching personal and entrepreneurial connection was established in 1949. Knümann met Josef Eisert, a development engineer at Siemens, who took over the company in 1953 after Knümann passed away.

From Blomberg to the world

With the arrival of Eisert, the company underwent a fundamental change. From only sales it became a company with its own production. At the Blomberg location, where the company had to be relocated during the war, a tool shop, plastics production, screw turning shop, assembly facilities, metalworking shop, warehouse, and logistics were soon established.

After the relocation, many new products were being developed and the portfolio increasingly expanded in the direction of electronics. With the innovative Interbus fieldbus system, the basis for industrial networking followed in 1987. The decisive step towards automation was taken. After the establishment of

the first foreign subsidiary in the USA in 1981, further subsidiaries followed. Today, its sales markets are all over the world.

Together for the future

Phoenix Contact now employs around 22 000 people and generated revenues of €3.6 billion in 2022. “In recent years in particular, we have experienced especially dynamic growth, which shows us we can provide answers to the key questions of our times with our solutions,” said Stührenberg as he assessed the revenue growth. Worldwide, Phoenix Contact’s production network spans 11 countries in which the level of vertical integration varies. More than 50 international subsidiaries are part of the Phoenix Contact Group. In this way, the company is always close to the markets and customers.

Together with customers and partners, Phoenix Contact develops solutions for the world of tomorrow using pioneering connection and automation technology. The integrated concepts, which include engineering and services, are applied in transportation infrastructure, e-mobility, for clean water, renewable energy and intelligent supply networks, and in energy-efficient machine building and systems manufacturing.

Social responsibility

With its integrated actions, Phoenix Contact is committed to empowering the ‘All Electric Society’, a future in which energy from renewable resources is provided in sufficient quantities and in an economically sustainable manner throughout the world. In addition to the consistent generation and use of renewable energies, reducing primary energy demand through efficiency measures and applying sector coupling to create intelligent and networked systems are key to this sustainable future. □



Phoenix Contact, Blomberg.

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Visit: www.phoenixcontact.com/en-za





Benjamin Coetzer,
Director at Routed.

Migrating to the cloud? Beware of the hurdles

Many businesses today are moving their operations to the cloud. However, before undertaking such a move, companies should understand the hurdles they may face, and consider how to overcome these, says Benjamin Coetzer, Director at local VMware Cloud Verified provider and VMware Principal Partner, Routed.

Most businesses today, if they have not already undertaken a cloud migration, are likely considering or planning such a move. This is generally motivated by the benefits proclaimed, including scalability, flexibility and cost efficiency.

Although there are undoubtedly many benefits, Coetzer says CIOs need to be especially aware of the challenges that arise in planning a move to the cloud.

Some of the biggest challenges revolve around managing cloud spend, understanding the cost components of cloud infrastructure and, of course, how those costs can scale. Additionally, migrating traditional on-premises workloads to hyperscale providers is not always a simple equation. Unlike buying physical servers and equipment, hyperscalers charge for communication and disk access in ways unfamiliar to most organisations.

Perhaps the single biggest global challenge currently, and certainly one that is a major issue in South Africa, is the lack of adequate cloud skills. A lot of people do not have the relevant experience in cloud migration and face a steep learning curve when transitioning from on-premises IT to the cloud.

Part of the problem is that with on-premises setups, IT teams have more control over data access and security. In the cloud, security becomes a shared responsibility, requiring awareness and training across the enterprise. Moreover, as businesses shift to software-as-a-service (SaaS) models, employees also need retraining, to adapt to new ways of using applications and accessing data while still maintaining effective security.

Legacy versus cloud native

Another concern is that technical leaders sometimes try to take legacy on-premises applications and shift these straight into a cloud native environment. Such applications do not always work properly in the new environment, but organisations that are used to the traditional Capex-type investments for hardware refreshes or perpetual software licences, quickly find that the cost operation model in a cloud environment is completely different.

Often too, it is the non-IT departments in the business that do not know how to handle this new cost model – the finance director, accountants and product teams, for example.

There are also significant technical challenges to

consider, connectivity being foremost among these. Since connectivity is critical to the cloud, it is imperative that the business or office park in which it is operating has some form of redundancy built in to ensure continuity. The best approach is to use two different connectivity media, such as a main fibre link, with a wireless connection as a secondary option.

A further challenge here is the issue of locality. This is of concern due to the nature of compliance requirements – like the General Data Protection Rule (GDPR) and the Protection of Personal Information Act (PoPIA) – which indicate that certain data must reside within local borders. It is essential for businesses to be aware of the personal information they are saving in their databases, systems, and applications, as there are strict rules around where such data resides, in terms of compliance.

Security and data privacy concerns should be among businesses' priorities, as such issues play a significant role in hindering cloud adoption. For example, we are aware that the cloud introduces new operating paradigms and governance challenges, such as Shadow IT. This is where different departments use various cloud services without oversight, something that can easily lead to data breaches of local regulations like PoPIA, and international ones like the US Cloud Act. Such laws add complexities to data sovereignty and privacy, so organisations need to consider these aspects when selecting a cloud provider.

High costs and vendor lock-in

It is also important to point out that businesses need to recognise and address these challenges before making the move. This is critical because, once a business is committed to a cloud provider, it is difficult to switch or repatriate data without incurring high costs. Vendor lock-in is a real concern, and carefully planning ahead can prevent a business getting trapped in a situation where options are limited and unforeseen costs arise.

This happens because the fees from hyperscalers are often consumption-based when repatriating data or information out of cloud environments. What occurs is that the providers may welcome new customers with an offer of huge discounts on their workloads, but this is done because they know that within the contract period, the client's consumption of their platform services is going to grow substantially. "Moving to a hyperscaler cloud is like

checking into Hotel California: You can check in but you can never leave,” Coetzer says. “Once you have committed, you may find yourself stuck with that provider because, to move out again may well cost you more than you would have saved with the original discount.”

One more thing to consider is the concept of multi-cloud, similar to the previously coined term ‘hybrid cloud’, where organisations place different workloads with different hyperscalers. This is often considered the next step in cloud migration, but presents further challenges, around governance, compliance, control, and operational insights across multiple different cloud providers, making the whole process more complex.

Looking at the big picture, cloud adoption is a move that can be expensive, due to the operational complexities as outlined. However, these expenses can be balanced by the

expertise that cloud providers bring to managing risk and operations, compared to relying solely on internal IT staff, particularly if they do not have appropriate cloud skills.

Besides doing the homework before making the move, for businesses still looking to migrate to the cloud Coetzer says the best advice is: Find a trusted partner that has a proven track record in cloud migration. Avoid those that like to throw buzzwords around and rather seek out a partner that will look at the current state of your business’s IT and business processes with a critical eye, and will be able to evaluate the situation and provide ongoing guidance as you move through the transformation journey. □

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

INDUSTRY 4.0 + IIOT : PRODUCTS + SERVICES

Managed services help support the edge ecosystem

A 2021 survey by the Uptime Institute found that the impact of data centre downtime has grown in severity, making the availability of data centres, at the core and at the edge, a key concern for organisations.

Rohan de Beer, Secure Power Channel Manager, Southern Africa Region at Schneider Electric acknowledges that maintaining availability is challenging, noting that edge data centres experience more frequent total facility outages than centralised data centres. The primary methods companies follow to improve edge availability – investing in improved equipment and redundant equipment – are not cost-effective ways of ensuring uptime.

Here, managed services have become a solution in supporting data centre uptime and, in parallel, an opportunity to the channel to provide added value in the growing data centre market.

The edge ecosystem provides a double opportunity: end users can turn to managed services providers for cost-effective uptime of their edge deployments, and existing providers can work with partners to add new services to their portfolios.

Managed services providers enable end users to focus on their core competencies. Edge locations need the same resilience, security, and fault tolerance as centralised locations, especially as they support an increasing number of mission-critical applications. Here, managed services providers, with the right capabilities, can offer the customer the assurance that operational efficiencies for edge deployments are being maintained.

De Beer says that ensuring the necessary resilience and availability at the edge is not a simple matter. It requires having at least two major capabilities in place:

- Remote monitoring and management of UPS and physical infrastructure
- Data collection and analytics from monitoring equipment; this data improves the reliability and

cost effectiveness of assets at the edge.

These specific capabilities are not the core competencies of most companies. Turning to a managed services provider places the responsibility for infrastructure uptime into the hands of experts so end users can focus on their core business.



Rohan de Beer of Schneider Electric.

The increased need for managed services also represents an opportunity for existing providers. For example, power protection at the edge is not something many end users consider. But an unmanned edge computing deployment without power is just another cost centre. For existing services providers, adding power monitoring and protection to their portfolio of offerings invites additional recurring revenue streams.

The same applies for monitoring and dispatch services. When physical infrastructure in remote locations goes down, those sites need immediate attention. A lot of organisations do not have full-time response staff to address such issues adequately – and managed services providers can assist.

Solutions and services providers can earn additional business by offering remote monitoring or dispatch services.

De Beer says the edge is where organisations need to invest and appropriate managed services can keep the ecosystem running smoothly for all parties involved.

For more information visit: www.se.com

Setting tomorrow's battery industry in motion

Leveraging the right network technology can help lithium-ion battery (LiB) manufacturers meet challenging demands and growing market opportunities. CC-Link IETSN network technology helped a premier LiB company simplify its manufacturing systems and comply with exacting product specifications.

The widely increasing use of LiB cells – in applications from smartphones to tablets and ear buds, and increasingly in electric vehicles (EVs) – is driving exponential growth in LiB cell manufacturing. To meet rising global demand, LiB producers need to scale up their capacity quickly and ensure they are delivering high-quality products. This requires high-precision high-yield, high-throughput manufacturing systems.

John Browett, General Manager at CC-Link Partner Association - Europe, explains that LiB manufacturing is a complex, multistage process, with most of the stages based on established converting principles. Standardly, and in simple terms, an electrolyte slurry is mixed and then applied to a metal foil as a fine layer, which is dried before passing through an intricate series of slitting, winding and cutting activities to produce the finished cell. These process stages require a precisely coordinated series of multi-axis motion control operations to deliver the required quality and avoid waste.

The performance of the finished cell in terms of capacity, internal resistance and reliability is highly dependent on multiple parameters, such as coating uniformity, film tension and others. Moreover, as the demand for lithium and other critical raw materials continues to grow worldwide, it is clear that material wastage caused by out of spec product should be minimised as far as possible.

Adding to the application challenges, as battery manufacturers seek to increase cell capacity, foils and their coatings are constantly becoming thinner. At the same time, materials need to be handled at higher and higher speeds to meet production targets driven by market demand.



A leading producer of automated lithium-ion battery manufacturing lines recognised the benefits of using CC-Link IE TSN networking technology – to improve the productivity of its systems, simplify their design and reduce time to market.

Furthermore, besides the critical motion control processes, various associated machine functions need to be integrated into the production process to provide the required functionality. These include visual coating inspection, film tension, tab welding, general machine control and safety systems.

Key to addressing these challenges is an open industrial Ethernet technology that delivers high performance along with network convergence. This provides for productivity and performance targets to be met, and for machine designs to be simplified by combining multiple traffic types onto a single network architecture. As a result, machine complexity can be reduced, which in turn decreases project lead time, accelerates scalability and maximises productivity.

TSN benefits in LiB manufacturing

When a leading producer of automated LiB manufacturing lines was looking for a new technology that would improve the productivity of its systems, while simplifying their design and reducing time to market, CC-Link IE TSN stood out.

CC-Link IE TSN is an open industrial Ethernet technology that was the first to combine gigabit bandwidth with Time-Sensitive Networking (TSN). As such, it offers several benefits to machine builders in this industry. First, the gigabit bandwidth means large volumes of production data can be handled easily, without affecting machine performance or plant productivity. Further, since data is shared at gigabit speeds, the setup offers a scalable solution that can continue to meet the increasingly demanding needs of LiB manufacturers. And, operation at these speeds means that multiple motion axes can be synchronised on micro-second intervals, providing a degree of process quality not previously possible.

Additionally, the integration of TSN into the network means several different traffic types can be combined onto a single network architecture. Hence the large and complex multi-axis motion control system of the company's machines would not have to accommodate the cost penalty of having to use multiple networks to handle motion control separately from other machine functions such as visual inspection, safety and general machine control. With CC-Link IE TSN's capabilities, all these disparate communication needs can share a common network architecture. The result is a simpler, less expensive machine design – and the machines are easier to build and maintain and can be delivered more quickly, winning significant competitive advantages for the OEM.

A further benefit is that TSN's ability to allow different traffic types to share the same network also provides the foundation for OT/IT convergence. In simple terms, this means the machine process data created by the OT of the shop floor can be more easily shared with higher level IT systems. This opens the door to further improvements, such as leveraging AI systems to analyse machine operation in order to deliver future process improvements.

Browett comments: "We are pleased to see companies such as this leading producer of automated LiB manufactur-

ing lines using CC-Link IE TSN. They are leveraging our technology to take a leap forward, ahead of their competitors, and provide an industry-leading, scalable platform for their customers now and into the future. We are confident that CC-Link IE TSN will continue to deliver benefits to the LiB industry and many other sectors as we move forward."

For more information visit: eu.cc-link.org/en

INDUSTRY 4.0 + IIOT : PRODUCTS + SERVICES

Collaboration to bring generative AI to industrial applications

Expanding on their longstanding partnership, ABB is working with Microsoft on the integration of Azure OpenAI Service into the ABB Ability™ Genix Industrial Analytics and AI suite. The companies are collaborating on the implementation of generative AI technology to help industrial customers unlock insights in operational data. Improved data collection and remediation will be aimed at enabling significant gains in efficiency and productivity, asset reliability, operational safety, lower energy consumption, and reduced environmental impact.

ABB is looking to integrate generative AI through Azure OpenAI Service, including large language models (LLMs) like GPT-4, into the Genix platform and applications, enabling functionality such as code, image, and text generation. When it is launched, the new application – Genix Copilot – will enhance the user's experience by offering intuitive functionality and streamlining the flow of contextualised data across processes and operations. This will provide industry executives, functional specialists, and shop floor engineers with real-time actionable insights for more informed decision-making and to support increased productivity. According to ABB, such insights have the potential to extend asset lifespan by up to 20% and minimise unplanned downtime by up to 60%.

In addition, the solution will have the capability to help customers achieve their objectives in respect of sustainability, energy efficiency and transitioning to clean energy by providing advanced monitoring and optimisation insights into industrial greenhouse gas emissions and energy usage.

Genix Copilot will also provide for the capturing of an operator's knowledge and facilitating collaborative decision making across various roles, with a strong emphasis on safeguarding data and knowledge within the enterprise.

ABB Ability™ Genix is a comprehensive, modular industrial IoT, analytics and AI platform that embeds industry-specific domain knowledge to drive business outcomes and ensures the protection of customers' existing investments. Businesses running Genix have seen up to 40% cost savings in operations and maintenance, up to 30% improvement in production efficiency, and up to 25% improvements in energy and emissions optimisa-



ABB is working with Microsoft to integrate generative AI capabilities into industrial digital solutions.

tion. The addition of generative AI capabilities to Genix will be aimed at further increasing these benefits.

"This is an important step in the strategic partnership between ABB and Microsoft and will accelerate the digital transformation of the industrial sector," said Rajesh Ramachandran, Global Chief Digital Officer, ABB Process Automation. "We believe Genix Copilot will help industrial customers achieve their objectives of sustainability, operational excellence and enhanced asset performance. Extending the generative AI capabilities across ABB's industrial digital solutions will open up a new era of AI for customers, enabling better decisions."

Ralph Haupter, President for EMEA at Microsoft said: "As we see it, organisations that will be best positioned for long-term success are those that modernise and scale their data platforms. Applying advanced digital capabilities such as Azure OpenAI Service will strengthen ABB's Genix to manage the contextualised data effectively and help drive the digital transformation critical for growth and lasting change."

Genix unlocks the power of data by automating contextual integration of operations (OT), information (IT), and engineering (ET) data across the enterprise and applies industrial AI to deliver advanced analytics and optimisation. It can be scaled from asset to plant to an enterprise. The platform can be deployed across cloud, hybrid, edge or on premises.

For more information visit: www.abb.com

Enabling cloud, CDNs and SaaS providers across Africa

TeleGeography, a leading telecom market intelligence and research provider, recently released a research update which highlights significant developments in the African telecommunications network infrastructure landscape and the resultant traffic patterns. This will benefit providers of cloud services, content delivery networks (CDNs), and software as a service (SaaS).

Among the key findings are the substantial increase in transit route capacity across the continent and the growth of intra-Africa traffic. More digital content is being serviced within Africa than previously and at a rapidly growing rate.

The expanded capacity in both subsea cable and terrestrial fibre has translated into large IP bandwidth growth, price declines in bandwidth, growth in localised data centres and, as a result, enhanced connectivity and improved user experiences. In summary, the development of infrastructure offers a healthy, growing telecommunication ecosystem which enables CDNs, cloud services, and SaaS providers to serve new customers in sub-Saharan Africa reliably.

Subsea cable, terrestrial fibre and data centre investments are making Africa the top-growing bandwidth market globally, with projected compound growth of 42% between 2022 and 2029, surpassing the global average projections of 32%. Content providers experienced 80% compound annual growth rates in African bandwidth between 2018 and 2022.

Introducing new submarine cable systems is expected to increase capacity for coastal and landlocked countries, increase the number and size of intra-African routes, decrease transit prices along key African routes, and boost growth of localised digital content.

As Internet Exchange Points (IXPs), CDNs, points of presence (PoPs), and data centre construction spark the growth of new ecosystems in Africa, the internet edge is moving closer to African end-users, with significant transit hubs within Africa assuming prominence over Europe.

The report highlights that despite the historical internet traffic routes from Europe to Africa, South Africa



TeleGeography Intra African Route Growth - 2016 vs 2022.

has become a growing regional hub for intra-Africa internet capacity with the percentage of traffic servicing sub-Saharan Africa becoming more intra-Africa than traditionally serviced from Europe. Intra-Africa capacity within sub-Saharan Africa being serviced from South Africa between 2016 and 2022, has seen compound growth of over 50% per annum, with South Africa entrenching its position as the content hub for Africa.

Michele McCann, Head of Platforms at Teraco says, "Teraco is serving 26 African countries and, as the demand for reliable and scalable digital infrastructure continues to surge, we remain committed to supporting these providers in expanding their presence across the region.

"With these substantial bandwidth investments, CDNs, cloud services and SaaS providers can unlock unprecedented growth opportunities in Africa's evolving digital landscape by leveraging Teraco's state-of-the-art facilities, deep ecosystems, and our position as the hub of Africa's digital infrastructure."

Teraco is strategically positioned with access to subsea cable systems on the east and west coasts of Africa, over 350 telcos, global cloud on-ramps and enterprises, ensuring its clients have multiple interconnection options and valuable data flows, creating more opportunities for innovation.

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

Smarter use of data

Emerson, a global leader in industrial software and engineering, has added data server technology to its suite of asset management tools to help process manufacturers improve performance by breaking down the data silos that can make it difficult to transform reliability and maintenance strategies in a digital environment. AMS Device Manager Data Server securely extends intelligent field device data to outside systems, to make it easier for reliability and maintenance teams to further capitalise on advanced analytics software, enabling a step change in operational efficiency and smart manufacturing.

For decades, process manufacturers have relied on asset management software to monitor plant production

assets – like measurement and analytical instrumentation, digital valve controllers, wireless gateways, and others – within a single plant and across the enterprise. As plants have advanced, the technology stack has grown to exploit and benefit from historically underused or inaccessible datasets. AMS Device Manager Data Server publishes intelligent field device data nearly instantaneously to industrial software analytics solutions already in use by customers. It eliminates the need for complex custom data integration and manual workarounds that are often the cause of delayed results and siloed data. With AMS Device Manager Data Server, the data is relayed via secure industry protocols.

For more information visit: www.emerson.com

Connect your authorised Small-Scale Embedded Generators legally and safely



Our shift towards more integrated electricity systems and new energy solutions, has seen a growing number of consumers generating their own energy via the installation of small-scale embedded generation (SSEG).

Our SSEG programme also responds to the increasing demand for alternative clean energy which can be integrated to the national grid.

Investing in a generator involves a significant financial commitment and therefore requires careful consideration of the following key aspects:

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- Ensuring the safety of people, animals and equipment.

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- Use of net billing services that allow exported surplus to offset current billed consumption or bank surplus to offset future billed consumption within the financial year, through appropriate tariffs and agreements.
- Supply points can, in approved circumstances, be consolidated to share exported generated surplus energy.
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Contact Eskom today for the safe installation of your SSEG at Advisoryservice@eskom.co.za





Thava Govender,
Babcock Engineering.

Power plant OEMs can help address SA's electricity crisis

As the South African government considers ways to improve the performance of Eskom's coal-fired power stations, collaborating with original equipment manufacturers involved in the construction of the power plants may offer a solution to optimising power generation and, over time, putting an end to loadshedding. Thava Govender, CEO of Babcock's engineering business says long-term partnerships with power plant OEMs could help resolve the electricity crisis.

The lack of reliable electricity supply is one of the biggest economic constraints in South Africa. For context, record levels of loadshedding were experienced in 2022, with 207 days of rolling power outages recorded during the year, compared with 75 days in 2021. This has had a devastating impact on businesses and the economy at large.

As part of government's efforts to overcome the electricity crisis and end loadshedding, the National Treasury proposed a total debt-relief arrangement for Eskom of R254 billion – as was announced in the 2023 Budget Speech. However, the arrangement comes with strict conditions to safeguard public funds. One of the conditions requires that Eskom would implement the recommendations of an independent assessment of its operations, which was commissioned by the National Treasury.

In February 2023, the Treasury appointed the German VGBE Energy Consortium to assess and investigate the operations of Eskom's coal fleet. The outcome of the assessment, which was concluded in July this year, will consider a concession model which could see OEMs playing a central role in turning around and improving the energy availability factor (EAF) and performance of Eskom's coal-fired power plants.

Why OEMs?

According to Govender, it is important to note that the root

cause of the current electricity crisis in the country is the lack of sustainable maintenance stemming from a long-running history of inadequate maintenance, not insufficient energy capacity, as is mostly reported. South Africa's fleet of coal-fired power stations has a 51% EAF, whereas many plants globally of the same age are operating at a much higher EAF of over 85%. Currently, says Govender, 80% of unavailable power is due to inadequate attention, with only 20% of the power stations on planned maintenance.

Over the years, a lack of proactive engagement with OEMs has hampered the determination, definition and optimisation of a detailed maintenance scope. The devaluing of OEM support has therefore impacted their ability to support Eskom effectively. One of the reasons for disregarding OEM engineering services is the perception that OEMs are expensive.

Govender emphasises however, that they offer a premium service which, of course, calls for a significant initial capital investment. But this is outweighed by the substantial return on investment through a much higher EAF over the lifecycle of the power plants. The comprehensive lifecycle support capabilities that OEMs provide are made possible by the strong skills base they maintain, and have invested in over the years, which constitutes a substantial overhead cost that OEMs carry.

In addressing the current power crisis, Govender believes power plant OEMs have an important role to play.



Babcock has been involved in the construction and maintenance of some of Eskom's flagship coal-fired power stations in the country, including the top-performing Lethabo Power Station (above, left) and others.

By their nature, OEMs offer end-to-end services – from design to supply, manufacturing, constructing, commissioning, operating, maintaining and guaranteeing the long-term performance of the boilers, turbines and generators, among other critical components of the power plants that they supply.

One of the sustainable ways of reviving Eskom's coal fleet is through the refurbishment of the power stations – restoring the plants to their near original state. Govender notes though that most of the power stations were built decades ago, and were designed for a certain coal quality available at the time.

With coal quality deteriorating over the years, OEMs – leveraging their access to new technologies, local expertise and global best practices – have the ability to upgrade the necessary components such as boilers and turbines, to allow the old power stations to operate at peak performance using the new grade of coal available. However, he makes the point that these changes require time to assess and correct, especially given that there have been some undocumented modifications to the power stations over the years.

“OEMs can bring a lot to the table in the quest to find a lasting solution to the incessant loadshedding,” says Govender. “They possess a comprehensive understanding, drawings and design performance parameters of the power stations. With their access to developing technologies, they can definitely improve the performance of the coal-fired fleet.”

The other key benefit of engaging OEMs is that they offer the spare parts needed to keep these power stations running at peak performance. “At Babcock, for example, we manufacture a fair majority of the parts for our boilers locally. OEM parts guarantee an exact replacement of what was originally included on the boilers, for example. This, in my view, is critically important and worth the cost that comes with it.”

A long-established OEM

As a leading manufacturer of boilers, Babcock has a long track record spanning some 130 years in South Africa, with an extensive installed base of over 1 500 boilers over this period. The company has been involved in the construction and maintenance of some of the flagship coal-fired power stations in the country.

Lethabo Power Station is one of those – and one of the top-performing power stations to date. The company was also involved in the construction of the first six units for Matla Power Station, five units for Hendrina Power Station and five units at Grootvlei Power Station.

Babcock also leverages OEM services to maintain and upgrade power stations that were originally built by other OEMs. Its engineering expertise enables it to execute modifications and improvements effectively. Some notable achievements include Kendal Power Station, where the company successfully executed a long-term maintenance contract from the date of its commissioning up to



OEMs like Babcock also provide the benefits of locally manufactured power plant equipment and components.

8 December 2021. At Matimba Power Station, the company successfully replaced a main steam system to enhance reliability.

Apart from building and maintaining power stations, the company has also expanded its scope of services with emissions abatement solutions. Having already successfully completed a NOx abatement project at a petrochemical plant in the country, where emissions levels were reduced to almost 40% below the legal requirement, Babcock has been awarded a contract to refurbish electrostatic precipitators at one of Eskom's power stations.

“Another area of competence is mainstream pipework. We have already demonstrated our competence in this area at two Eskom power stations. Babcock is the only company that has successfully executed a main system replacement from boiler to turbine,” says Govender.

Through its supplier development programmes, Babcock can directly empower local small and medium enterprises, micro-enterprises and qualifying small enterprises in the power value chain. “Through our Education and Training division, we have also demonstrated our commitment to developing skills, including those of artisans, mechanics and welders, for our own needs and for the broader economy,” Govender highlights.

In addition, Babcock leverages partnerships with leading international technology providers to ensure access and support from the best in the industry. “A lot of know-how resides within our organisation, but we can also tap into the strategic alliances we have with global technology partners such as that with Babcock & Wilcox in the United States. This partnership gives us access to the latest advances in technology and products which can be retrofitted on local power stations to optimise performance,” Govender concludes. □

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



Werner Fortuin,
SolarAfrica.

Regulating solar system providers

Solar photovoltaic (PV) energy has become an important part of South Africa's energy mix and will play a significant role in resolving the energy crisis. However, many service providers in the industry are still, in effect, 'unregulated'. Werner Fortuin, Head of Technical Operations at SolarAfrica, shares some insight into the dangers posed by unregulated installations and what prospective customers should be looking for when choosing solar providers.

Although prudent developers, EPCs and installers follow the applicable NRS (National Rationalised Specifications) SANS (South African National Standards) and IEC (International Electrotechnical Commission) Standards to ensure the safety and performance of their installations, unregulated service providers do not, and are likely unaware of the consequences of their actions.

As loadshedding continues, there has been a surge in the adoption of solar energy to keep the country's business sector operational. However, this booming industry has also seen the rise of unregulated solar power service providers.

The South African Photovoltaic Industry Association (SAPVIA) is one of the organisations that offers support and guidance to solar providers and, in effect, the wider market. SAPVIA promotes, develops, and helps grow the PV industry in South Africa. It offers members access to policy updates, market trends, and new technologies to promote a more regulated quality of installations. SAPVIA already has more than 700 members, and it regularly hosts working groups to address and solve various industry-related issues. Nonetheless, many service providers still opt out of the voluntary membership.

In Johannesburg alone, it is estimated that there are more than 20 000 unregistered solar systems. Although

many of these are residential, others belong to SMMEs. Unregulated service providers may be seen to offer less expensive options to customers, but the hidden dangers they present far outweigh any short-term savings. Compliance with regulations and good quality standards may increase costs, but these costs are quantifiable and can be readily validated through prudent cost-benefit analysis. However, the costs of non-compliance cannot be quantified, and costs related to damage to people, property and equipment can be exponentially higher than the initial installation costs.

A lack of compliance in the industry presents a significant threat to consumers and the broader solar energy industry. Unlike certified and licensed installers, non-compliant providers often lack the necessary training, expertise, and knowledge to design and implement systems safely and efficiently. Consequently, the chances of non-compliant installations, use of sub-par equipment, and inadequate maintenance increase. These risks can lead to reduced energy output, higher costs, and hazardous conditions that put the safety of on-site employees, as well as property, at risk.

One of the most concerning aspects of non-compliant solar service providers is the use of cheap and unreliable components. By cutting corners to save costs and optimise short-term profits, unlicensed operators pose a serious risk to their customers as they cannot ensure the long-term performance and safety of the systems and installations.

Another potential risk that comes with non-compliant solar systems is the possibility of rejected insurance claims, higher insurance premiums and deductibles, and in some cases the inability for the customer to insure their assets. This can leave businesses unprotected in the case of accidents or damages resulting from faulty installations. Reputable companies carry liability insurance, which provides essential protection to business owners against any mishaps or property damage that might occur during or after the installation process. Without this cover, businesses may face hefty repair bills or legal battles if issues arise due to poor workmanship.

It is noteworthy that the office of the Consumer Goods and Services Ombudsman (CGSO) has seen an increase in the number of complaints related to buying and installing solar systems and generators: it received 202 complaints



The C&I solar industry is set to see rapid growth and will play a major part in developing the new South African energy mix.

between February 2022 and 9 February 2023. These included compliance certificates not being issued, payment accepted but goods undelivered, and systems not installed within agreed timeframes. In addition, almost half of the suppliers involved refuse to cooperate with the office when it conducts investigations. For customers, Fortuin says, it simply is not worth the risk.

Skills development

On a positive note, Gauteng Premier Panyaza Lesufi recently announced that SAPVIA has endorsed the Gauteng government's programme to train 6 000 people as solar system installers. On completion of the 12-month solar system training initiative, the graduates will receive an NQF Level 5 qualification. The association will be overseeing the training and the curriculum to ensure it meets its standards. These are the kind of government initiatives that are needed to ensure that providers are accredited – and they contribute positively to the economy through skills development.

Government authorities and municipalities can play a more active part by conducting mandatory inspections for example, to ensure quality of installations, checking that the buildings are structurally sound and components are maintained. "We have come a long way, but there is still a long road ahead in ensuring widespread compliance to standards and good engineering practices," says Fortuin.

Business owners looking to install a solar system have the responsibility to conduct thorough research before

choosing a provider. It's important to do the research and check for proper licensing, certifications and customer reviews. Reputable solar installation companies will be transparent about their qualifications and are more likely to deliver high-quality, long-lasting solar systems that meet the customer's energy needs effectively.

SolarAfrica has robust quality management systems and strict Engineering, Procurement and Construction (EPC) guidelines in place to ensure its systems are compliant with local and global standards. Additionally, SolarAfrica has an in-house quality department that performs quality control checks throughout the project lifecycle and conducts regular audits to ensure compliance. "We only use trusted contractors who are 100% transparent with their work records, which we vet thoroughly," says Fortuin. "These should be non-negotiable standards for people seeking providers."

The C&I solar industry is set to see rapid growth over the next few years and will play a major part in developing the new South African energy mix. As it grows, it will become more strictly regulated, which will be a valuable benefit – for the industry and the country. "But until then, we need to work together – providers, industry associations, government, and consumers – to ensure the future stays bright, and in the safest way possible," Fortuin says. □

For more information visit: www.solarafrica.com

ENERGY MANAGEMENT + THE INDUSTRIAL ENVIRONMENT : PRODUCTS + SERVICES

Legal close progresses RMIPPPP hybrid power project

EDF Renewables achieved Legal Close on its Umoyilanga Project on 30 August 2023, with the signing of the Power Purchase Agreement (PPA) with Eskom, and the Implementation Agreement (IA) with the Department of Mineral Resources and Energy, for the hybrid renewable power facility to be built in South Africa.

The consortium of leading international renewable energy supplier, EDF Renewables, and privately held investment company Perpetua Holdings (Pty) Ltd, won approval for the Umoyilanga project bid in the South African government's Risk Mitigation IPP Procurement Programme (RMIPPPP), in March 2021. Early works have started, Financial Close is expected to be achieved by the second half of October 2023 and the construction period, in line with the PPA, is expected to start immediately following that, with commercial operations scheduled to begin in May 2025.

This innovative project combines solar, wind and battery storage technologies to offer dispatchable and reliable power to the national electricity grid. The project will operate as a virtual power plant, combining generation from two sites which are 900 km apart: Avondale in the Northern Cape, with 115 MW of solar PV and 30 MW of battery storage, and Dassiesridge in the Eastern Cape,



All the parties at the signing of financial close on the Umoyilanga hybrid project.

with 63 MW of wind and 45 MW of battery storage.

Following the signing of the PPA with Eskom for the Umoyilanga Project, EDF Renewables also signed a turnkey EPC Agreement with China Energy Engineering Corporation (CEEC), to proceed with the final design, procurement and construction of the 115 MW Avondale PV plant.

The combination of wind and solar resources with battery energy storage enables Umoyilanga to provide 75 MW, on demand, between the hours of 05:00 to 21:30, in line with the requirements of the PPA, and demon-

Continued on page 15

85% efficiency in trigeneration plant

Stefan Ziegler, Beckhoff Automation

In thermal power plants, more than 50% of the energy is usually lost in the form of heat. At Melbourne Airport, the natural gas driven power plant uses the waste heat to generate heat and cooling, thus achieving a much higher energy yield. This process is supported by Beckhoff Embedded PCs and EtherCAT I/Os enabling fast control and regulation of the plant, which automatically switches to emergency power supply in the event of a power failure.

Ideally, important facilities such as public authorities, hospitals or airports are equipped to maintain their operations, at least partially, when the grid supply is lost. In this regard, the 8 MW power plant at Melbourne Airport is designed to provide backup power. In normal operation, the plant covers part of the airport's energy needs with the grid-parallel supply of clean power. The contract to design and install an automation system for the complex power generation plant was awarded to engineering firm AIEglobal, based in Lake Wendoree, Australia. It specialises in automation and electrical engineering services for the manufacturing and building sectors. The project was implemented under the direction of lead electrical engineer Gary Brown.

The system comprises four 2 MW natural gas driven generator sets. Heat exchangers on the engine exhausts provide hot water for general airport consumption and a source of heat for one of the two absorption chillers, which can generate cooling using the heat energy input. Further water heat exchangers on the engine jackets provide heat energy for the second chiller, which is used in times of higher cooling demand. As a result of trigeneration – that is, combined cooling, heat and power generation – the overall plant has proven to be capable of transferring 85% of the gas energy input into usable energy for the airport.

Substantial cost savings

AIEglobal used seven CX2020 Embedded PCs for the automation of the generator sets (gensets), hot water retic-



The EtherCAT I/Os installed on each genset significantly reduced the extent of cabling required to connect to the central control room.

ulation and overall plant control, including HV substation circuit breaker switching. For fail-safe plant operation, the controllers are configured in a ring topology network along with a primary and secondary redundant SCADA system, with all communications using OPC UA.

Heat exchangers on the engine exhaust and engine jacket of each generator feed two separate heat exchanger systems, with high-temperature hot water being generated by the exhaust gas boilers. Distributed EtherCAT I/O modules are used on each generator set for system networking. Implementing EtherCAT communications on each genset considerably reduced the amount of electrical wiring required to connect the gensets to the central control room. The central control cabinet size could also be reduced to a single 800 mm tier. The cost savings of this approach are substantial, and with the use of EtherCAT there is no performance degradation as is common with some field-buses in extensive installations. The I/O scan time for the four gensets and central controller I/O is less than 1 ms, which enables optimum response times for fast PID control and control during emergency power conditions. To further ensure a high reliability level, EtherCAT redundancy was implemented on all remote I/O modules.

Short cable runs in the Modbus RTU network

The system includes over thirty variable speed drives (VSDs) to control pumps and fans and the VSDs are controlled via ten Modbus RTU serial communication networks.



Implementing EtherCAT communications on each generator reduced the wiring requirements and the central control cabinet size to a single 800 mm tier.

Each Modbus network uses an EL6021 EtherCAT Terminal as Modbus master terminal connecting to an average of four VSDs. This approach keeps the RS485 cable runs short, enables connections based on required functionality and consequently achieves the high performance necessary for PID control of important process variables by the relevant CX2020 controller.

Common protocols in process automation

The automation of the trigeneration project required the use of a range of communication protocols. The CX2020 controllers, along with the directly connected EtherCAT I/O proved very powerful in this respect. The protocols used and their communication functions are set out below:

- OPC UA: CX2020 to CX2020, and SCADA system to CX2020
- Modbus/RTU: CX2020 to variable speed drives, circuit breakers and energy meters (electrical and gas)
- Modbus/TCP: CX2020 to gensets, Ethernet gateways to third-party genset controls, Modbus RTU gateways, circuit breakers, HV and LV systems and HMI units for the gensets
- M-Bus: CX2020 to gas energy meters (implemented in TwinCAT)
- DNP3: CX2020 to SCADA system.

Productivity in IEC 61131-3 programming

By far the biggest expense in implementing modern control systems is the cost for software application. This includes the functional description in the initial design, coding, commissioning as well as ongoing support and fault diagnostics. Gary Brown explains: "Based on many



Seven CX2020 Embedded PCs were selected to automate the four 2 MW gensets, the heat exchangers and the overall plant control system, as well as the connection to the SCADA system.

decades of experience, I have found that the use of the IEC 61131-3 line-based graphical function blocks provides the highest level of useful information on the PLC programmer's screen. The TwinCAT Engineering platform, based on Visual Studio, provides a very fast and efficient method for program entry, debugging and ongoing support. Most conventional PLC systems use a spreadsheet type of presentation for programming, which is often slow and tedious to use and limits productivity."

He adds: "I have noticed over recent years the software implementation of control system projects using high-level languages that were not designed for real-time control, doesn't always work as intended. IEC 61131-3 has evolved over time, and for good reasons. So we were very glad that TwinCAT Engineering provided us with a user-friendly interface for IEC 61131-3 programming." □

For more information visit: www.beckhoff.com

ENERGY MANAGEMENT + THE INDUSTRIAL ENVIRONMENT : PRODUCTS + SERVICES

Continued from 13

strates that renewable energy can provide reliable, dispatchable power at a competitive price.

To achieve this, batteries at Dassiesridge will generally charge from the wind energy at night, discharging power in the morning until the sun rises. The solar installation at Avondale will supply the bulk of the energy during the day, supplemented by wind energy from Dassiesridge. Excess solar energy will be used to charge the batteries at Avondale, which will discharge after sunset.

A sophisticated energy management system will give instructions to the assets across both sites to optimise the power supply in real time, depending on weather forecasts and Eskom's requirements. The low-carbon electricity produced will help to meet the electricity needs of 120 000 households for 20 years, based on the Eskom residential consumption average of 3 319 kWh/household.

The project is committed to providing around 450 full-time jobs to local, South African citizens, during the construction period. Additionally, it is committed to contributing about 40% of the capital expenditure

to local content (procuring South African goods and services). Over the 20-year operational period, 1.2% of revenue will be invested in local communities through socio-economic initiatives.

Tristan de Drouas, CEO of EDF Renewables in South Africa, said: "The signing of the PPA with Eskom is a crucial milestone before financial close and the launch of the construction phase. Our teams in Gqeberha and Cape Town have been working very hard, so today's legal closing is a significant achievement on a long journey.

"We look forward to realising this project in South Africa, supporting the government's and our ambitions to develop low-carbon energy solutions for the future, and to help to solve the loadshedding crisis," he said.

Perpetua Holdings Director, Logan Govender added: "We have forged a sound collaboration and true sense of partnership with EDF Renewables on this project and we are excited by the contribution that, collectively, we are confident it will deliver to South Africa."

For more information visit: www.edf-re.co.za

African leaders commit to pursue green and inclusive growth

African leaders ended the three-day Africa Climate Summit held in Nairobi, Kenya, in early September, with a call to the global community to act with urgency in reducing emissions, honour a commitment to provide \$100 billion in annual climate finance to developing countries, and swiftly operationalise the Loss and Damage facility agreed at last year's COP27 in Sharm El Sheikh, Egypt.

For their part, African leaders committed to developing and implementing policies, regulations and incentives aimed at attracting local, regional and global investment in green growth and inclusive economies.

In the *African Leaders Nairobi Declaration on Climate Change and Call to Action*, they undertook, among other aims, to:

- Further accelerate the operationalisation of the Africa Continental Free Trade Area (AfCFTA)
- Advance green industrialisation across the continent by prioritising energy-intensive industries to trigger a virtuous cycle of renewable energy deployment and economic activity, with a special emphasis on adding value to Africa's natural resources
- Redouble efforts to boost agricultural yields through sustainable agricultural practices, to enhance food security while minimising negative environmental impacts.

This, the declaration states, will require mobilising more capital for both development and climate action, particularly adaptation. The leaders also called for the overhaul of the current global financial infrastructure, which they said does not meet the needs of developing countries.

In his closing remarks, President William Ruto of Kenya emphasised the continent's rich endowments: Africa's potential is "made up of young, resilient and motivated human capital, natural resource wealth and green energy potential," Ruto said.

These qualities, he said, "would define the future of global opportunity for unprecedented prosperity and a new paradigm of industrialisation that respects the environment and supports our planet's capacity to sustain biodiversity."



The Africa Climate Summit was held from 4 to 6 September 2023.

The Nairobi Declaration takes into consideration young Africans' demand for a larger role in decision-making on climate action, as captured in a Youth Declaration produced just ahead of the Africa Climate Summit and presented to President Ruto. The Youth Declaration also pushes for the accelerated establishment of a Global Green Bank and a New Global Financial Pact that will prioritise young people and their interests in climate financing.

The Africa Climate Summit yielded important commitments in addition to the declaration. Dr Sultan Al Jaber, the President-designate of COP28, announced a \$4.5 billion initiative involving several UAE-based entities and Africa50 to develop 15 gigawatts of clean power in Africa by 2030. The funding is projected to catalyse at least \$12.5 billion in additional financing from multilateral public and private sources.

US Special Envoy Kerry announced a new Biden administration commitment of \$3 billion annually to support adaptation as part of the US PREPARE initiative.

The African Development Bank Group's President Dr Akinwumi Adesina announced a \$1 billion facility to accelerate climate financing for Africa's youth businesses.

In remarks to the assembled leaders, Dr Adesina emphasised: "Africa must develop its own carbon markets, properly price its carbon, and turn its vast carbon sink into new sources of wealth. Africa cannot be nature-rich and cash-poor," he said.

For more information visit: www.afdb.org



The agreement was signed by AUDA-NEPAD CEO Nardos Bekele-Thomas (left) and IRENA Director-General Francesco La Camera.

Advancing regional interconnections in Africa

The International Renewable Energy Agency (IRENA) and the African Union Development Agency (AUDA-NEPAD) signed an agreement on 4 September 2023 aimed at supporting African countries in their efforts to achieve the African Union's Agenda 2063 and the United Nations Sustainable Development Goal 7 to ensure access to affordable, reliable, sustainable and modern energy for all. The agreement was signed by IRENA Director-General Francesco La Camera and AUDA-NEPAD CEO Nardos Bekele-Thomas,

on the margins of Africa Climate Week in Nairobi.

"Acknowledging that 80% of the global population that is without access to electricity lives in sub-Saharan Africa, it is evident that the existing energy infrastructure cannot adequately meet the continent's needs," said La Camera. "The creation of a more equitable energy system – one that leverages a diverse mix of Africa's abundant renewable resources – is dependent on a more interconnected, flexible and reliable power grid

Continued on page 17

Moving beyond loadshedding

“Over the past 16 years, South Africa’s citizens have had to contend with a great deal of loss and uncertainty as a consequence of loadshedding. We have all lost something – one of the biggest being the confidence that we are in control of our lives and our businesses,” says Roger Hislop, Energy Management Systems Executive at CBI energy.

“Now, just three-quarters of the way through 2023, South Africa has already experienced more power outages than it did during the whole of 2022, and at varying levels of intensity,” he adds.

Businesses and individual homeowners have had to invest billions of rand in their own diesel generators, solar PV and battery systems. “More billions will be spent, with companies pulling investment from manufacturing capacity, facilities, stock, and R&D and pushing this into just keeping the lights on. We have all had to face the fact that, in the private sector, we have to take charge of our own energy future.”

With a view to recovering control of our lives – for our families and our businesses – Hislop outlines five steps towards moving beyond the impact of loadshedding and achieving energy security for the country’s future.

Reduce energy consumption

Reduce waste and inefficiencies and cut unnecessary costs by turning off loads when possible and shifting loads to when they put the least strain on supply.

Optimise generation

Use what you have more effectively. Run loads during the day to use up solar capacity (if that is an option for your business) and run generation sets at optimal load level to reduce diesel consumption and maintenance costs.

Automate demand-side management

Shed what you need to and when you want to shed it –

and, rather than doing this manually, the most efficient way to do it is by automating load control. Reduce large loads, and cut down on the large number of small loads that all add up.

Curtail demand

Use power where and when it makes sense to do so and set hard limits on power and energy. Hard limits on power (kilowatts) means making sure that not too much load comes on at the same time. Hard limits on energy entails budgeting your kilowatt hours and sticking to that. Energy is, in this respect, a finite resource to be used wisely.

Plan around energy independence

What do your essential systems need and can you supply them? Do you have enough solar to top up batteries? Do you have enough diesel stored?

“In every one of these steps, the key is knowing in great detail what you are using power for, when and why,” Hislop emphasises. “This requires granular, per-minute metering at multiple points in the electrical distribution network within a building or facility. More importantly, it means implementing a simple but robust, electrical load management system, where you can turn things on and off at the click of a button. Or, better yet, set up some automated rules and let the computers click the button.”

In closing, Hislop says, “We have lost some things that we didn’t know were so central to our lives – our comfort and sense of being in control. But the survival of our economy and the jobs it creates are at risk. We have navigated the impacts of ongoing power outages, we need to make a plan, sort it out, and carry on as a country.”

For more information visit: www.cbi.energy



Roger Hislop, Energy Management Systems Executive at CBI energy.

Continued from page 16

across regions. This partnership serves as a pivotal step towards achieving that objective.”

AUDA-NEPAD CEO Nardos Bekele-Thomas underscored the findings of the Continental Power Systems Masterplan (CMP), designed to provide a strategic roadmap for connecting Africa’s five power pools, emphasising the critical need for immediate and proactive measures in Africa’s electricity sector.

She highlighted that, “the current business as usual trajectory falls significantly short of achieving universal electricity access by 2040, which necessitates a substantial increase in investments to elevate the continent’s installed capacity from 266 GW to some 1 218 GW. To realise this ambitious target, an estimated USD 1.29 trillion in cumulative investments will be essential, to establish a robust continental electricity mar-

ket valued at USD 136 billion by 2040. It is imperative that we take urgent and strategic actions to accomplish these transformative goals.”

The continued investments in cross-border transmission infrastructure and a deepening of electricity trade will allow African countries to accelerate their energy expansion and transition by sourcing electricity from a wide range of competitive, clean energy resources, anchoring on the continent’s five power pools to create, potentially, Africa’s Single Electricity Market. Since 2021, IRENA, in partnership with other organisations, has supported AUDA-NEPAD and African stakeholders in developing the CMP. The masterplan aims to establish a long-term, continent-wide planning process for power generation and transmission that involves all five African power pools.

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



Babalwa Kekana heads up operations and maintenance services at Nordex Energy South Africa.

Raising the representation of women in renewable energy

In the renewable energy industry where women constitute just 14% of the workforce, Babalwa Kekana demonstrates that the status quo can be challenged. Leading a team of 81, which comprises around 80% men and 20% women, Kekana is the Head of Services for Nordex Energy South Africa, which undertakes the operations and maintenance function for nine wind farms.

Most of the team are technically skilled people who have qualifications in mechatronics, mechanical, and electrical disciplines, and most have completed the Nordex wind turbine technician training. Six of the service technicians are women.

“The renewable energy industry in South Africa and globally has a long way to go to achieve gender parity and accommodate more diversity. Generally, there are fewer women than men in leadership and technical jobs in the renewable energy sector and this is evident too in my division, where technical and operational skills are needed.

“The general perceptions of appropriate gender roles driven by industry and societal norms, and the physical nature of technician roles, contribute to the slow change to see more women in the industry. I’d like to see this challenged as I believe women have unique qualities, which include exceptional management and interpersonal skills that can add value and help to create a thriving industry and organisations,” said Kekana.

She entered the industry in its early years, a decade ago, describing the technical and commercial environment as demanding and at times intimidating, especially in relation to the complexity around wind turbine generators, which requires technical knowledge and an understanding of mechanics. However, through mentoring and her ability to face challenges head-on, Kekana was able to take on the many demands.

“Personally, I have maintained a curious and flexible mindset throughout my career and had the great privilege of observing the industry’s development from the ground up. I benefitted directly from being mentored by experienced international project managers during my early years who coached me through the entire value chain of the construction and operations of renewable projects. This learning has been profound and critical to my development, far more than any academic curriculum. It is this experience that has enabled me to develop my leadership capabilities and provide direction and guidance to my service team,” she said.

However, she points out that despite the company’s successful efforts to increase gender representation across management, it is a continuous challenge to access a pipeline of talent in the turbine maintenance areas of the business.

To move beyond the current gender status, deep-rooted gender assumptions, which are sometimes cultural and unconscious, need to be tackled, she says. A key factor is increasing the number of women studying and working in STEM (science, technology, engineering and mathematics) fields.

For the sector, the starting point, Kekana believes, is a clear industry plan that seeks to develop a diverse pipeline of women in the renewable energy industry. Secondly, organisations need to focus on recruiting candidates with transferable skills who can bring diverse perspectives to the field, and thirdly, renewable energy companies can set targets to increase the presence of women on boards, in leadership, and in the workforce.

“During our recruitment process for the 2023/2024 internship programme, we noticed the low number of women putting their hands up for internship opportunities, which means awareness of the industry opportunities is still limited. However, we will continue our efforts to help change this unfounded perception,” Kekana said.

Working together with industry associations to help effect broad change, Kekana supports the Gender Diversity Working Group’s endeavours to increase skills development from the grassroots up. In addition to this, the Energy and Water Sector Education and Training Authority (EWSETA) women’s management development programme, was launched this year in collaboration with the South African Wind Energy Association (SAWEA), to develop sector leadership.

“I am directly involved with the SAWEA Working Group’s recently launched ‘Management Development Programme for Women in Renewable Energy’ along with three of my colleagues. The exposure thus far has been very valuable in terms of networking with industry colleagues, in similar roles as myself,” Kekana said.



Nordex Energy South Africa (NESAs) has a total installed capacity of more than 1 GW in nine wind farms which it owns and operates around the country.

For more information visit:

www.nordex-online.com/en/south-africa/

Visualising sound to detect air leaks

Focusing on the use of air leak detection equipment to prevent downtime, Fluke here highlights the case of a leading manufacturer that literally helps keep the wheels of commerce moving. As one of the world's foremost after-market manufacturers of wheel-services equipment, the company designs, builds and markets products under trusted and distinguished brands.

In many of its processes, the manufacturer relies on compressed air to run about 400 tools in its 14 000 m² plant – all from a 200-horsepower compressor. "We use compressed air everywhere in the plant – for pneumatic drivers, robotic welders, the laser cutter, and powder-coating equipment," says the Chief Operations Officer. With compressed air comes noise – and air leaks.

Reducing energy waste

Air leaks cause compressed-air-driven equipment to work harder, leading to wasted energy. The potential for air leaks in this plant is increased with the use of older equipment accumulated over the last few decades through various plant consolidations. Hearing air leaks can be challenging in a noise-filled environment, so most leak detection activities are conducted after hours.

"Usually, we wait until the building is very quiet during an off shift or a maintenance shutdown, and we just try to hear air leaks as best we can," says the Maintenance Supervisor. "We also use bottles of soapy water to spray on an area where we think there may be a leak and look for bubbles." This spray and watch method requires maintenance team members to be close enough to the possible leak to hear it and spray the solution in the correct area.

Another way to find compressed air leaks is to use an ultrasonic leak detector. This method requires a highly trained individual and significant time to locate all leaks. Small leaks can be challenging for the human ear to hear, and not all leaks are in easily accessible areas. It can be a daunting task.

See the sound you can't hear

When Fluke approached the manufacturer about testing its ii900 Sonic Industrial Imager – an acoustic imager that can pinpoint leaks from 50 metres away in a noisy environment – the manufacturer was sceptical but more than willing to try it.

The testing involved the maintenance lead and the maintenance technician, who alternated through a period of eight hours, surveying the entire plant for leaks using two Fluke industrial acoustic imagers. The Fluke industrial acoustic Imager let them 'see' sound as they scanned hoses, fittings, and connections for leaks. The results of their leak survey surprised the manufacturing team. They found overall 143 leaks – big and small – and all in a single workday.

"I questioned some of the leaks the tool was finding, so I sprayed those spots with soapy water and saw that



Fluke's ii900 Sonic Industrial Imager (acoustic imager) can pinpoint leaks from 50 metres away in a noisy environment.

the tool was right; there was a leak exactly where it said there was," says the maintenance technician.

The maintenance manager was particularly impressed by the ii900's ability to find even the smallest of leaks. "Small leaks are very difficult to find," he says. "I noticed there were some leaks that the ii900 found that we would never have found by spraying with soapy water. We found one leak on an airline back in the paint room that we couldn't feel by putting a hand around it, or hear, but it was an obvious leak that had been there for some time."

The ii900's built-in acoustic array of tiny, sensitive microphones generates a spectrum of decibel levels per frequency. Based on this output, an algorithm calculates a sound image known as a SoundMap™ which is superimposed on a visual image. The SoundMap is automatically adapted depending on the frequency level selected so that background noise is filtered out. The SoundMap is updated on screen 10 to 20 times per second.

Long-range air leak detection

The team quickly identified a leak 26 feet up in an overhead airline. "I was amazed at how easily you could just pick up the Fluke sonic imager and walk the aisles in the plant scanning an overhead area and very quickly spot leaks," says the maintenance manager.

Besides helping to find hard-to-detect leaks, the manufacturing team notes that the ii900 offers substantial potential for saving time and costs. "Once we find and fix most of the leaks for the first time, we can probably do follow-ups and scan the whole plant in about an eight-hour shift." This would help save overtime costs because the team can scan for air leaks during the regular day shift rather than after hours.

It also will save energy and wear and tear on the equipment. "Air leaks just draw money out of the company," says the maintenance manager. "They are tough to locate, so it's hard to direct the maintenance team to the correct spot. The ability to take a photo of the leak with the Fluke sonic imager and send it to the maintenance team as part of the work order is extremely valuable. We think it'll save us money – in labour and energy costs."

For more information contact Comtest.

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Email: sales@comtest.co.za, visit: www.comtest.co.za

Speed monitoring solutions for conveyor belts

Conveyor belts are widely used across various industries, ensuring the smooth and efficient movement of materials, products and components in the manufacturing process. The reliable operation of conveyor systems relies on accurate monitoring and control, particularly in maintaining appropriate belt speeds. ifm, a globally recognised leader in industrial automation and sensor technology, has introduced innovative speed monitoring solutions that address the critical needs for precision, safety, and efficiency in conveyor belt operations.

Conveyor belts serve as the circulatory system of industries, transporting goods efficiently and with speed. The optimal operation of conveyor belts hinges on maintaining the appropriate speed. Irregularities in speed can lead to a cascade of issues – from decreased productivity and compromised product quality to potential safety hazards. ifm's speed monitoring technology offers a comprehensive suite of solutions tailored to suit different industries and applications.

One of the standout solutions is its non-contact inductive sensing technology. This makes use of sensors that can detect metallic targets without any physical contact. In the context of conveyor belts, the technology can be employed to monitor rotational speed. A small metal target is affixed to the rotating component of the conveyor system, and the sensor detects the target's passing frequency to calculate the speed. The non-contact nature of the technology ensures minimal wear and tear, reducing maintenance needs, while maintaining accuracy.

Accuracy is a priority in speed monitoring, especially in industries where precision is key. ifm's technology boasts high accuracy levels, in some cases achieving deviations of less than 0.1% from the actual speed. This level of precision translates into enhanced quality control, reduced material wastage, and improved overall efficiency.

However, accuracy alone is not enough to ensure the seamless operation of conveyor belts. Reliability and



ifm's speed monitoring solutions ensure precision, safety, and efficiency in conveyor belt operations.

real-time monitoring are equally important. ifm's speed monitoring solutions offer continuous data transmission, providing operators with a real-time view of the conveyor's speed. This instant access to critical data enables operators to make informed decisions promptly. Furthermore, the sensors can be integrated with automation systems, allowing for automatic adjustments to maintain the required speed and prevent deviations.

Safety is another critical factor in industrial settings. Inadequate speed monitoring can lead to accidents, equipment damage, and the risk of injury to personnel. In ifm's solutions, these concerns are addressed with safety-oriented features. Emergency stop systems can be integrated with the sensors, ensuring that if an abnormal speed is detected, the system can be halted instantly to prevent any potential accidents.

ifm's speed monitoring technology offers a range of sensor options – from inductive sensors to magnetic encoders, each technology has its particular advantages, making it suitable for different conveyor systems and environments.

For more information contact ifm South Africa.

Tel: +27 (0)12 450 0400

E-mail: info.za@ifm.com

Visit: www.ifm.com/za

OEM pressure sensor for mobile machines

The MH-4-CAN, based on the MH-4 from Wika, is a powerful, reliable and resilient pressure sensor for mobile working machines.

Even under demanding conditions, the sensor delivers constant, precise measured data and ensures high operational safety. The distinguishing feature of the MH-4-CAN is, as the name suggests, the CANopen or SAE J1939 serial interface. This enables it to be used in complex machines and offers the advantage of simple and cost-effective system expansion with the bridging of large distances and, simultaneously, ensuring signal stability and signal integrity.

With its CANopen or SAE J1939 serial interface, the MH-4-CAN is designed for use in complex mobile machines.



The MH-4-CAN meets high demands and provides high precision measurements operating at temperatures between -40 and +100°C. With its up to three times overload safety, the sensor withstands hydraulic pressure spikes – and is optionally available with a restrictor. Metallic shielding means the MH-4-CAN works interference-free at field strengths of up to 60 V/m. In addition, vibrations up to 40 g and shocks up to 100 g do not affect the measurement quality.

For more information contact WIKA Instruments.

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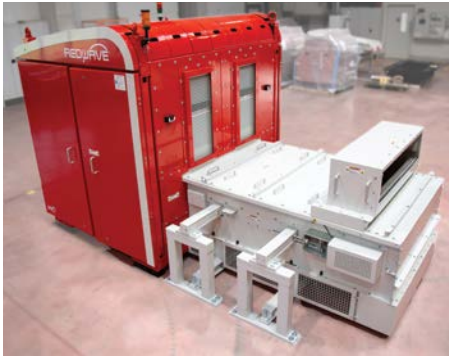
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The REDWAVE XRF fine has been well received in the market as customers confirm the machine's exceptional performance and precision.

Fine sorting of metals for recycling

REDWAVE, a world leader in XRF sensor-based sorting technology, has introduced a new generation of sorting machines. The cutting-edge REDWAVE XRF fine sorting machine sets new benchmarks for sorting fine materials in the metal recycling industry. It can accurately

detect and sort a blend of non-ferrous metals from a size of 4 to 25 mm, to produce high-quality products such as pure copper, brass, zinc and precious metal fractions.

Metal recycling presents many benefits, including energy savings and preserving valuable resources. For metal recyclers, fully automated sorting with X-ray fluorescence (XRF) technology has proven to be economical and efficient for years.

However, a challenge arises in sorting fine materials (4 to 25 mm) without losses. Conventional sorting machines typically use a chute system, which works well for coarser materials, but presents some drawbacks when handling fine materials. These include chute behaviour, changes in trajectory, and the adherence of contaminated parts. These limitations can result in deteriorating quality in the sorted material and a reduction in output.

REDWAVE XRF fine has been developed specifically for materials sized from 4 mm. The machine employs a

belt system instead of a chute system, drawing on the company's extensive experience and cross-application know-how. Compared to conventional chute systems, the belt system offers maximum precision, which is particularly advantageous when sorting fine metals so they can be precisely identified and accurately ejected. The belt system offers significant benefits over the chute system when handling fine, small, and round materials.

The new machine is designed for ease of access and maintenance, including quick belt changes when needed.

It is loaded with energy-saving valves optimally arranged and spaced to maximise sorting accuracy. The REDWAVE XRF fine also boasts innovative sensor technology that offers fast scan rates, a higher resolution, and precise material detection. Additionally, REDWAVE is independent of supply chains.

With these developments, the REDWAVE XRF fine sorting machine can sort fine materials efficiently, setting new standards in performance and precision for metal recycling.

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

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Homegrown tech to monitor JoJo tanks



JoJo Tanks has developed a remote monitoring application and related IoT devices for its water storage tanks.

South African company JoJo has a history of innovation, since founder Jan Joubert cooked plastic in his farm kitchen to pioneer roto-moulding of large plastic containers. Forty years later, JoJo still aims to be at the forefront of development that brings affordable solutions to domestic, agricultural and commercial water storage and backup supply.

In September, South Africa's largest water tank manufacturer, JoJo Tanks, which has been proactive in adding to its range of products as a holistic water solutions company, launched a remote water monitoring smartphone application – JoJo Monitor. The application is available from the Apple and Android stores.

In partnership with a local engineering company, JoJo has spent four years developing the remote water monitoring smartphone application and three IoT devices. The JoJo IoT devices can monitor tank levels, measure water consumption, and detect water in places where it either should or should not be ponding. The first device to be launched is the JoJo Tank level monitor.

The JoJo Monitor application has an easy-to-use interface, which allows for user defined alerts and setup, using Bluetooth for the initial activation and testing, and live readings or real-time monitoring within reading dis-

tance of the device. Remote monitoring is carried out via the Sigfox network. Each device is supplied with a free-of-charge 12-month subscription to Sigfox. Information can be shared among several users.

The tank level monitor uses radar, which makes for more accurate reading than ultrasound as it does not pick up the sides of the tank. "Remote level monitors allow the user to manage what they can't see: the levels of water inside their tanks," says Sebasti Badenhorst, Sales and Marketing Executive for JoJo.

"The JoJo tank level monitoring device is easy to use and install on top of the JoJo tank. It has been designed to be flexible so it can be used in most applications, or in scalable solutions to incorporate a collection of tanks. It is calibrated for the range of JoJo vertical, slimline and horizontal tanks and allows for interconnected tanks, but the configuration can be customised for any tank," Badenhorst says.

The app can be downloaded directly from the app store and is compatible with IOS, Google Play and Android platforms. The device is, like the JoJo Tank, developed in South Africa by JoJo and is supported by a local call centre.

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

A flowmeter to reduce non-revenue water

Kamstrup has introduced the flowIQ® 4200, which it describes as its biggest water meter to date. It offers a metering solution that spans small households, commercial buildings and district metering. For the measurement of large water flows in commercial buildings and districts, the flowIQ® 4200 offers ultrasonic precision up to 1 000 m³/hour – over its full lifetime.

“flowIQ® 4200 is the perfect meter to complete our product portfolio. We are happy to launch a meter tailored to the needs of the biggest water suppliers and hope to help them save money, time and the environment – now and in the future,” says Mads Sckerl, Senior Vice President of Kamstrup’s Water Division.

flowIQ® 4200 retains the high quality of all Kamstrup meters and offers top-of-the-line accuracy based on ultrasound technology. This makes it an ideal solution to reduce non-revenue water in larger distribution networks.

As with all its meters, Kamstrup is committed to producing, testing and calibrating on-premises, so customers receive a solution that delivers optimum service over a long period, saving money over the duration of operations.

flowIQ® 4200 has a lifetime of up to 20 years. It delivers ultrasonic precision and pinpoint accuracy across flow ranges. Split flanges ensure flexible and easy instal-



flowIQ® 4200 offers a metering solution for diverse water flow applications.

lation. Batteries can be changed to extend the meter’s life. flowIQ® enables accurate billing of large users of water.

For more information visit: www.kamstrup.com

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Smart in sensing





OMRON's V450-H DPM handheld scanner decodes direct part marks efficiently.

Decoding direct part marks

Direct part marks (DPM) are the language of industry – codes, symbols, and text etched or printed directly onto parts, beyond the limitations of labels. Often taking the form of Data Matrix or QR codes, DPMs play an important role in traceability across various sectors, particularly in the automotive and electronics manufacturing industries.

The main advantage of DPM codes is their permanence, as they are permanent marks that resist removal, obscuration, or damage. They are especially useful where traditional labels fail – on textured surfaces that reject adhesion, or miniature parts where labels cannot find a footing. DPM codes endure as long as the parts themselves, providing for 'cradle-to-grave' traceability.

The challenge is that, unlike the traditional bold black barcodes on white backgrounds, DPM codes present low contrast marks, etched into the core of the part. Several variables can affect their readability, including how they appear and the surface on which they appear.

For instance, DPM codes etched onto curved or uneven surfaces may raise gleaming reflections that would confuse barcode readers. The surfaces on which DPM

codes are placed are most often riddled with imperfections – granules, stripes, streaks, each adding a layer of complexity to their deciphering and reading. This is where the new imager-based OMRON V450-H reader works, using algorithms created to decode DPM codes reliably. In the shadows, low-angle lighting and vivid LEDs define an accurate contrast to elevate code visibility.

OMRON's V450-H rugged handheld scanner is designed specifically for industrial DPM reading. It sets new industry standards for durability and performance as well as providing reliability and ease of use.

With its advanced X-Mode decoding algorithms, the scanner ensures consistent readability of even damaged, distorted, or complex directly marked codes, and delivers remarkable decode rates. Out-of-the-box performance eliminates the need for extensive setup in most applications, supporting ease of use.

For more intricate scanning tasks, the V450-H offers the WebLinkPC user interface, a user-friendly and intuitive configuration tool. This interface streamlines the setup process, making it easy to optimise the scanner for challenging applications. Whether for high-density codes or specialised requirements, the V450-H can be adapted easily.

For more information visit: www.industrial.omron.co.za



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A single source for electrical termination products

Pratley is well known in the electrical industry for its high-quality cable glands and junction boxes – and the company also manufactures and supplies a range of other electrical accessories that complement these products, says Marketing Director Eldon Kruger.

PVC electrical tapes

When fitting a cable gland into an installation electrical tape is needed to insulate the connection to the apparatus. Pratley supplies PVC electrical tapes for normal application and a flame-retardant version. The latter is specified mainly in large industry, mining, and by municipalities. Both PVC tape ranges comply with SANS 122, a requirement of most large institutions.

Specialised tapes for high voltage applications include Pratley Rubber Tape, a tough, insulating, and self-amalgamating tape ideal for insulating busbars, transformer bushings, cable tail connections, and high voltage terminations.

Pratley's High-Tension Splicing Tape, a high quality self-fusing tape with excellent electrical properties, is also widely used. The tape is ideal to splice electrical terminations and for corona resistant insulation. The breakdown voltage of the tape is 23 kV per 0.5 mm. All Pratley tapes are packaged in useful reusable containers to protect them from contamination, like steel filings or coal dust, when stored in a toolbox.

Blanking plugs

The company also supplies a wide range of blanking plugs to blank off unused entries on any junction box with an unused open cable entry. They are available in both nickel-plated brass and a tough engineered plastic. The blanking plugs are for general-purpose applications or for use in explosive atmospheres / Ex rated applications.

Cable retainers

Cable retainers are used to anchor cables or piping onto angle iron, either 25 mm or 50 mm. Small or large versions are available to suit different types of strapping material, from cable ties to stainless steel strapping. Each retainer has four possible fitting positions – to be selected to suit the cable size that needs to be clamped to the angle iron. The user simply turns the retainer to the correct size to match the size of the cable.

"For most electrical installations these products are needed to complete the installation," Kruger says. "Sourcing them all from a trusted supplier means customers do not have to shop around for these accessories. It saves a lot of time and resources for the end user."

Kruger highlights that Pratley conducts ongoing research and development to meet the needs of its diverse customer base. "We have competent and skilled design engineers, constantly developing new and innovative product solutions for our customers. We also have a well-equipped, state of the art electrical testing facility to develop and test new products."

Pratley prides itself on its customer service and developing innovative solutions for its customers. It also has highly qualified technical staff in the main centres where it operates, both locally and internationally, to assist with any application requirement.

"It is Pratley policy to produce products that outperform any other directly competing product on the world market. This is a very bold statement to make, and we stand by it," Kruger emphasises. The statement is printed on all products manufactured and supplied by Pratley.

For more information contact Pratley.

Tel: +27 (0)11 955 2190

Email: sales@pratley.co.za

Visit: www.pratleyelectrical.com



Cable retainers are used to anchor cables or piping onto angle iron, for safe electrical installations.

Touch buttons with integrated audible alarm

The new K50 Pro Touch Button family from Turck Banner includes models with an integrated audible alarm, expanding the product functionality to provide additional indication and feedback and improving the interaction between operators and equipment.

The K50 Pro Compact with display models have an integrated 4-digit, 7-segment display and two independent touch areas. The integrated audible alarm models are available with 14 different tones with customisable intensity.

This multicolour RGB touch button is ergonomically designed to eliminate hand, wrist and arm stresses commonly associated with repeated operation; no physical force is required to operate the touch button. I/O logic, colours, animations, and audible settings can be configured with the Pro Editor software or via IO-Link. IO-Link gives full access to advanced audible and LED

control, plus dynamic interaction.

Combined with the audible tone variations, up to fourteen colour variations are available in one device: green, red, yellow, blue, white, cyan, magenta and variations of these.

The K50 Pro Touch Buttons are ideal for pick-to-light and call button applications in a range of industries and environments – from the automotive industry to the food and beverage sector where models made with FDA-approved materials can be used.

For more information contact Turck Banner.

Tel: +27 (0) 11 453 2468

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Visit: www.turckbanner.co.za



The new K50 Pro 50 mm touch button multicolour display models include a programmable audible indicator.

Preventing short circuits and fires in solar inverters

With the growing number of solar power installations and the inverters that form part of the systems, business owners and households need to be aware of the potential fire risk. This includes overheating or short circuits in the battery or other electrical parts that can result in an explosion.

CEO of ASP Fire Protection Services, Michael van Niekerk, explains that solar inverters, an essential part of any solar power system, convert direct current (dc) power produced by solar photovoltaic panels into alternating current (ac) electricity, to power appliances and devices at home and in businesses.

He highlights various factors that can cause a solar inverter to catch fire. It can simply be the naturally high temperature of the operating environment, compounded by the equipment generating heat as it inverts and transforms high-voltage electricity into usable power.

Potential short circuits can also be caused by a lack of adequate maintenance and management, improper installation, poor quality equipment, or overgrown vegetation, plant debris or even small animals and insects finding their way into equipment.

Van Niekerk also points out that grid-tied solar systems are exposed to inrush current when grid supplied power is restored after loadshedding – and this can cause damage or fires. This is one of the reasons why it's important to have the system designed and signed off by a registered electrical engineer.

"Any failed component that short circuits can result in a fire that spreads through the inverter, causing a domino effect," van Niekerk highlights. Here, automatic fire suppression is important to detect and suppress a fire quickly so the inverter is offline before the fire can spread to other components. This reduces the impact of any fire and prevents damage to other equipment and the surrounding area.

He sets out a few general recommended safety tips, as below.

- Place the inverter on a reasonably flat horizontal or vertical surface.



With the growing number of solar power installations and the inverters that form part of them, business owners need to guard against the potential fire risk.

- Keep the inverter dry and do not expose it to rain or moisture. Do not operate the inverter if any surface that is wet may come in contact with any power source. Water and many other liquids can conduct electricity and lead to serious injury or death.
- Avoid placing the inverter on or near heating vents, radiators or other sources of heat. Do not place the inverter in direct sunlight.
- Ensure the inverter is well ventilated to allow for dispersal of the heat generated while the inverter is in operation. Maintain a clearance of a few centimetres on the top and sides of the inverter when it is in operation.
- Do not use an inverter near flammable or combustible materials or place it in areas such as battery compartments where fumes or gases may accumulate.

"Fires happen," says van Niekerk, "and it is therefore important to be prepared by understanding the fire risks, how to best mitigate those risk factors, and knowing how to manage a solar inverter fire."

For more information contact ASP Fire.

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Visit: www.aspfire.co.za



*Carina Kleinhans,
HSE Manager at
DEKRA Industrial
SA.*

Women in health & safety

Over the years, the traditional image of a health and safety or SHEQ (Safety Health Environment and Quality) officer as a man in a safety helmet and high-visibility jacket harshly enforcing the rules has changed. And Carina Kleinhans, Health, Safety and Environmental (HSE) Manager at DEKRA Industrial SA – a leading company in non-destructive testing (NDT) and inspection – says it continues to change as more women enter this field, which is the cornerstone of safe and responsible operations in diverse industry sectors.

"The frequently negative, punitive image and reputation of safety professionals is evolving into a more positive,

caring and proactive one. Notably, this is as women bring their own special value and skills to the role," Kleinhans maintains.

She believes that because safety is a daily, lifelong commitment, celebrating the contribution of women in safety – or in any role or sector – should not be confined to a single day or month of the year, as it is in South Africa every August.

"Furthermore, the decision to appoint women to management or leadership positions – in safety or any other discipline – should never be gender-based, but rather hinge on the applicant's attitude and ability," Kleinhans adds.

Continued on page 27

Enhancing safety in mining operations

Today, modern technology has become an integral part of mining operations, ensuring safety and improving productivity. Booyco Electronics, a leading player in proximity detection solutions, is at the forefront of these innovations with its game-changing Booyco Electronics Asset Management System (BEAMS) software solution.

A centralised information hub

Anton Lourens, CEO of Booyco Electronics, says the key to enhancing operations lies in centralising information from various sources, including the mine's proximity detection system (PDS) assets data. "BEAMS acts as a single source of information, a comprehensive hub that consolidates data from our PDS and CPS (collision prevention systems) hardware and monitoring devices into a robust database," says Lourens.

The software suite is a web-based application that links the PDS hardware products and the monitoring devices, and transforms a vast amount of data into a unified, comprehensible and manageable stream. This enables operations managers, safety teams and other stakeholders to gain greater insight into various facets of the mining operation, paving the way for increased safety and productivity levels.

Detecting patterns for safety

One of the fundamental achievements of BEAMS is its ability to analyse data to detect patterns which could indicate unsafe behaviour. This functionality enables mining customers to understand potential risks and design appropriate interventions, mitigating the possibility of future safety incidents.

"BEAMS helps paint a comprehensive picture of the working environment, uncovering operational issues that were not previously seen," Lourens says. By quantifying the working environment and the interactions happening within it, potential risks and bottlenecks can be identified, managed and reduced, in turn supporting a significant boost in productivity.

Additionally, using the data, BEAMS can provide a dig-

ital twin model with real-time, accurate information about the state of the mine's assets and the environment. The data informs a more precise and reliable digital twin that reflects current and historical conditions of the mine.

Lourens highlights that this allows for predictive modelling, risk analysis, and more informed decision-making. "With the insights provided by BEAMS, digital twin models can be used to their full potential, making them a more powerful tool for improving safety, efficiency, and productivity in mining operations."

Easy implementation

BEAMS is engineered for easy implementation and adaptability. It operates on web browser platforms and can conform to various information and infrastructure environments. This flexibility allows for seamless integration into existing systems and workflows.

In addition to improving safety and productivity, BEAMS can integrate with lamp room management systems in underground mines. This feature provides for legal compliance with lamp room requirements and helps mines to locate critical safety equipment such as lamps, self-contained self-rescuers, and gas instrumentation.

Customisable reporting

A further benefit of the technology is that it can be configured to meet the needs of each user, offering a standard set of reports or providing customised reporting to address specific requirements. This customisation enhances the user's experience, enabling a mining operation to get the most from its data and steadily improve safety and productivity.

"BEAMS is a powerful tool for any modern mining operation. Providing centralised information, detecting unsafe interaction patterns and designed for easy implementation, adaptability, integration, and customisable reporting, it is redefining safety standards and productivity levels in the mining industry," Lourens summarises.

For more information visit:

www.booyco-electronics.co.za



The Booyco Electronics Asset Management System (BEAMS) software suite is changing the way mines process and evaluate operational data.

Continued from page 26

Her own career began at nursing college in 1996. Given the demanding nature of the job, including night duty, when she had children Kleinhans resigned and moved into administration – progressing steadily from typist to clerk, site agent and, personal assistant to the managing director, then into the safety sector.

Making the move to safety

She was initially unsure when she was given the opportunity to move into safety. Although she knew little about her prospective new career, she made the change in 2007. She started working first for the former Raysonics in 2014 and stayed with the company when it was acquired and

became DEKRA Industrial. She worked as a safety officer and then safety manager on sites such as Sasol Secunda, Eskom's Kusile power station and many others.

Her love of people and learning have opened the way for her. "I love people," Kleinhans says, "and it is important to me to know that they are healthy – and safe – at work, on the road and at home, in line with DEKRA's safety ethos. I think we are put on this planet to serve a purpose for other people. In the field of safety, if I can get only one person to think differently and to be positive and responsible about safety, I will have succeeded."

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



Monitoring mine ventilation systems

BBE, a mine ventilation and refrigeration engineering firm, recently released the latest version of its VUMA Live software offering. This enables real-time monitoring of mines' underground ventilation and cooling systems.

The latest version of Vuma Live is an integrated solution that enables remote monitoring and control of mine ventilation and cooling systems.

Christo Visagie, Director at BBE, says the latest version of VUMA Live was developed with the assistance of ventilation and refrigeration industry experts to bring its user interface in line with that of the traditional supervisory control and data acquisition (SCADA) tools used by mines.

"It has a similar control interface, alarm function and historical trending, and enables open communication with various other industrial hardware systems without the need for further third-party development tools or purchased systems," he says.

"The VUMA Live interface makes use of a 3D environment that our ventilation clients are familiar with as they have been using the VUMA ecosystem. With the latest version of VUMA Live, we can monitor and control underground ventilation equipment remotely and program control philosophies using standard Programmable Logic Controllers (PLCs) that are already being used at the mines."

Visagie says that when it was launched initially, VUMA Live was ahead of its time in terms of technology – and its adoption was limited by the technologies then in place at mines and in their underground environments.

"However, as the equipment and communication systems at mines have been modernised, we have developed VUMA Live as an integrated ventilation control system – a digital twin of the underground mine environment. In the latest version we have updated the user interface and integrated it with other subsystems to ensure it works efficiently."

He adds that VUMA Live can be used to monitor and to simulate working conditions in underground mines, because it is integrated with the rest of the ecosystem, enabling users to simulate, predict and foresee specific scenarios accurately using live information. Traditional SCADA tools used for ventilation systems were mainly monitoring systems that allowed an operator to see live information.

"VUMA Live feeds information into the VUMA Network solver, and with that we can flag changes in the environment and predict timelines to raise awareness and prompt investigations when necessary. The technology can also adjust the ventilation system automatically if necessary, based on predefined criteria, to mitigate the predicted changes before they occur," says Visagie.

He adds that although similar systems have been operating around the world for some time, the technology is fairly new for South Africa, so adoption and understanding of the system among local mining companies is a relatively slow process. "Our biggest hurdle is the technology infrastructure in existing mines. South Africa has a lot of older mines that do not have the infrastructure and equipment needed to adopt VUMA Live," he says.

"Hence BBE has explored environmental monitoring solutions that can be integrated with advanced controls, such as VUMA Live, for mine ventilation monitoring systems."

BBE aims to develop VUMA Live to become a complete ventilation monitoring and control system that integrates seamlessly into existing SCADA systems.

"Our goal is to provide a complete solution to control the underground mining environment. Integration with other systems and technologies is key to this endeavour," Visagie says.

For more information visit:

<https://bbe.co.za/mine-ventilation/>



Minimising the risk of arc flash in maintenance

Businesses rely on constantly available electrical power and, in most cases, servicing of a company's power network must be performed while the system is live. This heightens the risk of arc flash occurring. Maintenance errors or accidents are the leading cause of arc flash incidents and related injuries.

However, circuit breakers equipped with Eaton's patented Arcflash Reduction Maintenance System™ (ARMS) will extinguish an arc almost instantaneously. This significantly reduces arc flash energy and the risk of injury. The system can be activated automatically when a control room door or maintenance panel is open, and thus provides a high degree of safety for service personnel.

In the event of an arc fault, the ARMS system ensures an accelerated shutdown compared to a

standard short circuit release. ARMS uses a separate electronic trip circuit providing faster signal processing and interruption times than the standard 'instantaneous' protection. When enabled, the trip unit will trip the breaker with no intentional delay whenever the configured pickup level is exceeded. When enabled, the Maintenance Mode function operates regardless of the instantaneous settings.

Eaton's Arcflash Reduction Maintenance System™ is an optional feature on Power Xpert Releases PXR20 electronic trip units. The technology is integrated in the IZMX series of air circuit breakers (ACBs) and is available for the compact moulded case circuit breakers of the new digital NZM series.

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



Circuit breakers equipped with Eaton's patented Maintenance Mode will extinguish an arc almost instantaneously.

Africa needs more engineers to advance its gains on SDGs

Ahead of the UNESCO 9th Africa Engineering Week and the 7th Africa Engineering Conference, which took place at the CSIR Convention Centre in Pretoria from 25 to 28 September, Rovani Sigamoney, UNESCO Education Programme Specialist and a chemical engineer, outlined the progress made on the continent on the United Nations' 17 Sustainable Development Goals (SDGs).

Sub-Saharan Africa, with its population of one billion people, has a relatively high proportion of young people – 70% of the population is under 30 years – and a wealth of natural resources and minerals. These factors, and others, support the potential for collaboration among countries to eradicate poverty and develop economically and sustainably, Sigamoney said.

"However, according to the World Bank, economic growth has slowed on the continent since 2021, exacerbated by global events like the Covid 19 pandemic and the war in Ukraine, among others. Growth is expected to increase slowly again in 2024 but countries need to scale up green energy investments, infrastructure development, transform agricultural productivity and prepare for a low-carbon future."

In 2020, African governments were just over half way (53.8%) to achieving the SDG goals and targets. However, the Covid pandemic pushed 23.6 million Africans into extreme poverty and slowed down progress on all the targets. While Africa faces many challenges, the three most important of these, according to Sigamoney, are:

- **Education** - There are still 288 million school-age children out of school. There is a need to increase proficiency in mathematics and reading as this is, respectively, about 54% and 70% below the global average for schoolchildren in grades 2 and 3.
- **Energy** - In 2022, 43% of the continent lacked access to electricity. Tapping into green energy sources can improve energy access.
- **Food security** - Africa needs to build resilient economic systems and reduce the reliance on food imports by transforming and modernising agricultural productivity

In terms of education, Sigamoney made the point that engineering teaching and practice needs to be updated with modern technologies and advances in AI. "We need to get more young people, especially young girls, into the pipeline and teach them how exciting and interesting mathematics, physics and the hard sciences are.

"With regard to energy, we need to invest in teaching and research into renewable energy systems for the continent to address and overcome our electricity and energy problems. And for food security, we can modernise agricultural systems by building technology suited to Africa to increase crop production sustainably and affordably while still preserving the planet and protecting our natural environment."

As each SDG is linked to the others, there is a need

for every one of the 17 SDGs to be achieved in order for the continent to reach its goals. These are in line with the African Union's Agenda 2063, which complements the targets of the SDGs. "However, if we, as engineers, look at Education (SDG 4), Clean water and sanitation (SDG 6) and Affordable and clean energy (SDG 7), we also directly and indirectly impact all the other SDGs. What we do locally makes a difference globally and thus improving Africa's sustainability, helps the world."

Sigamoney highlighted that despite the challenges the continent faces, progress made on some fronts is encouraging:

- **SDG 3:** Good health and well-being - Maternal mortality rates decreased significantly in Sub-Saharan Africa. The countries that have significantly reduced maternal mortality rates compared to 2017 are: Tanzania (55%), Eswatini (45%), Mauritania (39%), Ethiopia (33%) and Eritrea (33%).
- **SDG 4:** Quality education - Primary school enrolment in Sub-Saharan Africa increased from 60% in 2000 to 78% in 2018.
- **SDGs 13 and 14:** Climate action and Life below water - Seychelles is the highest ranked country in Africa, having put in place the legal and policy frameworks required to address these environmental concerns.

"Engineers are needed and involved in every one of the 17 SDGs and we need to push towards solutions that encompass sustainability. Africa desperately needs more engineers and events like the 9th UNESCO Africa Engineering Week, which aims to stimulate and excite our youth to pursue careers in engineering, encourage and support the development of more engineers. We need young women engineers as well, as women make up 50% of our population and only 10 to 20% of the engineering workforce in Africa. The most sustainable solutions are found when different minds and different perspectives come together to solve global problems locally," Sigamoney concluded.

The 9th UNESCO Africa Engineering Week and the 7th Africa Engineering Conference was hosted by ECSA – the Engineering Council of South Africa – at the CSIR International Convention Centre in Pretoria from 25 to 28 September 2023.

For more information visit:

<https://africaengineeringweek.co.za>



Rovani Sigamoney, UNESCO Education Programme Specialist and a chemical engineer.

Empowering local energy communities in clean energy transitions

In its newsletter of 4 September 2023, the IEA highlighted its commentary on the benefits of community-based energy projects, noting that such projects are receiving increased attention as effective vehicles enabling more inclusive, equitable and resilient energy systems. The commentary was compiled by Vida Rozite, Energy Policy Analyst; Matthieu Prin, Programme Coordinator; Silvia Laera, Energy Policy Analyst; Josh Oxby, Energy Analyst; and Alexandre Roussel, Former Energy Analyst at the IEA.

Putting people at the centre of all clean energy transitions improves people's lives and is key to successfully implementing energy and climate policies. Around the globe local energy communities, or community-based energy projects, are showing clear benefits in deploying renewable technologies, improving efficiency, supporting reliable power supply, reducing energy bills, and generating local jobs.

Digital platforms and tools are making it easier to set up cooperatives, engage stakeholders, make investments and exchange electricity. An increasing number of countries are allocating significant funds to support community-based clean energy projects. The Italian National Recovery and Resilience Plan has allocated EUR 2.2 billion^[1] to support energy communities and self-consumption, and the USD 370 billion United States Inflation Reduction Act of 2022 offers additional financial incentives for community-based clean energy projects. The IEA recently organised a virtual panel discussion among experts to explore and share experiences about the role that energy communities can play in supporting clean energy transitions.

With ever-growing pressure to accelerate decarbonisation and mitigate impacts of the energy crisis on households and businesses, community-based energy projects can help address numerous challenges faced by power systems, including losses, grid congestion and the need to accommodate growing peak demand. Recently, the IEA estimated that one gigatonne of carbon dioxide emissions

come from grid losses, equal to almost 3% of current global energy-related CO₂ emissions. Local community-based generating, sharing and consuming of electricity can significantly reduce these losses and enhance energy efficiency.

For example, in northern Perth in Australia, a battery resource shared by 119 households resulted in collective savings of over AUD 81 000^[2] over a five-year period. The battery also helped ease the strain on the grid by enabling an 85% reduction in consumption of electricity from the grid at peak times for participating households.

The energy community of Magliano Alpi in the Italian Alps developed tools to forecast energy generation and demand and share electricity, enabling the community to use their solar photovoltaic systems more effectively and cover 35% of their electricity needs. Increased reliance on their own generation resources during peak demand periods alleviated grid stress and helped defer expensive infrastructure upgrades.

Energy efficiency and community benefits

Providing customers with access to their energy production and consumption data is crucial to the success of energy communities, raising awareness about the impacts of individual behaviour and underscoring the economic benefits of being part of the community. Software based on machine learning is also widely used to optimise energy efficiency and deliver financial savings. Recently, peer-to-peer digital trading on blockchain platforms has been tested to enable citizens to exchange energy within the community. Such initiatives foster collaboration and trust among prosumers and consumers. For example, in the city of Lucknow in India, residents were able to sell their rooftop electricity production at 43% below the central market price, using digital tools to allow other residents to benefit from local clean energy and cut their electricity bills.

Digital tools support local energy communities

Developed by people for people, local energy communities are an effective means of maximising socioeconomic empowerment. As they depend on trust, within and outside the community, these systems involve and educate people who would otherwise be excluded or passive in clean energy transitions. More than this, they have become tools to help overcome historical societal inequalities in energy systems. For example, the RevoluSolar energy initiative was the first photovoltaic community founded in a Brazilian favela, enabling renewable energy access for 30 families. The community opted to re-invest the profits from the projects



Localised microgrids can support energy sharing, energy savings and a stable supply for small communities.



Microgrids powered by renewable energy can be developed to serve small clusters of households – interconnected to each other and the national grid.

into charities and jobs training to tackle rising rates of local unemployment. This ability to determine where, how and to whom the revenues from the project are distributed, improved overall citizen welfare in the favela. It also enabled the community to protect the citizens from rising energy prices.

Empowering citizens

Energy communities also help develop local value-chains, jobs, and skills. The Lynedoch residential community microgrid project, which interconnected over 30 homes via a tiered grid system (from household to household, to the village, to the national grid) was the first smart embedded residential rooftop microgrid in South Africa. The pilot project is co-owned and maintained by the utility (Eskom), but members of the community were taught and certified by industry to take on roles in the development, installation, maintenance, operation, and ownership of the energy system. Such initiatives help ensure the sustainability and longevity of projects and demonstrate the value of enhancing citizen engagement in localised clean energy transitions.

Local value chains

Energy community models can be effective mechanisms to deliver clean energy transitions. They illustrate the benefits of place-specific interventions and highlight the added value of inclusive people-centred approaches. Better access to financing and support, regulatory reforms, and sharing of experiences could give communities around the world greater access to local, clean and affordable energy. For instance, the European Parliament has recently provided funding for the creation of an advisory hub and support service to help collect and disseminate best practices and provide technical assistance for community initiatives across the European Union.

Notes:

- [1] Exchange rate: 1 Euro (EUR) = USD 1.09 (as at 8 August 2023, when the IEA published this commentary).
 [2] Exchange rate: 1 Australian Dollar (AUD) = EUR 0.59 = USD 0.65 (as at 8 August 2023, when the IEA published this commentary).

This work forms part of the IEA's People-Centred Clean Energy Transitions Programme and the Digital Demand-Driven Electricity Networks Initiative (3DEN). Further mapping of initiatives and benefits is under way.

For more information visit: www.iea.org

Participants in the IEA-hosted virtual panel discussion

Moderator: Dr Brian Motherway, Head of Energy Efficiency, IEA

- Eduardo Avila, Executive Director, RevoluSolar - RevoluSolar in the Babilônia favela, Rio de Janeiro, Brazil
- Sharne Bloem, Researcher, Stellenbosch University - Smart Embedded Residential Microgrid, Lynedoch, South Africa
- Valerio Covicchio, Renewable Energy Community Business Developer, Enel X
- Reena Suri, Executive Director, India Smart Grid Forum (ISGF) - P2P trading of rooftop solar – Lucknow city, Uttar Pradesh, India
- Adela Tesarova, European Commission, Directorate-General for Energy (DG ENER)

Remote monitoring of water reservoirs in rhino sanctuaries

Highly specialised conservation programmes have been set up in some of the biggest national parks in southern Africa in order to rescue, rehabilitate and protect rhino populations. In South Africa, according to Stats SA, over 44% of protected land is dedicated to nature reserves, and all of them need to manage the continuous supply of clean, filtered water and process wastewater to run efficiently. Ian Loudon, International Sales and Marketing Manager at remote monitoring specialist, Omniflex, outlines how South African rhino sanctuaries are using wireless monitoring to keep an eye on water tanks and keep conservation programmes running.

According to Save the Rhino, there are just 6 195 black rhinos and 15 942 white rhinos left in the world, and South Africa is home to the largest populations. The ongoing poaching of rhinos means both species face extinction if they are not adequately protected.

Because protection sites will span over tens of thousands of hectares, installing water tank monitoring systems for a conservation site isn't easy. Water tanks and reservoirs are often located in difficult-to-access, unsafe areas and installing control cables over large areas is expensive. Hence, facilities managers are turning to wireless systems to monitor and manage the potable and grey water levels for the camps, facilities and feeding stations for convalescent rhinos.

Choosing a wireless system

When choosing a system for water monitoring, facilities managers have several options, including licence-free band radio telemetry. This system uses restricted radio band frequencies, controllers and separate radio remote terminal units (RTUs) with data interfaces to monitor and control a site's water tanks. The licence-free band allows

as many devices as necessary to be connected without regulatory approval. The band used is free from other radio traffic that can interfere and disrupt communications for managing water reticulation.

With impractical cable distances and expensive instrumentation costs, the traditional solutions used to monitor water conditions in tanks are not feasible for use on conservation sites. Using wireless products that combine radio and controllers in a single package, it is possible to monitor and control water tank levels remotely across an extensive conservation site. And by using licence-free band frequencies, unnecessary engineering and costly administration can be avoided.

One reliable solution is a system comprising multiple RTUs wirelessly interfaced into a big screen television at a central administration point, which, due to security levels required for anti-poaching programmes, is manned 24/7. The screen provides an overview of all water tanks located in the facility, many of which are several kilometres away. Each RTU is configured to detect high and low water levels in the tanks in real-time and will trigger an on-screen alarm when abnormalities are detected.

In this use case, due to the remote location of the potable water reservoir, it is impractical to connect the RTUs in the tanks to the mains power. Therefore, each terminal has a built-in solar panel and does not require any additional power connections.

Because the RTUs monitoring grey water are located closer to the manned station, they can be hardwired using a single cable to the mains power. However, in order to operate off-grid and independently, the entire facility is powered by a solar system and a backup generator for emergencies. This ensures that the remote monitoring of water levels can function independently, despite the frequent rotational grid outages in the country.

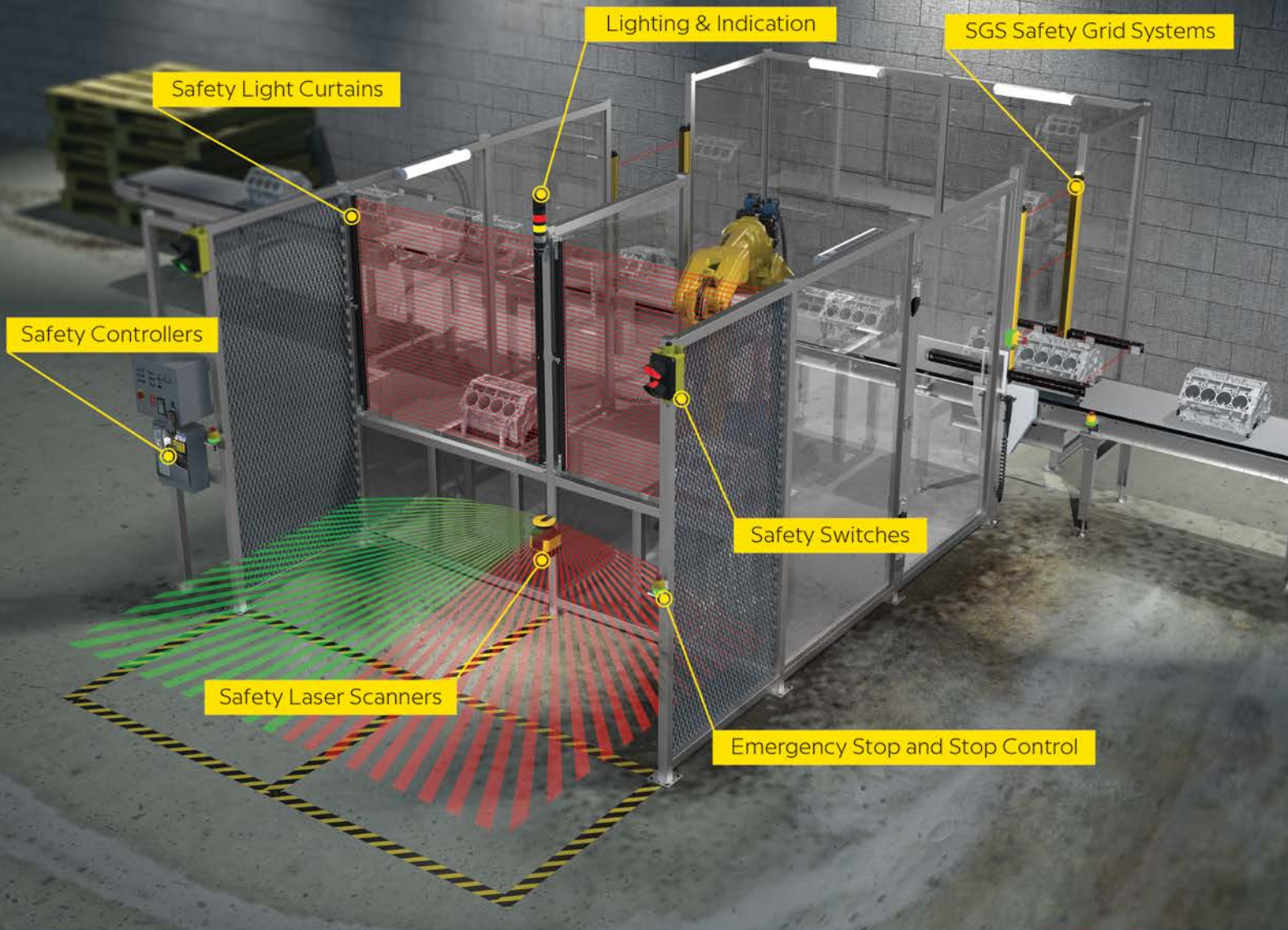
The system enables conservation site managers to monitor the conditions of their water tanks over distances of up to 15 km. The RTUs are also robust, housed in weatherproof casing with power supply charger units and backup batteries. What's more, the low power consumption of the system makes it suitable for solar-powered out-stations at remote reservoirs.

Conservation programmes are essential to maintaining breeding populations and protecting endangered species from poachers. Therefore, every process from the installation of security fences to the monitoring of water levels must be carefully and efficiently controlled. When facility assets are spread over a large area, wireless remote monitoring technology makes control and management more simple, efficient and cost-effective.



In rhino conservation areas, site managers are using radio telemetry systems to monitor water levels in remote tanks and reservoirs.

For more information visit: www.omniflex.com



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A handwritten signature in black ink that reads 'Klaus Eisert'.

Klaus Eisert,
Shareholder of Phoenix Contact



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