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Welcome to the 2024 Insights issue where we've asked industry leaders to provide you with their views on what challenges and opportunities lie ahead. The issue combines content from three magazines in one — *Process Technology*, *Sustainability Matters* and *ECD*.

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THE EVOLUTION OF SOCIAL LICENCE

Glenn Johnson, Editor, Process Technology

The “social licence to operate” term first came about in reference to mining companies, but now almost every company must be seen to be operating responsibly.

The term “social licence” has been around for about half a century, but its present usage as “social licence to operate” is generally accepted to be associated originally with the resources industry in the early 2000s.

The term emerged as a recognition that companies, especially those involved in resource extraction like mining, needed more than just legal permits to operate successfully. It highlighted the importance of earning and maintaining the trust and acceptance of local communities, stakeholders and the broader public.

In more recent times, the concept has evolved beyond its initial association with mining companies and has become a crucial consideration for businesses across various other industries. Today, virtually any company, regardless of its sector, is expected to demonstrate a commitment to responsible and ethical practices. This includes not only complying with legal requirements but also engaging in activities that contribute positively to society, the environment and the wellbeing of employees.

It should be remembered that the concept of social licence actually reflects, not a legal



mining industry, Rio Tinto faced substantial backlash after it dynamited the ancient Indigenous site at Juukan Gorge.

In most cases in the examples above, no law was broken, but the reputational ramifications are still playing out.

The focus on 'ESG'

The main areas in which organisations measure their social licence today is through what has become known as Environmental, Social and Governance measures (ESG).

According to the Harvard Law School, "the three categories of ESG are increasingly integrated into investment analysis, processes and decision-making" when it comes to corporate investment.

'Environmental' captures general environmental sustainability, including energy efficiencies, carbon footprints, greenhouse gas emissions, deforestation, biodiversity, climate change and pollution mitigation, waste management and water usage.

'Social' covers labour standards, wages and benefits, workplace and board diversity and inclusion, pay equity, human rights, community relations, privacy and data protection, health and safety, and other human capital and social justice issues.

'Governance' covers how the environmental and social factors are managed, corporate board composition and structure, strategic sustainability oversight and compliance, executive compensation, political contributions and lobbying, and bribery and corruption.

Environmental sustainability

The largest aspect of the current concept of social licence to operate involves environmental responsibility. Companies are increasingly under scrutiny for their impact on the environment, and stakeholders expect them to go beyond mere compliance with regulations. Businesses are now required to proactively manage their energy and water usage, minimise their ecological footprint, and engage in sustainable practices that promote environmental conservation.

Although the energy and mining sectors are the ones feeling the most pressure to act — being responsible for 56% of Australia's greenhouse emissions — there is pressure across all industries and coming from many angles. Regulators are imposing stricter emissions limits, such as the Safeguard Mechanism for businesses in Australia, as well as increasing pressure on companies to provide greater transparency in emissions reporting. The federal government has committed the country to reducing greenhouse gas emissions by 43% below 2005 levels by 2030, and to net zero by 2050.

requirement, but an unwritten agreement between business and society. Some might argue that the burden of proof seems to lie with stakeholders to show what companies are doing wrong, not with companies to prove what they are doing right, while the absence of community protest may be interpreted as consent.

If companies do not break the law, repercussions are limited to reputational and financial effects, but in today's digitally connected world, company reputation has become increasingly important. We only have to reflect on the number of televi-

sion advertisements we see championing the responsible work of mining and gas companies — to a television audience that is not their direct customer — to see that these companies are taking their social image more seriously than ever.

On the flip side, there is much discussion in the news media about increasing scepticism in the community towards major corporate entities, after a number of high-profile incidents where companies have failed to meet community expectations in relation to treatment of their workforce, or in protecting personal data. Similarly, in the

In the commercial arena, banks will no longer finance certain projects and will tighten lending to those not meeting their sustainability plans, and shareholders, including superannuation funds, are demanding a clear path to decarbonisation.

On a more public level, customers are taking their business to sustainable brands, individual companies are expecting more sustainable outcomes from their suppliers, and in some cases, employees are demanding climate action from their employers.

Energy and water

Efficient management of energy and water resources is essential not only for minimising environmental impact but also for ensuring long-term operational sustainability. This involves adopting technologies and practices that enhance energy efficiency, reduce water consumption and minimise waste generation. Companies that prioritise environmental stewardship not only contribute to global sustainability goals but also enhance their reputation and credibility among environmentally conscious consumers and investors.

Recycling

Resource recovery is another critical aspect of the modern social licence to operate. Companies are encouraged to implement strategies for recycling and reusing materials, reducing waste, and minimising the depletion of finite resources. This not only aligns with the principles of a circular economy but also demonstrates a commitment to responsible resource management.

Sustainability reporting

Mandatory sustainability reporting is becoming a potential future requirement that companies will need to meet. Governments, regulatory bodies and investors are increasingly recognising the importance of transparent reporting on ESG metrics. This reporting provides stakeholders with insights into a company's sustainability performance, enabling them to make more informed decisions and to hold companies accountable for their impact on society and the environment.

A recent annual survey of the ASX100 by KPMG (the KPMG Australian Sustainability Reporting Survey June 2023)² reflected that “the vast majority of Australia's top companies now report on sustainability performance” but acknowledged that “areas for potential improvement persist”.

Among ASX100 companies reporting on sustainability, the proportion of companies linking sustainable development goals to aspects of their business has increased from 71% in 2022 to 77% in 2023, according to the report. However, the main area



COMPANIES ARE INCREASINGLY UNDER SCRUTINY FOR THEIR IMPACT ON THE ENVIRONMENT, AND STAKEHOLDERS EXPECT THEM TO GO BEYOND MERE COMPLIANCE WITH REGULATIONS.

identified for improvement was external assurance, with the report stating that “limited assurance continues to be the most common level of assurance among those organisations (85%), with 9% obtaining a combination of limited and reasonable assurance ... Independent verification of reported information would increase confidence in organisations' sustainability reporting and reduce greenwashing risks”.

Social responsibility

There are many aspects to social responsibility, and according to a review by QUT³, “multiple social licences will exist across multiple scales both internally (project, organisation and industry) and externally (local, regional, national and international)”. These social licences are often at odds with one another: for example, the greater environmental benefit of closing a coal mine is at odds with the social impact on the community that the mine supports in terms of jobs and flow-on business.

Generally, from a social perspective, a social licence to operate cannot be controlled, so companies seek to attempt to manage it through protecting reputation — mainly through PR activities. According to the QUT research, this has traditionally been accomplished either “through a pro-self perspective, where the social licence is a resource ‘bought’ through actions that align with stakeholder expectations, or [through] a pro-social perspective in which the social licence is the result of mutually beneficial relationships with stakeholders”.

The report reflects that while a pro-self perspective can result in a social licence, the transactional nature of this approach means that collaboration with stakeholders is undertaken only usually around a specific project and only on the company's terms: “Often the stakeholders are chosen by the firm to pre-determine the outcome, engaging only with those likely to already agree with the firm's actions. These licences are therefore not supported by any lasting relationship and are withdrawn as easily as they are initially acquired.”

With a pro-social perspective, on the other hand, “rather than trying to persuade

stakeholders that the firm's actions will be beneficial, through authentic dialogue and ongoing engagement the desires of the stakeholders are integrated into the firm”.

The latter can result in a social licence that reflects a more genuine alignment of interest and is much more resilient as it is founded on shared values. The former, more common approach, usually results in further conflict and court decisions, as we often see playing out in the approach taken by some industries to the concerns of social groups that may not be in agreement with their actions, such as farmers, environmentalists and Indigenous people.

When a company fails to meet stakeholder expectations the social licence may be damaged or lost altogether. Repairing a social licence means that to be seen as anything other than tokenistic, dialogue must be accompanied with concrete action to demonstrate a genuine desire to repair relationships. Recent events around the Optus response to a major network outage are a case in point.

Social licence cannot be ignored

Today the concept of ‘social licence to operate’ extends across industries, with businesses expected to prioritise responsible practices. Environmental, Social and Governance (ESG) measures, including sustainability reporting and a focus on environmental responsibility, are now key criteria for evaluating companies. The path forward involves authentic stakeholder engagement, integrating their desires into business practices, and a genuine commitment to shared values to build and sustain a resilient social licence.

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GLENN PARSONS

CHIEF TECHNOLOGY OFFICER, WARREN AND BROWN TECHNOLOGIES

What growth opportunities do you predict for your industry in 2024?

In 2024, I see several growth opportunities for the industry as an increasing number of higher density optical fibre cables and connectors are deployed in international and national markets. The thirst for higher bandwidth services such as 5G wireless and 250 Mbps fixed line services, along with massive growth in cloud-based services, is driving demand for increasing levels of connectivity.

Telecommunications is constantly evolving and improving. The technology never stays still. New networks can take years to roll out and as they approach end of life, they are eventually replaced with the next generation of equipment. In this environment, the opportunity for growth can be realised through innovation, end-to-end next-generation solutions, maintained quality control and an unwavering focus on the customer and the challenges they face in transitioning their networks.

What are the three biggest challenges or threats facing your industry in 2024?

Three of the biggest challenges facing the industry in 2024 are as follows:

Maintaining supply chain stability

Maintaining reliable and consistent component supply for production and finished goods is critical to meeting customer requirements. Recent global events such as the COVID-19 outbreak in 2020 have shown us how supply chains can be disrupted causing long delays in material supply. As a result, carefully considered alternate supply chain options should be implemented wherever possible to mitigate the risk of supply chain disruption.

Controlling costs

The global economic outlook is uncertain. Rising inflation and rising interest rates are a common thread across many economies. The wars in Ukraine and the Gaza strip are adding to the uncertainty. Minimising increases in costs can be a significant challenge in this environment. Further escalation of global instability in 2024 would provide a significant challenge to the industry.

Continuing to fund R&D activity

Continuing to fund the required R&D activity in the current climate of rising interest rates is a challenge. However, as described above, to grow the business in 2024, ongoing development will be required.

How is your company mentoring staff and developing workforce skills in 2024 and beyond?

In recent times, employee training programs have been conducted on an as-need basis to assist employees with their current role. Most of the training has therefore been on-the-job training as required. The company has spent considerable time and effort focusing on quality control procedures to enhance the efficiency

of the production line. This has reduced the lead time of product deliveries and enabled the production line to become more agile in its approach.

Attracting and maintaining a strong, capable workforce is a priority for the company in 2024. To assist with this endeavour, the plan is to further enhance the workforce development program by introducing additional online training focusing on developing the individual. It's a more holistic approach which I hope will greatly benefit the employees and the company alike.

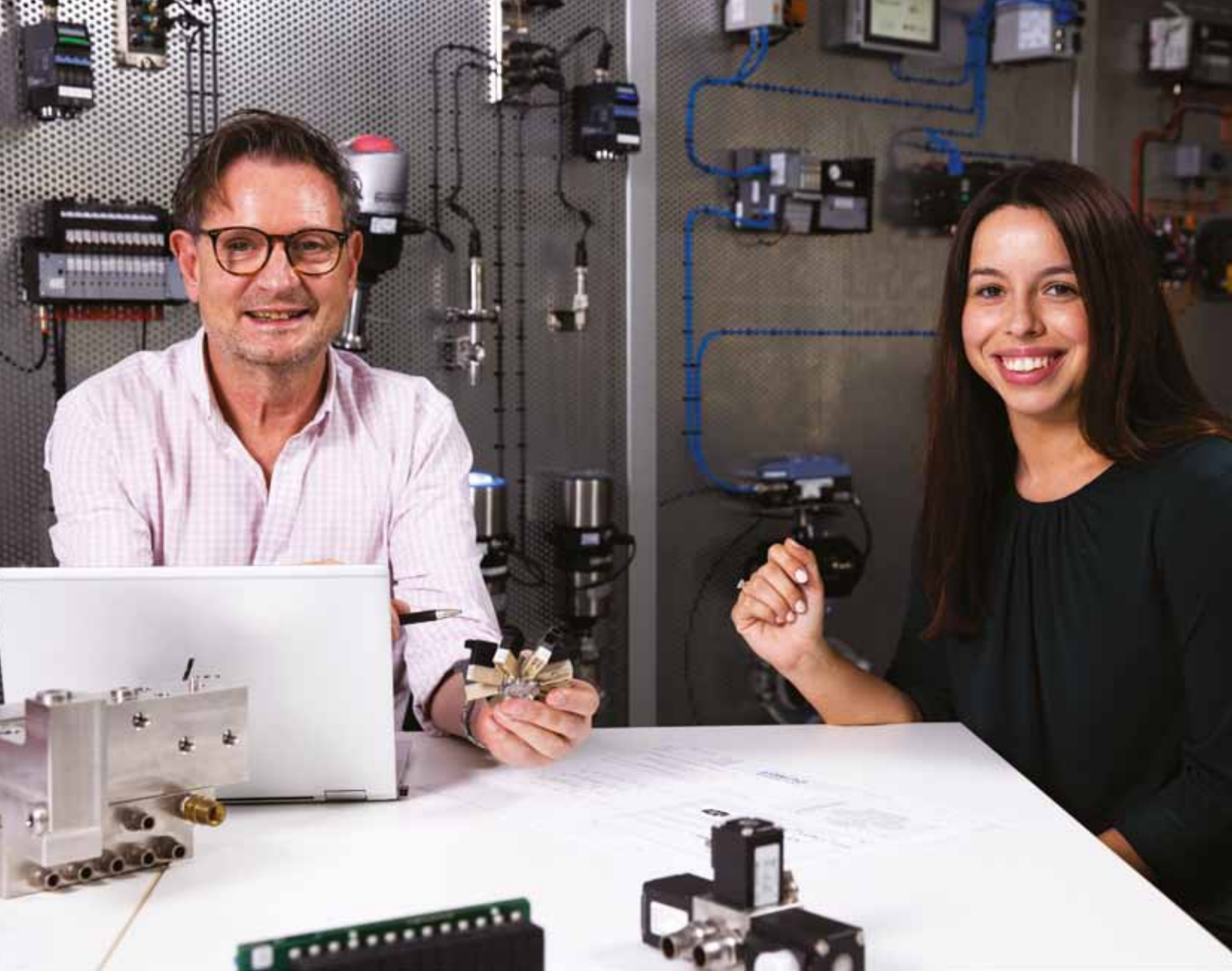
What resource recovery initiatives is your company planning to implement in 2024?

WBT is planning to expand our resource recovery initiatives in 2024 through a reduce, reuse, recycling approach. We have a well-established recycling process for metal, cardboard and electronic waste. In 2024, we are looking to further reduce and minimise our reliance on non-recyclable packaging materials. We are also looking to explore schemes that promote reuse of packaging materials with our customers for specific products where this makes sense. Some of these initiatives can be implemented in isolation. Other initiatives will require significant cooperation across the industry including suppliers, logistics partners and our customers.

We recently established a repair centre supporting the refurbishment and repair of legacy equipment for our customers. The repair centre has the capability to determine the failure modes of active equipment, repair it and then test against required specifications. In 2024, we are looking to extend the number of products supported by the repair centre allowing customers to extend the life of aging devices (as required) by repairing and reusing legacy devices in a cost-effective way.



Glenn Parsons, an innovative technology leader with an illustrious career, currently serves as the Chief Technology Officer at Warren and Brown Technologies. Joining the organisation in 2016, Glenn has played a pivotal role in shaping the company's technological landscape. With a rich background in the tech industry, he brings a wealth of experience and expertise to his role.



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CUONG VO

GENERAL MANAGER AT BÜRKERT AUSTRALIA

What growth opportunities do you predict for your industry in 2024?

Manufacturers today are faced with a number of simultaneous issues that affect their ability to maintain profitability — not least of which are increasing regulatory requirements, labour shortages and the need to achieve sustainability targets. While greater use of process automation can provide solutions to many of these problems, manufacturers may be challenged by how to choose the best solutions for their needs and to integrate these automation solutions into their existing operations and processes.

It is therefore necessary for businesses to seek out the right partners with the right technology leadership to help them to find their way clearly to the right solution.

The growth opportunity in this situation is therefore in being the partner that will be a willing and active collaborator with the end customer: providing the necessary support through each phase of transformation, from consulting engagement to analytics implementation; from infrastructure readiness assessment to support services. Providing these comprehensive services will be the main areas of opportunity for businesses in our industry to deliver significant value.

What are the three biggest challenges or threats facing your industry in 2024?

Firstly, it is clear to many of us that global economic growth will slow further in 2024, and there are also the ongoing wars in Ukraine and the Middle East that could contribute to a worsening global financial outlook. Locally, we are still seeing high inflation and high energy prices, which has meant manufacturers are choosing to delay further investment unless there is a clear short-term return.

Secondly, manufacturers are faced with increasing regulatory expenses, increasing consumer demands and mandated sustainability targets.

These two issues lead to the need for a way to more easily managed scalability, both up and down as business needs change. Traditional manufacturing automation systems are difficult to scale, and can suffer unacceptable downtime costs when equipment fails. There is a need for more modular automation solutions that allow businesses the flexibility to cope with fluctuating demands.

Finally, today's businesses are having to grapple with managing an aging workforce, upskilling workers to be able to cope with new requirements from automation and digitalisation and, at the same time, attract and retain young talent with increasingly higher demands regarding purpose, working models and lifetime career models. It is more important than ever for our industry to continue to broaden our support for STEM education and university partnership programs.

How is your company mentoring staff and developing workforce skills in 2024 and beyond?

Many industries, including us in process control and automation, are starving for people. Millions of skilled jobs are going unfilled, and many employers are at their wits' end about how to fill them. To help alleviate this persistent crisis, industry has had to implement

several remedies. These include applying labour-saving automation to reduce manual tasks, but also employing advanced digitalisation including artificial intelligence to enable less experienced employees to succeed in technically sophisticated jobs where they likely didn't have the tools to succeed before.

Many manufacturing problems are very complex, with multiple facets, and draw on many disciplines. This means that many soft skills are necessary too. Team leaders need emotional intelligence and the ability to work well with others, so they can get their teams aligned to solve those complex problems.

Globally, Bürkert operates its own workforce development and enablement program. It puts employees on the pathway to gaining the skills they need, which has also proven to be a good way of retaining them.

The company also provides its employees a working environment where each individual has the chance to develop in accordance with their abilities and strengths, to use the freedom offered and to grow and take on responsibility, while maintaining a healthy work/life balance.

How is your company tracking with its net zero emissions by 2050 targets?

Bürkert has set the goal for itself to become carbon neutral as a global organisation by 2030 and is currently undertaking a study of the complete ecological impact of its portfolio of products, systems and services. Sustainability will become a decisive factor in developing Bürkert's portfolio and underlying technologies.

In addition to making its own portfolio greener, Bürkert will assess opportunities to add solutions and services helping customers and partners to become more sustainable. Bürkert will develop a deep understanding of customers' sustainability efforts and build the required competencies to develop solutions and services that help customers reduce their carbon footprint and save resources in their value creation process.



Cuong Vo, General Manager at Bürkert Australia, boasts over 20 years in process control and automation. With a background in Swisslog, Rockwell Automation and Schneider Electric, Cuong excels in sales, operational excellence and digital marketing. Specialising in guiding medium-sized organisations through transformative changes, he prioritises customer-centric

approaches for sustainable growth. Passionate about industrial automation, Cuong emphasises collaborative problem-solving, leveraging competence and commitment. Joining Bürkert during a growth phase, he looks forward to contributing to the team's momentum, sharing knowledge and accelerating market presence in Australia. Cuong's extensive experience in the United Kingdom and Australia positions him as a key asset to Bürkert's regional success.

OPTIMISING AUSTRALIAN NETWORKS AND SPEEDING ELECTRIFICATION

WHY TECHNOLOGY-DRIVEN TRANSMISSION COULD BE A GAME CHANGER FOR THE GRID

Jack Curtis, Neara Co-Founder

Multiple reports released throughout 2023, including the New South Wales Government's Electricity Supply and Reliability Check-Up, have reinforced the main challenge facing Australia's energy sector: we need to diversify our approach to the clean energy transition or risk losing grid reliability. In fact, this report's specific recognition of untapped capacity sitting within the grid highlights the pressing need for infrastructure optimisation beyond physical projects and transmission lines, with new methodologies like digital analysis critical to maximising the grid's full potential.

Australian network service providers (NSPs) are increasingly deploying AI and machine learning-powered capabilities to unlock untapped network capacity and bring renewables online faster. This diversified approach aims to de-risk the clean energy transition by sourcing untapped capacity,

but technology can and should be playing a greater role in stabilising energy supply as renewables are brought online.

Based on digital modelling of the NSW network, there are up to 10 gigawatts of available yet untapped capacity sitting within the existing grid with a clear accessibility pathway. This volume of available power requires little network augmentation and funding and could provide more energy than HumeLink, Central West Orana and Eraring combined. Essentially, this would give us enough renewable generation in time to counter the exit of fossil-fuelled power stations like Eraring, without waiting for the delivery of new transmission projects.

With further analysis and modelling, this figure could rise significantly not only in NSW but across Australia. Neara's AI-enabled digital modelling of Essential Energy's network, which covers nearly 900,000 homes and businesses, allowed

the network to unlock significant capacity across its 1.4 million conductors by showing the volume of energy distribution available to be transported could more than double with only minimal cost and time investment required. By modelling each span individually, capacity in certain parts of Essential's network was twice as high as previously thought under a crude standards model. These findings alleviated the requirements for export limits on rooftop solar and allowed larger systems to be installed on residential and commercial premises.

Sourcing network capacity with advanced digital line ratings

Digital line ratings can play a critical role in bringing renewable energy online at an accelerated pace. In the United States, EMPACT Engineering scaled its adoption of Neara's platform for wider processes including line ratings, allowing the identification of more



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opportunities to bring more electricity online using only existing assets, finding 94.5% of lines could safely run at double their capacity. This assisted EMPACT in helping utilities more effectively navigate extreme weather and resultant demand spikes while bringing more clean energy online faster.

While there are still limits to how much energy utilities can run at once, technology in this use case helps utilities implement standards at a line-by-line level offering critical flexibility not provided by crude, conservative models traditionally deployed for safety. Traditional line rating methods that evaluate capacity usage are still largely manual, requiring individual engineers to be sent into the field to record, compile and analyse data from each stretch of the network. This process is incredibly time-consuming, laborious and cost-intensive, and fails to provide the level of detail or visibility needed to accurately assess true

capacity across an entire several-thousand-kilometre-long network.

This method has caused utilities to err on the side of caution to avoid the risk of overloading lines with potentially dangerous levels of current, as well as downstream clearance risks. This has left many utilities unable to reap the benefits of abundant clean energy projects because the conservative approach leaves little room for new energy integration. Without digitisation of the network to understand the actual capacity, clean energy projects otherwise ready to go are being put on hold due to a lack of confidence as to whether the capacity for them to be safely activated exists.

The potential of technology-driven transmission

The path to a sustainable energy future will be radically shaped by the convergence of technology and innovative thinking. Utilities

are already combining multiple data sources including LiDAR, geospatial and satellite imagery to create a more accurate network picture at speed and with greater context. This not only means utilities can action infrastructure changes more efficiently including the strategic addition of taller poles or alternative conductors to accommodate more current, but to identify and aggregate latent network capacity pockets of all sizes to increase the flow of clean energy.

The shift from a manual, conservative approach to scalable data-driven analysis will play a pivotal role in unlocking capacity and fostering a transition towards a more sustainable, optimised future where clean energy is a reality. The combination of innovation and infrastructure will mark the success of the clean energy transition, serving as the paradigm shift required to ensure that 2030 and 2050 targets are not a possibility but a reality.

ROBUST POWER GRID NEEDED FOR ONCE-IN-A-DECADE DEMAND



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The Australian Energy Market Operator (AEMO) has completed its 2023–24 Summer Readiness Overview, outlining expected weather conditions, energy system preparations and contingencies to maintain electricity reliability in Australia’s main power systems this summer.

AEMO works on an ongoing basis with generation and transmission businesses, federal and state governments, and key agencies to manage risks to the National Electricity Market (NEM) that serves the eastern and south-eastern regions of Australia, and the Western Australian South West Interconnected System (SWIS).

“Our extensive planning with industry, governments and network businesses aims to have enough generation and transmission available year-round to meet consumers’ electricity needs,” said AEMO Executive General Manager Operations Michael Gatt.

“This year’s summer forecast is for hot and dry El Niño conditions, increasing the risk of bushfires and extreme heat, which could see electricity demand reach a 1-in-10-year high across the eastern states and in Western Australia.”

In August, AEMO identified periods when electricity reliability thresholds were at risk in the NEM and SWIS this summer.

“The entire industry has been focusing and continues to focus on managing possible risks for the summer ahead, particularly during high demand periods,” Gatt said.

To mitigate such risks, AEMO is in the process of procuring additional reserves through the Interim Reliability Reserve and Reliability and Emergency Reserve Trader (RERT) mechanisms in the NEM. In Western Australia, it is tendering for reserves through the Supplementary Reserve Capacity mechanism.

Compared to last summer in the NEM, an average 1500 MW of scheduled generation and an extra 2000 MW of generation capacity from new wind and solar projects will be available this summer. In the WEM, nearly 50 MW of extra scheduled generation is expected to be available.

However, an expert from RMIT has cautioned that more measures need to be put into place.

“According to the Australian Energy Market Operator we are in a much better position than last year due to additional wind and solar capacity added to the system,” said Associate Professor Lasantha Meegahapola from the university’s Electrical and Biomedical Engineering department.

“However, the amount of energy produced by these renewable power sources is significantly lower compared to traditional

generators, since they can only produce power when there’s wind and sun.

“Relying too much on these generation sources is too risky without a large storage capacity built into the network.”

While having additional wind and solar power should reduce the risk of blackouts in the coming hot summer, blackout risk cannot be ruled out, Meegahapola said.

“The operator needs careful planning to optimally utilise the additional wind and solar generators while coordinating with the energy storage systems.

“As we move towards a low-carbon power grid, the network requires more storage capacity to firm the output of the wind and solar energy generators.

Meegahapola, who conducts research into renewable power generation, power system stability and microgrids, said community or neighbourhood batteries and microgrids should also form part of the mix.

“These solutions would help us construct a more robust power grid that can cope with extreme weather conditions.”

In addition to its collaboration with industry, governments and network businesses to identify and plan for relevant summer risk scenarios, AEMO said it had undertaken extensive briefings and emergency exercises to test contingency plans and communication processes ahead of summer.

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CHARLENE LOO

MANAGING DIRECTOR, BSI AUSTRALIA AND NEW ZEALAND

What growth opportunities do you predict for your industry in 2024?

Clients and stakeholders will need expert guidance and strategic support in navigating the myriad global challenges but also opportunities they will face in 2024. Whether it is on climate, quality of life or cybersecurity, BSI will be responding to these needs as a trusted partner for organisations looking to accelerate progress towards a sustainable, ethical and digitally safe world.

What are the three biggest challenges or threats facing your industry in 2024?

Climate change is something we take very seriously and is a consideration for all those we work with. At BSI, we are committed to using our expertise to guide organisations on how to adapt their own operations to this transition.

A second challenge we and those we work with face day-to-day is cyber risk. As we digitise our business, adapting our services for organisations that are themselves digitising at a rapid pace, we become heavily dependent on IT systems. To counter this, we continue to invest in our cybersecurity program and BSI is globally certified to the Information Security standard ISO 27001.

A third challenge — equally one we see as an opportunity — comes around social sustainability and workplace culture. Organisations have the opportunity to partner with their people to build diverse, equitable and inclusive workplace cultures with the potential to bring enormous benefit to individuals, organisations and society.

How is your company mentoring staff and developing workforce skills in 2024 and beyond?

We take equality and diversity seriously, understanding that by using the talent and skills available in all groups and communities, we can build the strong team needed to accelerate progress for the long-term benefit of all.

In 2022 we launched our global Smart Working policy, which provides a flexible structure to help leaders, teams and employees consider where, when and how work best gets done.

Through our 'human connections' series, we have continued to mature our approach across diversity, inclusion and wellbeing, encouraging open conversations among our people and giving them the opportunity to share their perspectives on topics they care deeply about.

To support talent retention, we have also expanded our parent mentoring program and have supported a total of 51 mothers matched since it began. Our Global Women's Network Forum launched last year and now has six regional branches.

What strategies is your company developing to build resilience to extreme weather conditions in 2024?

Sustainability is core to our operations. We produced the world's first environmental management standard in 1992 and since then we have led the way in developing new standards around areas including energy

management and sustainable events. For example, the ISO Net Zero Guidelines, an output of Our 2050 World collaboration facilitated by BSI, provide a practical, end-to-end framework for organisations at any level of maturity on their net zero journey.

Recognising that water security is a key area of the conversation about extreme weather, we also recently launched a campaign setting out concrete steps to support progress towards a water positive future.

What plans does your company have in terms of the energy transition, electrification and replacement of gas?

We have a Kitemark for Electric Vehicle Charging, which supports market assurance amidst the rapid expansion and technological advancement in electric vehicles and their associated systems. We also offer comprehensive hydrogen testing and certification services as we take steps to cleaner energy.

Earlier this year we launched the revised carbon management standard, PAS 2080:2023, designed to help built environment organisations accelerate progress to a sustainable world by reducing their carbon emissions.

How is your company tracking with its net zero emissions by 2050 targets?

BSI has made a public commitment to reach net zero in its operations by 2030, requiring a 90% reduction in Scope 1 and 2 emissions. A further commitment has been made to reduce Scope 3 emissions by 42% in the same timeframe. Our Carbon Allowance Model gives leaders across BSI personal accountability for greenhouse gas (GHG) emissions reduction by introducing a designated carbon budget for each team and linking the achievement of organisational net zero goals to individual remuneration.

Adopting standards and BSI's own solutions is a strategic cornerstone: thus, measurement and reporting of BSI's GHG data is being done in line with the requirements of the GHG standard (ISO 14064-1). BSI is also implementing the ISO Net Zero Guidelines.



Charlene Loo joined BSI ANZ in 2017 and was appointed Managing Director in April 2023, overseeing all facets of the organisation. With over two decades of leadership experience, she has steered the business to new heights through strategic planning, a customer-centric approach and a passion for fostering a collaborative work culture. Notably, sustainability is a key focus in her leadership approach.

2023 A KEY YEAR FOR SAFEGUARD REFORM AND SUSTAINABILITY DISCLOSURE

Ilona Millar and Emily Morison – Gilbert + Tobin

There is no doubt that 2023 has been a significant year for climate law and policy reform, both in Australia and overseas. For Australian businesses, few reforms have been more noteworthy than the introduction of long-awaited changes to the Emissions Reduction Safeguard Mechanism, and the ongoing development of global and domestic climate, sustainability and nature-related risk disclosure standards.



Here, we recap these key developments and what they mean for Australian businesses as we approach the end of the year.

Safeguard Mechanism reforms commence

Following months of consultation, 1 July 2023 saw the commencement of reforms to the Safeguard Mechanism established under the *National Greenhouse and Energy Reporting Act 2007* (Cth) (NGER Act) and National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth).

Under the reforms, the baselines for designated large facilities will decline on a trajectory aligned with achieving Australia's updated emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050. This decline rate is set at 4.9% per year to 2030 for most facilities, with particular trade-exposed facilities eligible to apply for a discounted rate.

Other important features of the reforms include the introduction of 'Safeguard Mech-

anism Credits' (SMCs), which facilities may automatically generate for below-baseline performance. These units can be banked on an unlimited basis until 2030, and may be traded and surrendered for compliance purposes, along with Australian Carbon Credit Units (ACCUs).

Although the reforms have commenced, there are a number of important elements of the scheme that are still under development, including the 'international best practice benchmarks' that the government will apply for the purposes of setting a baseline for new facilities, and the emissions intensity values of production variables that will be used for baseline calculations.

The reforms should prompt existing Safeguard Mechanism facilities — and those looking to develop emissions intensive new or expanded facilities — to consider opportunities to optimise onsite decarbonisation. Facilities should also consider the utility of a procurement strategy for ACCUs and SMCs — including opportunities to generate SMCs for below baseline performance in the

near term to support longer-term compliance — and potential funding opportunities to support adaptation to the reforms, such as the Safeguard Transformation Stream of the Powering the Regions Fund.

ISSB launches sustainability and climate disclosure standards and government consults on mandatory climate-risk disclosure framework

In June 2023, the International Sustainability Standards Board (ISSB) published its much anticipated first two global sustainability disclosure standards: 'IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information' (IFRS S1) and 'IFRS S2 Climate-related Disclosures' (IFRS S2).

IFRS S1 requires companies to disclose information about their sustainability-related risks and opportunities that is useful to investors when making decisions about providing resources to these companies. Meanwhile,



Stock.com/Thinkin Piang

IFRS S2 requires disclosure of information specifically linked to climate-related risks and opportunities, and is designed to be used in conjunction with IFRS S1. Both standards adopt a similar structure to the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD), with required disclosures centring on four pillars: governance, strategy, risk management, and metrics and targets.

While the standards will be effective for annual reporting periods beginning on or after 1 January 2024, a transitional relief provision in IFRS S1 allows entities to only disclose information on climate-related risks and opportunities under IFRS S2 for the first reporting period; in other words, entities will only need to apply IFRS S1 in so far as it is relevant to climate-related disclosures for the first year.

What does this mean for Australian companies?

The standards themselves will not be mandatory for Australian businesses until codified

under Australian law. However, this may not be far away, with the Australian Department of Treasury recently consulting on a framework for mandatory climate-related financial risk disclosures for Australian businesses that is proposed to align closely with IFRS S2.

In its most recent consultation paper released in June, the government proposed a phased approach to disclosure obligations: the first group of entities — which would have obligations from 2024–25 onwards — are proposed to be certain types of large entities with reporting obligations under Chapter 2M of the Corporations Act. Significantly, entities required to report under Chapter 2M of the Corporations Act that are also ‘controlling corporations’ under the NGER Act and meet NGER publication thresholds will also be included in this first group. Obligations for smaller Corporations Act companies will commence from 2026–27, with obligations for smaller-scale businesses applying from 2027–28 onwards. Controlling corporations who report under Chapter 2M of the Corporations Act and do not meet publication thresholds will also have obligations from 2027–28 onwards.

One important corollary of aligning the framework with IFRS S2 is the proposal that disclosure of material scope 3 emissions be required for all reporting entities from their second reporting year onwards. While some industry groups have raised concerns over the proposal for scope 3 reporting, citing challenges associated with calculating these emissions, others have supported this proposal but suggested that more guidance is needed on the materiality of scope 3 emissions. Other submitters have advocated that entities should be given more time before mandatory scope 3 disclosures are phased in.

Details about what information will need to be disclosed under the framework will be set out in standards that are currently under development by the Australian Accounting Standards Board (AASB). The AASB is expected to release an exposure draft of these standards in October for consultation, following publication of a position paper by Treasury.

Companies should review the requirements of IFRS S2, on the assumption that the Australian framework when finalised will largely align with these requirements. For entities that already report in accordance with TCFD recommendations, undertaking an analysis of gaps between current reporting and the requirements of the IFRS S2 may help to enhance their climate-related disclosures and prepare for mandatory reporting obligations to commence.

TNFD launches recommendations for nature-related risk management and disclosure

Beyond climate and sustainability disclosure frameworks, 2023 has also been a significant year for nature-related reporting, with the Taskforce on Nature-related Financial Disclosures (TNFD) launching its recommendations for nature-related risk management and disclosure on 18 September 2023 after two years of design and consultation. These recommendations are designed to be consistent with the TCFD and ISSB (among others) and again adopt the TCFD’s four-pillar framework.

One important feature of the TNFD’s recommendations is the ‘LEAP’ assessment approach, which provides a framework to assist organisations to assess their nature-related dependencies, impacts, risks and opportunities.

In the wake of the launch, the Australian Government published a report on the outcomes of a number of Australian case studies that tested the draft recommendations across different value chains, including critical mineral mining for producing clean energy technologies and natural gas extraction for industrial manufacturing (among others).

The report suggests a number of actions for Australian businesses looking to adopt the TNFD recommendations, including building their internal natural science capabilities; developing a stakeholder engagement strategy to help identify and assess nature-related risks and opportunities; seeking opportunities to promote First Nations People’s knowledge and land management practices; and creating a roadmap for preparing nature-related disclosures.

Although Australian businesses are not currently subject to mandatory nature-related disclosure requirements, as the report notes, the launch of the TNFD recommendations should prompt companies to evaluate whether nature-related risks and opportunities are material to their business activities and warrant disclosure to shareholders in accordance with the Corporations Act 2001 (Cth). Businesses should also monitor developments from the ISSB, which recently concluded consultations on potential future work priorities, including standards for biodiversity, ecosystems and ecosystem services. The ISSB is expected to announce its priorities in the first half of 2024.

This article has been republished with permission from Ilona Millar, Partner at Gilbert + Tobin, who authored this article with Emily Morison, Lawyer at Gilbert + Tobin.

INSIGHTS INTO COMPRESSED AIR

For industry to continue using compressed air as a sustainable power source, new generation compressors will need to be super energy efficient and match the demands of each application.

...they are already here!

KAISHAN COMPRESSORS



p|mv ROTARY SCREW

Rare earth, permanent magnet and variable frequency technologies combine in advanced efficiency, energy saving performance.



2-Stage precision airend.



kr|of OIL-FREE

Class Zero oil free Rotary Screw supplies contaminant free compressed air for food and other critical applications.



Advanced control panel.



kr|sa LP ROTARY

Single stage, 3 bar, low pressure, specifically designed to maximise output at pressure. More air, less power.



Larger rotary airends for high efficiency.



SCREW 16 BAR

For faster, efficient laser cutting with high purity air power using permanent magnet and variable speed drive technology.



100% duty rated. Ultra quiet.



Kaishan Compressors Australia is part of the Global Kaishan Group, a world leader in the research, design and manufacture of advanced technology air compressors and systems for every application.

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MARK FERGUSON

CEO, KAISHAN AUSTRALIA

What growth opportunities do you predict for your industry in 2024?

I see potential for growth in the supply of purpose-designed compressors and systems for contamination-free, scientific, chemical, food and beverage and precision engineering applications. The introduction of new innovations in specialised, energy-saving compressors, including variable speed, permanent magnet, oil-free and low-pressure models, offers machines that are designed to match critical industry needs with maximum energy efficiency. Global resources also allow us to custom design and build compressors for mining, marine and other demanding applications.

With industry needing to maintain compressors and systems in peak running condition to maximise production with the lowest possible energy usage and extend the life of existing installations, we will see a growing need for repairs, replacements and regular servicing. To that end we have increased our national fleet of highly trained mobile technicians backed by a comprehensive stock of compressor parts and system accessories for all makes and models.

What are the three biggest challenges or threats facing your industry in 2024?

We find the three biggest challenges are around staffing, energy costs and global unrest.

Firstly, there is a shortage of available personnel skilled in compressed air-related trades and administration. Being a highly specialised industry, we are aware of the need to train future technicians through an ongoing apprenticeship program. Even competent technicians from similar fields need intensive training and experience in the ever-evolving compressed air industry. The hangover from COVID-19 also continues to put pressure on recruiting and retention of our workforce; however, we believe providing a positive work environment and real growth opportunities will keep us ahead of the game throughout 2024 and beyond.

Increasing energy costs and supply uncertainties also continue to put pressure on our industry and that of many of our customers. We at Kaishan must continue to lead in the development of low energy cost solutions to compressed air supply. With the introduction of global initiatives including rare earth and permanent magnet technologies, we are currently achieving quite remarkable results in improving energy in to airpower out ratios that have maintained compressed air as a viable and sustainable power supply.

Thirdly, uncertainties in relation to global trading and the ramifications of international conflict are constantly putting upward pressure on pricing for production commodities. Increased capital costs of compressors and ancillary products are stifling customer equipment upgrades and replacement investment by customers.

How is your company mentoring staff and developing workforce skills in 2024 and beyond?

As a rapidly expanding business, we are constantly seeking skilled and capable people to grow and enhance our administration, sales

and service departments around the country. Attracting and retaining these people is an ongoing challenge with intensive training and retraining, remuneration and succession strategies that reward our people. Our apprenticeship program is training new technicians to handle current and future developments in the industry.

What strategies is your company developing to build resilience to extreme weather conditions in 2024?

We have grown and prepared our national, mobile service teams to handle customer downtime emergencies with a professional and effective rapid response protocol. Our national network ensures we are adequately stocked avoiding supply delays in all types of compressors and products to meet the continuing demands of our customers.

What plans does your company have in terms of the energy transition, electrification and replacement of gas?

Fortunately, most of our air compressors run on electricity, so our reliance on gas and other forms of energy are minimal. This is why we are so focused on minimising the amount of electrical input for airpower output. With Australia's rapid intended transition to renewable energy generation, we are very aware of the part we and every industry will have to play in reaching these goals. Energy-efficient compressors and well-maintained systems will be paramount in assisting our customers to meet their industry emission reduction targets.

How is your company tracking with its net zero emissions by 2050 targets?

Globally, the Kaishan Group is on track to produce more renewable energy than our compressor products take from the worldwide grid. We are global leaders in manufacturing and installing power plants that generate power back into production by converting waste energy into useable electricity. This allows factories to reduce energy usage and meet their emissions reductions targets.



For over 30 years Mark Ferguson has worked with a myriad of compressed air equipment applications across Australia. Starting in the industry as a Graduate Engineer, Mark has been involved in all aspects of compressed air including sales and marketing, design and manufacture through to business leadership.



CONTROL VALVE VOLUME BOOSTER

The Type 6000 Volume Booster from ControlAir is a one-to-one signal to output relay that, when used with a positioner/actuator, is designed to increase the stroking speed of control valves. A large input signal change to the volume booster delivers high-volume, fast-action throttling control. An integral bypass valve provides system stability while allowing normal positioner airflow and normal valve actuation with small input changes. If the volume booster is to be used for on/off control valves, the bypass valve can be closed to optimise stroking speed. The Type 6000 is available in aluminium or 316 stainless steel construction.

The fast response of the Type 6000 delivers high air volume for rapid actuator stroking. It consists of an adjustable bypass valve tuning unit that responds to eliminate actuator overshoot or overdamping. There is also soft seat sealing to provide tight shutoff and reduce costly air consumption. Type 6000 volume booster is corrosion and wear resistant, made of stainless steel for external trim and internal wear parts. There is a choice of 1/2" or 3/4" NPT supply and output ports. The material used for the diaphragms is either nitrile or nylon, and the bypass valve and springs are made of 304 stainless steel. Special versions are available with EPDM or silicone elastomers and stainless steel internals.

Slentech Pty Ltd
www.slentech.com.au

ENABLING FOOT SWITCH

The BERNSTEIN Three-Stage Enabling Foot Switch is an electromechanical switch designed for staged control operations. Its features include hands-free operation; reduced risk to the operator; easy and controlled positioning; and pedal position feedback.



Generally, a machine will not operate when a safety gate is open, which can make programming and maintenance problematic. With an enabling foot switch, these tasks can be safely performed using the logically designed switching stages as follows: Position 1 = OFF, Position 2 = ON, Position 3 = STOP, or rather will revert to the OFF position when the pedal is fully compressed. Level 3 is of enormous importance for the safety of the operator.

In addition, the enabling foot switches can be equipped with a safety latching mechanism. This ensures that the foot switch engages after reaching Position 3, and also ensures that the machine cannot be started without first being unlocked.

Enabling foot switches from Bernstein also have the added option of pedal position monitoring. From a control point of view, pedal positions 1 and 3 are completely identical. Bernstein switches have an optional additional PNP signal output which indicates the exact pedal position, making it easy to identify and signal a forced stop.

Pacific Automation
www.pacificautomation.com.au



SPARK TRAP FOR DUST EXTRACTION SYSTEM

Nordfab's Inline Spark Trap is a complementary fire prevention item for a dust extraction system.

Installed in the ducting system, as part of a dust collection system, the Inline Spark Trap is designed to reduce the possibility of fire in cyclones/dust collectors, by decreasing the number of sparks which could reach the cyclone or dust collector through the ductwork.

The spark trap's effectiveness is based on a simple principle, disrupting the laminar airflow to cause sparks to cool and extinguish before they can enter a cyclone/dust collector.

There are no moving parts and no power is required for operation.

Nordfab Pty Ltd
www.nordfab.com



Mass timber office building opening in Melbourne

Hines has announced the practical completion of its mass timber office building in Melbourne. The building will offer tenants an employee-centric workspace to help attract and retain talent, while supporting demand for high-quality, green office buildings.

The firm's T3 Collingwood is claimed to be the tallest mass timber office building in Melbourne. Building with timber can result in carbon savings when compared to steel and concrete.

David Warneford, country head of Australia and New Zealand at Hines, said, "We're seeing a strong pivot towards ESG adherence, as well as towards core central locations, among today's tenants — both are expected to underpin growth for the prime end of the office market in Australia. Demand is there, and we see good locations and premium green buildings leasing."

The 18,200 m² and 15-storey building is located at 36 Wellington Street in Collingwood, Melbourne, adding to Hines' global portfolio of 26 timber assets in various development stages across North America and Europe as of 2023.

"These 'magnet buildings' are sustainability driven, well located, technologically efficient and adjacent to transit. They're more than just office buildings. They're places for building culture, collaboration and community," Warneford said. "Given the strength of our portfolio,



continued momentum in return to work in our capital cities and the future supply dynamics of office, we're optimistic about the office sector in Australia."

Hines is also developing 600 Collins, the firm's \$1 billion next-generation prime office tower in the heart of the city, which aims to set benchmarks for tenant amenity, workplace and ESG.

Regional hospital installs Wastemaster



Tonnes of food waste from the Epworth Geelong kitchen is being converted to compost, reducing landfill and greenhouse gas emissions. In the longer term, this waste will also be used to power local homes.

Epworth Geelong is one of the first regional Australia hospitals to install a Wastemaster food waste dehydrator, which removes 80% of water from kitchen waste.

Leonie Lloyd, Executive General Manager Epworth Geelong, said Epworth wants to champion sustainable hospital practices. Results from an independent sustainability audit found that one of the biggest contributors to the hospital's carbon emissions was food waste from the kitchen.

"Previously, tens of thousands of kilograms of food offcuts were being taken from the kitchen at Epworth Geelong to landfill," Lloyd said.

The Wastemaster dehydrator removes water from food waste such as fish and chicken bones, fruit and vegetables, eggs and eggshells, teabags and coffee grinds, leaving behind a powdery residue that is high in nutrients.

Epworth HealthCare Group Sustainability Manager Simon Mikedis said the residue will be taken to a City of Greater Geelong council facility to be used in nutrient-rich compost in local parks and reserves.

"Longer term, we will partner with an anaerobic facility so food waste residue can produce electricity to power homes," Mikedis said.

In Victoria, Epworth Richmond was the first hospital to install a Wastemaster system. Last year, more than 36,000 kilograms of kitchen waste from the hospital was reduced to residue and taken to Yarra Valley Water's anaerobic facility at Wollert. This residue was used to create enough electricity to power five homes for an entire year.

"In three years, the Wastemaster at Epworth Richmond has prevented 135 tonnes of food waste going to landfill, cutting greenhouse gas emissions by 224 tonnes," Mikedis said.

The installation of the Wastemaster system at Epworth Geelong was made possible through support from the Percy Baxter Charitable Trust.



Extracting a better future

How leading mining companies are bridging sustainability commitments and delivering results

Scan to download
the white paper





Andres Quijano, Envirosuite Sales Manager — Americas at Envirosuite

In an era where environmental stewardship and ethical practices take centre stage, the mining industry is currently moving towards a transformative shift towards Responsible Mining in order to meet increased supply demands.

The global mining industry stands at a crossroads, facing challenges and opportunities that will shape its trajectory for decades to come. To ensure a prosperous future for mining and deliver meaningful results to shareholders, communities, and regulators, a decisive action plan is needed. This action plan hinges on the adoption of Responsible Mining practices, which has the potential to trigger a once-in-a-generation reset of regulatory policy and community expectations.

The numbers suggest an increasing need to demonstrate responsible mining practices

According to statistics in our latest white paper on Responsible Mining:

- Over the next 10–15 years, we can expect a global shortage of critical minerals
- 9/10 institutional investors say they factor ESG and sustainability into decisions
- 67% of institutional investors feel they have a “responsibility to invest sustainably”

A once-in-a-generation reset for the mining industry to take on ESG and sustainability requirements

The adoption of Responsible Mining practices will continue to be a foundation of strategic milestones for the mining industry as it moves forward into a rapidly changing world. There is currently a once-in-a-generation opportunity to fundamentally reset within the prevailing regulatory landscape and set a new bar for stakeholder expectations.

This paradigm shift is not just about meeting increasing ESG requirements but about embracing a profound commitment to transparency, sustainability, and ethical practices. Mining companies are presented with the chance to reposition themselves as leaders in responsible resource management, setting new industry standards that prioritise environmental preservation and social responsibility. This transformation extends beyond short-term gains; it is a strategic move that secures the industry’s long-term viability.

By embracing Responsible Mining, producers can demonstrate their unwavering dedication to sustainable practices, fostering trust and credibility among regulators, local communities, and stakeholders. Mining companies can forge meaningful partnerships that empower local inhabitants and preserve their cultural heritage.

The journey to Responsible Mining is not just one of compliance requirements; it is a proactive commitment to shaping a brighter and more responsible future for the industry while safeguarding the Earth’s precious resources for generations to come.

Download: Free white paper on Responsible Mining

Envirosuite understands the importance efficient and sustainable mines play in society. It is essential for the mining companies to break through data silos, build social licence to operate and demonstrate responsible mining practices.

Today’s mining operators remain focused on staying within imposed limits in order to avoid costly stoppages. Despite these measures, a variety of challenges at a mine site can hinder efficiency and lead to a constant struggle of balancing productivity targets against compliance thresholds.



Envirosuite provides mining operators with digital solutions to demonstrate responsible practices and gain operational flexibility.

Learn more about how the leading mining companies are bridging sustainability commitments and delivering results in our latest white paper “Extracting a better future”. Scan to get a copy of the white paper.



Andres Quijano has over 15 years of experience providing hardware and software solutions to environmental professionals. He’s been on a mission to enable sustainable mining operations at some of the world’s most complex sites for the past decade.



Envirosuite Operations Pty Ltd
www.envirosuite.com



LOAD CARRIER FOR OFFSHORE WIND SECTOR

Combilift, global manufacturer of multidirectional, articulated forklifts and straddle carriers, is moving into the offshore wind sector with the launch of a new product designed to meet the intricate load-handling demands of large-scale offshore wind manufacturers.

The Combi-LC, designed at Combilift's HQ and manufacturing plant in Ireland in collaboration with Siemens Gamesa, allows for the movement of wind turbine blades and towers — some as long as 115 m and weighing in at around 70 t — through production stages and on to storage locations, which can sometimes be as far as 5 km apart.

The concept of bespoke Load Carriers [patent pending design] is based on two fully customisable remote-control units with low-level chassis beds that can work in tandem master and slave operation, with dimensions and wheel configurations that vary according to load type and weight.

Siemens Gamesa is the first company to use the bespoke Load Carriers.

Combilift
combilift.com



FLEXIBLE SWITCHBOARD CABLES

LAPP Australia's locally stocked range of orange tinned copper Switchboard Flex cables is designed to meet Australian standards for use in switchboard applications. The cables are suitable for switchboards and transformers, mains power distribution, burial in underground ducts or conduit, and other industrial applications. These low smoke zero halogen (LSZH) cables are designed for harsh Australian conditions. They are ultra-flexible with class 6 stranding, and a minimum bending radius of 5 times the outside diameter of the cable.

The single-core double insulated (SDI) cables feature an operating temperature range of -25°C to 110°C and voltage rating of 600 V/1000 V. The orange outer sheath is made from R-E-110, a flexible rubber that provides UV and weather resistance, oil and chemical resistance, and flame-retardant properties.

Conductor sizes range from 10–300 mm with outer diameters from 9–32.4 mm to suit a broad range of industrial applications, including mains power distribution and DC power feeds. Other products in the SDI range include earth tinned copper (green-yellow outer sheath, 110°C), standard bare copper (black outer sheath with bare copper, 90°C) and black tinned copper (black outer sheath with black copper, 110°C).

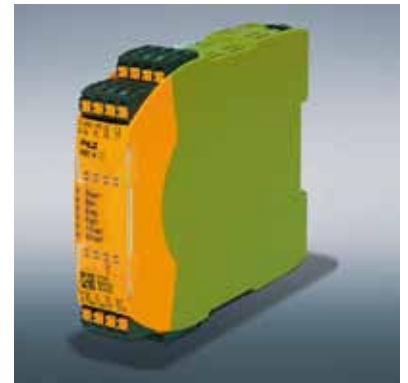
LAPP Australia Pty Ltd
lappastralia.com.au

SAFETY CONTROLLER

The PNOZ m C0 standalone base unit from the PNOZmulti 2 small controller range is now available in Australia.

PNOZ m C0 offers numerous functions in a compact housing: eight safe inputs and four safe semiconductor outputs in a width of 22.5 mm monitor safety functions on small machines. Depending on the application, users can achieve PL e or SIL CL 3. There are also two test pulse outputs, both of which can be configured as standard outputs.

LED indications are provided for error messages, diagnostics, supply voltage, output circuits and input circuits, and monitoring of shorts across contacts is achieved by means of test pulse outputs at the inputs.



Users can create a safety circuit using the PNOZmulti Configurator software tool, which provides access to a large collection of authorised software blocks without having to pay any licence fees. The PNOZmulti Configurator I is designed to help accomplish safety requirements simply, flexibly and intuitively, whether it be for emergency stop, safety gate monitoring, light curtain or two-hand operation. The safety configuration only takes a few clicks. PNOZmulti can be used regardless of the machine type, plant type, country or branch of industry.

The safety circuit can be transferred directly to the unit via a USB cable and stored directly there, or alternatively, via the chip card.

If the number of safety functions on a machine rises, users can migrate to the modular expandable base units PNOZ m B0, PNOZ m B0.1 or PNOZ m B1.

Pilz Australia Industrial Automation LP
www.pilz.com.au



HARNESSING SMART WATER TECH FOR SUSTAINABILITY

Remi Thelisson, Head of Digital Transformation, Asia Pacific, Veolia Water Technologies

Water is the essence of life, and its responsible management is crucial for the wellbeing of humanity and our planet. As the global population burgeons and climate change intensifies, water management poses increasingly complex challenges. Among these challenges is the pressing need to decarbonise water treatment activities.

Conventional water treatment processes are often energy-intensive and can contribute significantly to a manufacturer's carbon emissions. By embracing smart water technologies, companies can significantly reduce their carbon emissions while improving their overall sustainability performance.

Here are three ways smart water technologies can enhance an organisation's sustainability efforts:

1. Optimising resources

Efficient resource management is at the heart of sustainability. Real-time data monitoring and analytics play a pivotal role in identifying areas for improvement. With the right digital solution, organisations can monitor their water treatment processes in real time, allowing them to make data-driven decisions that optimise resource utilisation. For example, weather forecasts can be used to optimise the operations of sewers and wastewater plants, load, as well as energy

and chemicals usage, such that organisations can achieve cost savings while simultaneously reducing their environmental impact.

The merits of resource optimisation are twofold: it not only drives cost reductions, but also contributes to the curbing of greenhouse gas emissions, aligning organisations with sustainable practices.

2. Improving water treatment and conservation

Advanced analytics and artificial intelligence (AI) are game changers in every aspect of our lives, including the water industry. They enable companies to monitor and optimise water treatment processes with precision. By leveraging these technologies, organisations can prevent non-compliance issues and ensure that treated water quality remains consistently high. Moreover, smart water technologies empower businesses to manage water more effectively by identifying areas where water can be conserved, reducing wastage and supporting the preservation of this precious resource.

3. Data-driven decision-making

Data forms the bedrock of effective water management. With smart water technologies, data is transformed into actionable information for operators and managers. Key performance indicators (KPIs) can be set to provide guidance for decision-making, offering a better understanding of the plant's operations and enabling rapid responses to water quality issues and emergencies.

By harnessing the power of data-driven decision-making, organisations can optimise their operations, improve efficiency and minimise their environmental impact.

By embracing smart water technologies, such as Veolia Water Technologies' Hubgrade digital solution, organisations can optimise resources, improve water treatment and make data-driven decisions. The solution provides user-friendly and comprehensible data, as well as a unified platform for users to evaluate, monitor and improve process performance. By leveraging advanced technologies, like artificial intelligence and machine learning, the solution analyses data gathered from sensors that monitor the biological composition of wastewater. It can automatically fine-tune treatment parameters, such as minimising aeration or optimising chemical usage.

OPTICAL BREAKOUT CABLE

The LAPP HITRONIC HDH mini-breakout cable is designed to be a compact and efficient solution for data transmission in demanding environments. Combining fibre optics with durability, this cable is said to ensure reliable connections in industrial settings and telecommunications. Its design features robust connectors and a strong outer jacket, safeguarding against mechanical stress and environmental factors.

The Mini-Breakout Cable's versatility, coupled with its space-saving construction, makes it suitable for scenarios where space is at a premium. With high data transfer capabilities, resilience and adaptability, the LAPP HITRONIC HDH Mini-Breakout Cable stands is said to be suitable for high-demand applications.

The cable is designed to be easy to handle due to a flexible and compact design and includes reinforced glass yarn for strain relief. The halogen-free LSZH outer sheath meets fire protection requirements, with classified fire behaviour according to EU Directive 305/2011 (BauPVO/CPR).

It is suitable for use in backbone network areas and can be used in both dry and damp rooms.

Treotham Automation Pty Ltd
www.treotham.com.au



MULTIFUNCTION CABLE CERTIFIER

Approved by more than 35 cable manufacturers worldwide, the TestPro CV100 Multifunction Cable Certifier is purpose-built for today's copper and fibre network infrastructure. Offering a large suite of test functions, the TestPro CV100 enables certification of cables to ISO/IEC 14763-3, AS/NZS 3080:2003 and other standards through hot swappable test adapters.

It offers testing for single pair Ethernet, hybrid-powered fibre, wireless network connectivity (SSID, RSSI, Ping, Speedtest, Roaming) and network connectivity (Speedtest, SNR per link speed).

The CV100 platform is compatible with multiple plugin test adapters for different applications, including: copper test adapters up to CAT 8.1 and 3 GHz as standard (CAT 8.2 as an option); fibre OLTS test adapters (singlemode and multimode); OTDR test adapters; and multi-gigabit network test up to 10 Gb and PoE Test Adapter up to 90 W. It comes with project management software and regular free firmware updates.

Other features include full CAT6A certification in 6 s; network switch detail (VLANs list and usage, slot, port, device list, MACs, IPs); a locator for NEXT, RL and Shield; and MPTL and coaxial adapters. Made in Singapore with local calibration in Australia, it has a 5-year warranty.

TelecomTest Solutions
www.telecomtest.com.au

GPU CARDS

Advantech has introduced the NVIDIA RTX 6000 Ada and NVIDIA RTX 4000 SFF Ada GPU cards for its modular systems.

Powered by the NVIDIA Ada Lovelace architecture, these graphics cards provide an increased number of CUDA cores compared to the previous generation. They are also equipped with third-generation RT Cores and fourth-generation Tensor Cores. The Ada generation graphics cards can claim more than double the single-precision floating point throughput, resulting in up to 2-times higher performance for 3D model workflows, real-time ray tracing and AI training. With their higher performance these RTX GPU are suitable for manufacturing, transportation and medical industries for image processing and Edge AI acceleration.

As an NVIDIA Elite Partner, Advantech can offer a wide range of industrial GPU solutions, with a specific emphasis on NVIDIA RTX GPU cards and Quadro GPU cards. In the near future more NVIDIA Ada Generation GPU cards will be available, including the RTX 5000 Ada, RTX 4000 Ada, A800 40GB Active and RTX 4500 Ada.

Advantech Australia Pty Ltd
www.advantech.net.au





Energy savings achieved through power monitoring at rubber plant

Founded in 1917, the Yokohama Rubber Company manufactures various types of tyres for passenger cars, trucks and buses, construction vehicles, industrial vehicles, agricultural and forestry machinery. It also manufactures conveyor belts, bridge and civil engineering materials, and aviation components as well as

sporting goods. The company's plant in Onomichi City, Japan, began production in 1974 and specialises in the production of large tyres for construction and industrial vehicles that operate in mines, ports and other demanding environments.

The tyre manufacturing process requires a large amount of energy, especially in the scouring process for mixing raw materials. In response to the drive for carbon neutral manufacturing, Yokohama Rubber is working on energy conservation initiatives with the initial goal of reducing its greenhouse gas emissions by 28%, compared to 2019, by 2030. Longer term it plans to achieve net zero CO₂ emissions by 2050.

The company has already reduced the use of electricity through the introduction of modern inverters while other energy-saving measures have resulted in other significant reductions in fuel costs. Aiming to go further and create a world-class energy-saving program, engineers from the Onomichi Plant visited Mitsubishi Electric's Fukuyama Works, which showcases energy conservation techniques in its own operations.

On visiting the plant, Kazuyoshi Yanagisawa, Manager of Onomichi's Engineering and Maintenance Section, commented that: "While their products are different from ours, I realised at once that the factory's energy efficiency is superb, thanks to the monitoring and analysis systems they have developed."

Based on their tour of the Fukuyama Works, Onomichi's Engineering and Maintenance Section developed an energy-saving data collection system based on Mitsubishi Electric's EcoWebServer III. This collects energy information from around the factory and displays it on a PC connected to the site's existing internal computer network. The system means power consumption can be visualised in near real time, making it possible to plan effective energy-saving measures.

"We quickly discovered via EcoWebServer III that power consumption was fairly constant throughout the day," said Takeshi Matsushita of the Engineering and Maintenance Section. "Surprisingly, it did not drop much during periods of low production. This was because the main water pump was operating all the time, even when a pressurised supply was not required. This was a quick fix with an immediate payback in terms of significant energy savings."

It was also realised that power consumption was not dropping significantly during the night when production was also lower. After consulting with the appropriate personnel, new procedures were developed



ensuring compressors were turned down or off when not needed. This simple initiative led to further energy savings both at night and during the day when major production equipment was not in use.

To enhance the energy-saving effects of EcoWebServer III, Yokohama Rubber has also installed EcoAdviser

at the Onomichi Plant. EcoAdviser is an energy-saving support application that graphically visualises energy information collected by EcoWebServer III in an easy-to-understand manner that can be seen by all personnel.

"It is only natural that we energy managers want to see and understand fully detailed energy information," said Kazuyoshi Yanagisawa, Manager of the Engineering and Maintenance Section. "However, it is the operators onsite who actually use the energy. We realised that in order to increase onsite motivation for energy conservation, clear simple graphics display via EcoAdviser would be an ideal solution."

To help with implementation, the company adopted the EcoAdviser Utilization Support Service provided by Fukuyama Works. This includes screen creation training and basic screen creation services to get the system up and running quickly. The training has been effective, and now the staff members are able to create new screens on their own.

Yokohama Rubber designates June every year as 'Environment Month', when each department at the plant competes in energy-saving activities. The EcoWebServer III and EcoAdviser played a major role in the most recent Environment Month.

"Previously we could only describe the results rather than quantify them," Matsushita said. "However, EcoWebServer III and EcoAdviser have made it possible to visualise the effects of actions such as turning off wasteful lighting in a way that can be understood by everyone. Showing the actual power-saving figures really motivates each department."

In addition to Environment Month, the Engineering and Maintenance Section now uses the figures to disseminate information to all personnel via a regular in-house e-newsletter entitled Energy Conservation Communication. By copying the EcoAdviser screen into the newsletter, specific information can be given in an easy-to-understand way.

Not content to rest of their laurels, Onomichi is now considering integrating management of energy sources other than electric power, such as boilers, steam and cooling water, into the EcoWebServer III/EcoAdviser system.

Mitsubishi Electric Australia
www.mitsubishielectric.com.au

ENCLOSURES

The flame-retardant UL94-V0 ABS IP54 1556 family of enclosures is inspired by the IP68 polycarbonate 1557 series. It features the same modern rounded corners and top face styling and introduces rectangular versions to complement the square formats derived from the 1557 series. IP54 sealed for general-purpose indoor use, the ABS material gives a lower price point than the polycarbonate used in the 1557, which is designed for installation outdoors and in aggressive environments. Self-tapping screws secure the lid to the base, for applications where repeated access is not required. There are multiple PCB mounting standoffs in both the lid and the base.

There are four square sizes from 80 x 80 to 200 x 200 mm and three rectangular ones from 120 x 80 to 200 x 160 mm. All are available in black, RAL 7035 grey and white and there are two heights: 45 and 60 mm for the smallest size and 45 and 70 mm for the larger ones. The enclosure is suitable for desktops when fitted with the supplied feet; it can also be wall-mounted with four visible brackets or two hidden ones. Also available as an option are 2-mm-thick aluminium internal panels.

Hammond Electronics Pty Ltd
www.hamfmg.com



ON-SITE CLEANING AND SANITISING SYSTEM

eWater Systems are designed to replace harsh chemicals with a sustainable on-site system that provides an unlimited supply of Australian Certified Organic disinfectant, sanitiser and cleaner using electrolysis technology.

There are two central products in the range that both directly and indirectly adhere to all major green building programs.

The eWater Standalone System is a wall-mounted, single outlet device that is compact and suitable for commercial kitchens and cleaning closets. The system is easy to install and can be set up within new sites or adapted to fit existing locations.

The Reticulated System operates through central tanks that are designed to support full building installations, large-scale food preparation establishments and medical facilities. This system provides multiple Oversink Flexi Faucets and Auto Dispensing Handwash Stations, which can be tailored to meet the needs of a busy kitchen, food preparation and facilities, as well as cleaning and sanitising operations.

eWater Systems are designed to be effective against a wide range of pathogens including coronaviruses (COVID-19) and are supported by HACCP food safety certification.

eWater Systems Pty Ltd
www.ewatersystems.com

MODULAR CONNECTOR

A single connector that supports the demanding technical expectations of the increasing number of functions on a PCB board, following the general trend of miniaturisation, HARTING's har-modular is designed for various applications, transferring a variety of signals, power and data from PCB to PCB.

HARTING's har-modular gives users the option to customise their own connectors easily without the use of tools, thus saving on tooling costs and time. The har-modular also offers developers the option to create prototypes in small series, allowing quick reconfiguration with ease. The har-modular is suitable for developers who have difficulty in finding a solution for their applications from a wide range of DIN connectors.

The key requirement for the design of the har-modular is for it to be highly robust. This connector is as robust as the popular DIN 41612 connectors. Despite its similar sturdiness, it is not meant to replace the DIN 41612 connectors, but to offer viable solutions to meet the requirement for numerous different signal, power and data lines to co-exist in a singular connector.

Winner of the German Innovation Award 2021 and US IDEA Award, the har-modular is applicable in almost all industries, including the PGTD energy market. It is also a good solution for control cabinets and power supplies.

HARTING Pty Ltd
www.harting.com.au





Energy deal for Australia's vulnerable communities

Aged care and community services provider BaptistCare NSW, ACT and WA has signed a 10-year power purchase agreement (PPA) with Flow Power, linking energy use from its NSW and ACT operations to renewable generation from January 2025.

The PPA will allow BaptistCare to purchase around 15,000 megawatt hours each year from solar and wind farms in NSW from 2025. This will reduce the carbon footprint of its NSW and ACT operations by 70% (off a 2022 baseline of Scope 1 and 2 emissions).

"BaptistCare is committed to reaching net zero in our Scope 1 and 2 emissions by 2050 or before, and this PPA with Flow Power forms a key part of our credible roadmap to get there," said Thomas Griffiths, Head of Strategy & Investments for BaptistCare NSW, ACT and WA.

"We will save around 11,000 tonnes of carbon per year, which is like taking 25,000 petrol-powered cars off the road over the 10 years of the agreement.¹

"It's also a way to ensure BaptistCare is a part of the just transition. We care for some of the most vulnerable people in our communities, and this PPA, paired with other initiatives, is one part of our commitment to caring for people, planet and the community. We are proud to help lead the aged care and community sector towards a just transition to renewable energy," Griffiths said.

Byron Serjeantson, Chief Operating Officer for Flow Power, said: "This agreement represents a significant milestone on their 2050 net zero roadmap, and an important moment for the wider aged care sector."

Along with obtaining supply linked to renewable energy sources and large-scale generation certificates (LGCs) from Flow Power, the



agreement will complement other environmental and sustainability initiatives from BaptistCare. These include the installation of solar panels at residential aged care homes and efforts to reduce Scope 3 emissions such as through improved recycling practices.

"The scale of these challenges requires innovation and collaboration. We are grateful for the support from the NSW Office of Energy and Climate Change and the Sustainability Advantage Program to develop our net zero pathway and identify opportunities to reduce our emissions," said Charles Moore, CEO of BaptistCare NSW, ACT and WA.

1. EPA Greenhouse Gas Equivalencies Calculator: Greenhouse Gas Equivalencies Calculator | US EPA

Flow Power

www.flowpower.com.au

Insect-powered food waste management solution for hospitality industry



Luke Fraser, CEO Howard Smith Wharves (left) and Justin Frank, Head of Strategy and Communications, Goterra (right).

Howard Smith Wharves and Goterra have unveiled a food waste management initiative with the deployment of Goterra's technology onsite at the precinct. The solution, powered by insect technology, is designed to help provide sustainable food waste management in the hospitality industry.

CEO of Howard Smith Wharves Luke Fraser said, "Our core sustainability focus is to ensure that waste generated across our venues

is separated, segregated and recycled. We currently divert 96% of waste from landfills by utilising 17 different waste streams.

"By bringing Goterra into our precinct, we are adding another innovative solution to waste streams by harnessing the natural power of insects and transforming waste into fertiliser."

The modular onsite food waste processing system uses maggot-based robotic systems to unlock organic waste processing and divert food waste from landfill. Suitable for greasy food waste and biodegradable packaging, the black soldier fly larvae can convert food waste into high-value, low-impact protein and fertiliser in just 12 days.

Olympia Yarger, CEO and founder of Goterra, said, "Aligning with Howard Smith Wharves is a natural development in our mission. Engaging with sustainability-centric partners enables us to transform waste streams into regenerative by-products."

Fraser said: "It's of global importance that we reduce our footprint and make informed decisions about lasting environmental impacts. In Australia, with our goal of reaching net zero by 2050, we must ensure that sustainability is not just a one-off but business as usual. We have an open-door policy to allow the community to experience our equipment and processes in action to inspire widespread adaptation of similar practices."



HYDROPOWER: REDEFINING THE RENEWABLE ENERGY LANDSCAPE

Hydropower is a cornerstone of sustainable energy solutions. It promotes environmental responsibility, economic stability and energy reliability as the world continues to shift towards a sustainable and environmentally responsible future.

As a technology, hydropower provides essential grid stability and energy storage capabilities, enabling the seamless integration of intermittent renewable sources like wind and solar. Simultaneously, contributing to climate change mitigation through water resource management, flood control, and ecosystem restoration in well-planned and sustainable initiatives.

SMEC is advancing hydropower projects globally by utilising innovative designs and technologies that emphasise

environmental sustainability, enabling the harnessing of renewable energy from flowing water, redefining the renewable energy landscape.

In October 2023, the International Hydropower Association (IHA) held the World Hydropower Congress in Bali where SMEC's Karen Atkinson (Chief Operating Officer, South East Asia (SEA) Division) and Bob Tilbury (Market Director – Water), were among the presenters. Both shared their insights on current projects and contributing to the ongoing dialogue on the role and urgency for sustainable energy solutions.

Globally, there are key actions required within hydropower and the renewables sector more broadly to help achieve net-zero goals by 2050.

Acknowledging industry challenges with a sense of urgency

Despite its immense potential, the hydropower industry faces significant challenges, especially as emphasis shifts to the transition from global warming to the more immediate 'global boiling' scenario. This term, which Indonesian President Jokowi Widodo used in his opening remarks, shows the escalation in urgency for action to address climate risks. SMEC recognises the pressing issues of perceptions, financing, market mechanisms for capacity and firming, and industry capacity in consulting and construction. Perception-related issues involve concerns such as the environmental impact of hydropower and potential displacement of communities. Addressing these hurdles is imperative to unleash the full potential of hydropower as a sustainable energy source and to address the immediate environmental challenges posed by the climate crisis.

Actionable steps for industry advancement

The Congress highlighted three pivotal actions imperative for driving the industry forward, calling for collective efforts and individual engagement. SMEC advocates for industry-wide dissemination of knowledge, and advocacy for essential policies, regulations, and market mechanisms. Sharing lessons and best practices related to financing and sustainable contracting models will be crucial in propelling the industry's growth. Additionally, supporting organisations like IHA, pivotal in promoting the industry and addressing climate change, is critical for industry advancement.

Embracing sustainable hydropower

SMEC firmly endorses the IHA-authored San Jose Declaration and Bali Statement, underscoring the importance of sustainable hydropower as the driver for green industrial growth. This commitment aligns with the milestone launch of the Hydropower Sustainability Alliance (HAS) at the Congress, an initiative dedicated to enhancing transparency and trust through a rigorous Hydropower Sustainability Standard, combining efforts from both public and private sectors to certify sustainability, ensuring a mutual understanding between civil society and hydropower developers. This emphasises the imperative need for sustainable policies and standards for the industry's global well-being.

Message to COP 28: a call for collaborative progress

The message conveyed at the Congress to COP 28 is clear: the future of hydropower lies in sustainable development, recognising that green economic growth cannot occur without the pivotal role of hydropower. A key outcome of the Congress; the Bali Statement stresses that sustainable hydropower should be the backbone of national strategies fostering low-carbon economies, especially in regions like ASEAN where substantial hydropower potential exists.

However, success in these areas hinges on strong governmental and financial support, recognising and understanding the significance of present and future renewable energy landscapes, and delivering hydropower projects that meet the Hydropower Sustainability Standard. SMEC advocates for the transition towards a future where sustainable growth is propelled by water, wind, and solar energy collectively. Emphasising the integration of pumped storage with solar and wind, SMEC



believes that sustainable development is the path to achieving net-zero goals by 2050.

The imperative of collective action

The future of hydropower relies on collaborative efforts. It is imperative for all stakeholders to unite and work together to tackle the challenges impeding sustainable development in the industry. Collective action is fundamental in steering the industry towards a prosperous and sustainable future. Karen Atkinson, who delivered SMEC's closing statement at the high-level Stakeholder Forum, highlighted this critical insight, stating, "Embracing sustainable hydropower as the fundamental driver is not just a choice; it is an imperative for the future of our planet."

The World Hydropower Congress provided invaluable perspectives and directions for the future. The event emphasised the pivotal role of sustainable hydropower, advocating for concerted efforts, strategic alliances, and workforce transformation to drive the industry toward a sustainable, prosperous future. As a business SMEC stands poised to incorporate these insights into its strategies, continuing its commitment to fostering sustainable development and innovation in the hydropower sector.

Following the IHA World Hydropower Congress and COP28 there is hope that through a global collaborative approach, effective change can be achieved. At COP28, IHA announced that 125 countries have pledged to triple the total global renewable power capacity by 2030 to at least 11,000 GW and doubling energy efficiency improvement rates to be in with a hope of meeting 1.5°C goals. To achieve this, hydropower has a crucial role to play.

SMEC is proud of the technical expertise which our teams bring to this challenge and the role the engineering industry will play in shaping the global energy landscape, creating sustainable, secure, and prosperous communities for all.



Member of the Surbana Jurong Group

SMEC
www.smec.com



IPCs enhance warehouse automation



A high-profile distribution centre in North Rocks, Sydney, was grappling with an outdated control system, and Layer Seven Automation was tasked with finding a futureproof solution to improve efficiency, flexibility and connectivity while minimising costs. They found that solution in an Industrial (IPC) solution from Beckhoff.

The distribution centre was facing a challenge with its old system, consisting of 700 m of conveyor lines and 28 diverter stations, all of which had worked well for many years. But the controller boards started to fail one by one and it became clear that the system was reaching the end of its life. As it was a proprietary system and new parts were expensive, management decided something had to be done.

Lucky Thommadura of Layer Seven Automation found the solution to this challenge in a collaboration with Harry Mulder of Beckhoff Automation.

The solution utilised Beckhoff's C6920 IPC, which was able to be linked to all the diverter stations via the company's EtherCAT network and seamlessly merged Windows-based systems with a virtual PLC. This new set-up offered numerous benefits, including significantly faster operational processes, real-time program testing from multiple locations, cloud capabilities and third-party connectivity.

The project was executed in phases, starting with replacing the boards at each diverter station with Leuze scanners. The use of these advanced scanners with built-in I/O points streamlined wiring and simplified the design, while the EtherCAT network provided speed and reliability. The new system captured raw barcode data from the scanners, decoded it in real time and executed logic for each zone, ensuring efficient box routing and diversion.

Every box detection was recorded as an event in Beckhoff's TwinCAT event log and Layer Seven's event log. This was facilitated by RabbitMQ, a message queuing program, chosen for its suitability over MQTT for this specific application. Data from the Beckhoff controller was also

extracted via the TwinCAT ADS protocol, allowing real-time visualisation of operations. This data can be sorted into databases and message queues, facilitating dynamic reporting and analysis.

Among the benefits provided by utilising an IPC were rapid deployment capabilities, including network updates (an essential feature for a logistics centre in a post-COVID environment), and the fact that employees with minimal industrial programming experience were able to quickly get up to speed with its user-friendly interface. The IPC's Windows operating system also allows users to create their own programs and messaging systems to run concurrently with the control program.

The system enabled the distribution centre to manage peak occupancy zones effectively, thereby optimising resources and reducing operational bottlenecks. It also allowed for better reporting for management. The new architecture also proved to be highly cost-effective, replacing the need for multiple replacement boards with a single, efficient controller solution. It also provided enhanced security by isolating the EtherCAT network, limiting exposure to potential threats.

By leveraging Beckhoff's IPC technologies and strategic planning, the distribution centre has been able to achieve enhanced operational efficiency, real-time data insights and a cost-effective solution for future scalability.

In the future, Layer Seven Automation plans to implement redundancy in the form of a hot standby CPU for increased system availability. Additionally, it intends to optimise the system execution load to accommodate web services for visualisation purposes. The use of ADS to extract data for further processing and integration into ERP systems like SAP and MS-Dynamics is a key part of these plans.

Open IIoT

www.openiiot.com.au

CASE STUDY: NORDFAB PTY LTD X GREEN-TECHNOLOGY, E-WASTE COMPANY

Implementing Nordfab Australia's packed tower wet scrubber, ducting system, and carbon filter systems can offer several advantages for a green-technology company focused on eliminating electronic waste from landfill and promoting a circular economy.

Here are some key advantages:

Efficient Pollution Control:

The packed tower wet scrubber efficiently removes pollutants and contaminants from exhaust gases produced during the recycling or reprocessing of electronic waste. This ensures compliance with environmental regulations and minimises harmful emissions, contributing to a cleaner environment.

Resource Conservation:

The ducting system facilitates the efficient movement of air and gases within the facility, optimising energy use and reducing resource wastage. This helps in conserving energy, which aligns with the goals of sustainability and reducing the carbon footprint.

Odour and Emission Control:

The carbon filter systems are effective in eliminating odours and capturing volatile organic compounds (VOCs) that might be released during the recycling process. This ensures a safer and healthier working environment for employees and neighbouring communities.

Enhanced Recycling Processes:

By installing these systems, the company can improve its electronic waste recycling processes. Cleaner air and reduced emissions mean better working conditions for employees and can potentially increase productivity and efficiency in handling recycled materials.

Compliance and Reputation:

Adhering to strict environmental standards and utilising advanced pollution control technologies can enhance the company's compliance profile. This can lead to positive public perception, bolstering the company's reputation as a responsible and eco-conscious entity in the industry.

Contribution to Circular Economy:

By efficiently managing waste and recycling processes while minimising environmental impact, the company aligns with the principles of a circular economy. This contributes to the goal of reintroducing valuable materials back into the production cycle, reducing the need for raw materials and promoting a more sustainable approach to manufacturing.

Long-Term Cost Savings:

While initial investment might be required for installing these systems, they often lead to long-term cost savings. Reduced energy consumption, minimised waste, and improved process efficiency can result in lower operational costs over time.

In essence, the integration of Nordfab Australia's systems can significantly support the green-technology company's mission of eradicating electronic waste from landfill, promoting a circular economy, and ensuring environmentally responsible practices in its operations.



Nordfab Pty Ltd
www.nordfab.com

HOW CLIMATE RISK ASSESSMENT CAN HELP DECARBONISATION AGENDA

Amy Steel, Climate Risk Expert and WA Leader, ENGIE Impact

In recent years there has been a global push for increased transparency on the financial implications of climate change. Countries like New Zealand and the United Kingdom have mandated disclosures, followed soon after by the US, Switzerland and Singapore.

Australia looks set to be next.

This year Jim Chalmers called for Australia to align its business practices with international stakeholders, investors and competitors. And last December, the Treasury released a consultation paper detailing plans for a mandatory climate risk framework for certain Australian organisations.

Australian businesses are already on the front foot, ranking in the top four countries for Task Force on Climate-related Financial Disclosures (TCFD) support. Financial regulators have issued guidance requiring companies to report on their exposure to climate-related financial risks. Meanwhile, the Australian Banking Association, representing investors and business workers overseeing \$47.2 trillion in assets, supports applying the International Sustainability Standards Board's (ISSB) TCFD-based scheme to Australian borrowers.

The momentum is shifting towards mandatory reporting and, consequently, many companies are already providing crucial information on their efforts to mitigate the impacts of a rapidly changing climate. Companies reliant on fossil fuels face increasing financial and regulatory pressures in the coming years as well, making accurate reporting an imperative.

But it's not all about reporting solely to maintain compliance. There are several notable upsides to climate risk reporting, and it comes down to increasing their attractiveness to investors, improving their

bottom line, mitigating risk as well as adapting decarbonisation plans of companies in the long run.

Integrating physical climate risk must be considered as companies decarbonise

Decarbonisation remains a critical challenge of this decade, with various compounding and interacting factors influencing companies' decarbonisation plans. Work needs to be done to limit this risk and benefit from the advantages presented as companies take steps to decarbonise assets and businesses.

This July was recorded to be the hottest in 120,000 years in Australia. High temperatures are a known hazard for solar farms and can result in a decrease in energy production at extreme ambient temperatures. As extreme weather events grow in both frequency and magnitude under the changing climate, decarbonisation plans need to be adapted to build resilience to these more potent extremes. Companies should evaluate the system design components which are concurrently vulnerable to extreme heat events. For example, depending on the level of solar energy input the normalised power output for a solar farm decline with increasing temperature up to about 50°C. Companies need to identify the key thresholds which could be tipped. Simultaneously, they need to undertake scenario modelling to understand the future frequency, duration and magnitude of extreme heat and explore the other factors which may be contributing to the issue (ie, wind speed/irradiance) to assist in building a climate-resilient system.

In essence, climate risk assessment will encourage Australian industries to reassess their operations, identify areas for improve-

ment and take proactive measures to address climate-related risks. This transparency will not only help protect their financial interests but will allow companies to take proactive actions to achieve their commitment to decarbonisation.

Industrial evolution the key to climate transparency

Companies have recognised the importance of addressing climate risks and have started to incorporate decarbonisation strategies and climate risk management into their operations. For example, BHP has committed to a goal of net zero operational emissions by 2050 and is investing in low-emissions technologies to reduce its carbon footprint. Meanwhile, Rio Tinto has divested from



coal operations and is actively investing in renewable energy projects.

However, it is not just the mining giants that must take action; smaller companies across all industries must also adapt to the changing landscape by addressing climate-related risks and opportunities. Companies can address climate risks by incorporating climate-resilient design principles into their projects, investing in sustainable materials and engaging in thorough risk assessments to identify and mitigate potential vulnerabilities.

Pros of certainty and assessment outweigh cons of additional compliance

Mandatory climate risk reporting laws present both benefits and challenges, including

compliance costs, regulatory burden and concerns regarding the accuracy of reported information.

However, for Australian organisations, climate risk disclosures provide an opportunity to reassess their operations and identify areas for improvement. By addressing these risks and taking proactive measures, industries can not only protect their financial interests but also contribute to the global sustainability effort. Failure to address these risks could lead to significant financial losses, reputational damage and reduced investor interest.

As Australia moves towards a values-based capitalism, the nation must recognise the importance of integrating decarbonisation and climate risk adaptation. Embracing

transparency and mandatory climate risk disclosures will empower industries to seize the opportunities presented by a sustainable and resilient economy while safeguarding their future in a rapidly changing world.



Amy Steel, Climate Risk Expert and WA Leader, ENGIE Impact.



BLACK SOLAR PANEL

Trina Vertex S+ NEG9RC.27 is based on N-type i-TOPCon technology and is a lightweight, smaller 1.6+1.6 mm dual-glass solar panel with increased power production for residential and commercial applications. Available in Trina Solar's aesthetic black design, it measures 1762 x 1134 mm in size, delivering 445 W maximum power output, with an efficiency of 22.3%.

The panel can achieve either a 6.6 kW system or 8 kW system and is suitable for any type of residential or commercial rooftop. It incorporates a bifacial feature

with transparent encapsulant, making it suitable for specific applications such as carports, public spaces and agricultural projects, with additional power gain from the back side of the module.

The N-type technology is designed to benefit end users in a variety of ways when compared to P-type panels. The N-type cell's base layer is first coated with phosphorus and then the top layer is coated with boron. Electricity flows from the bottom to the top in N-type cells. N-type panels also deliver a higher conversion efficiency than P-type panels, due to the panels having a greater sensitivity to long wavelength light.

The solar panels are easily integrated and designed to be compatible with existing mainstream inverters and diverse mounting systems. They weigh 21 kg, making them suitable for low-load-capacity roofs.

The panel has increased crack and scratch resistance, meets IEC fire ratings (Class A+C) and meets Australia's harsh environment performance requirements. It has also passed 35 mm hail tests.

Trina Solar
www.trinasolar.com/au



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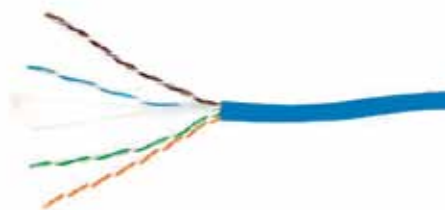
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CAT6 CABLES

WBT's CAT6 cables offer fast data transfer to elevate network performance. Crafted to adhere to the rigorous ISO:IEC 11801 cabling standard, these U/UTP (unshielded twisted pairs) cables are designed for use in both horizontal and vertical (backbone) configurations. They constitute the base of a very high bit rate VDI (voice-data-image) network.

Available in a vibrant array of colours, these cables come in 305 m boxes, offering flexibility in installation. The U/UTP design, when paired with WBT/HypaConnect connectors, ensures conformity with Class E channel standards. Suited to both new network set-ups and optimisations, WBT CAT6 cables facilitate the transmission of digital and analog voice, data and video signals.

Warren & Brown Technologies
www.wbnetworks.com.au



MACHINE VISION BOX PC

Interworld Electronics has introduced the AVS-320 compact fanless machine vision box PC from APLEX technology. The AVS-320 has been designed for factory automation, smart industry and machine vision applications. With its compact size, rugged and fanless design, high-speed powerful computing abilities and wide range of additional features, the AVS-320 is suitable for a wide variety of applications.

The AVS-320 is powered by the Intel Celeron J6413 quad core processor and supports up to 32 GB SoDIMM DDR4 memory. It has two USB3.1 and two USB2 ports; one RS-232 and one RS-232/422/485 serial port; one VGA and one HDMI graphics output port; one GbE and two GbE PoE LAN ports; 8-bit digital I/O; as well as one M.2 SATA port and one M.2 expansion slot. This wide range of I/O enables users to integrate it with machine vision cameras and other peripheral devices to collect and analyse image data in real time.

The AVS-320 is designed to be a rugged, durable and reliable fanless system that features a tough casing (aluminium heatsink and steel chassis) and an operating temperature range of -20 to 70°C, enabling it to continuously run, even in harsh industrial environments. It supports a 24 VDC input and is compact (180 x 130 x 55 mm), making it a good option for applications with limited space.

It supports both Windows 10 and 11, and is DIN-rail mountable, providing even more versatility.

Interworld Electronics and Computer Industries

www.ieci.com.au

CODE READERS

Balluff has released the BVS ID sensor, designed to read barcodes, 2D codes and DMC codes.

With Balluff's SensorApp software, the sensor offers auto-setup features with configuration and monitoring options via a web browser. The sensor also offers integration with automation and IT systems due to standardised interfaces.

The product also provides additional condition monitoring information when integrated into an IO-Link network, providing access to vibration, temperature, code quality and operating time. MQTT and REST API protocols enable IIoT communication, facilitating data exchange for Industry 4.0 initiatives.

The sensor comes in three versions. The BVS0060 has red and white LED illumination, and the BVS0061 has white and infrared illumination, both with IO-Link and Gigabit Ethernet interfaces. The BVS01A0 offers red LED illumination and a USB interface only.

Balluff Pty Ltd

www.balluff.com.au



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CARBON MONOXIDE SENSOR MODULE

Whether in homes, offices or public spaces, the demand for precise air monitoring tools is increasing. To cater to this need, Backplane Systems Technology now supplies Innodisk’s IAGCO, a digital carbon monoxide sensor module.

Designed for indoor air quality monitoring, IAGCO serves security monitoring needs and seamlessly integrates into wireless sensor networks. Its primary role is the meticulous detection of carbon monoxide concentrations around its installation point.

The sensor’s rapid response and recovery time provides users with prompt information about any dangerous carbon monoxide concentrations. It has wide operating ranges capable of accommodating varied temperature, humidity and voltage conditions.

The IAGCO’s on-chip data processing capability eliminates the need for external libraries, simplifying operations while not unduly straining the main control unit (MCU). Applications include smart home systems, HVAC and home appliances, as well the burgeoning realm of IoT devices.

Backplane Systems Technology Pty Ltd
www.backplane.com.au

ABSOLUTE ENCODER WITH SPE

TR Electronic has released an absolute rotary encoder series that directly support single-pair Ethernet (SPE).

The 582 series absolute multiturn encoder from TR Electronic can transmit its position measurement values and other status information to the master via 2-wire Ethernet. The same pair of wires can also be used to supply power.

The CEV582 absolute encoder offers 18-bit single turn resolution and up to 4096 revolutions via a multiturn gearbox. Data is provided via 10 Mbps SPE, with power provided over the same pair according to the Power-over-Data-Line (PODL) Class 11 standard, which allows up to 50 W per output, with only 3–4 W required by the encoder.

The encoder has a narrow 58 mm housing and comes in various shaft configurations: solid, blind, hollow, wire draw and claw coupling.

Leuze electronic Pty Ltd
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SMOKE ALARMS

PSA has launched two upgraded smoke alarms in its popular Lifesaver 6000 Series: Lifesaver 6800, mains-powered with 9 VDC battery backup; and Lifesaver 6800RL, mains-powered with rechargeable 10-year lithium battery backup.

In addition to using the latest photoelectric sensing technology, the Lifesaver 6800 and 6800RL feature a new advanced sensor to provide improved performance and a reduction in false alarms, particularly dust and bug contamination. This is particularly important given the lack of education around the need for smoke alarm cleaning maintenance (recommended annually). The Lifesaver 6800 and 6800RL's resilience against these false alarm triggers reduces the need for regular cleaning and servicing.

The anti-static sensor repels dust particles, while a fine mesh anti-bug screen over the sensor chamber minimises bug contamination. Other features include enhanced design for improved airflow, and easy installation and maintenance with the QUICK SLIDE base.

The smoke alarms can be interconnected with up to 24 units and have wireless interlinking capabilities when used with 6000WB.

PSA designs, develops and produces all products in partnership with a leading manufacturer of fire safety products — not a generic electrical manufacturer.

PSA Products

www.psaproducts.com.au



SiC MOSFETS

Toshiba has launched its 'TWxxxZxxxC' series of silicon carbide (SiC) MOSFETs. These products are the first in Toshiba's SiC MOSFET line-up to use the four-pin TO-247-4L(X) package, which allows Kelvin connection of the signal source terminal for the gate drive.

Use of the four-pin TO-247-4L can reduce the effect of source wire inductance inside the package, improving high-speed switching performance. For the new TW045Z120C, the turn-on loss is approximately 40% lower and the turn-off loss reduced by approximately 34% compared with Toshiba's current product TW045N120C in a three-pin TO-247 package. This helps to reduce equipment power loss.

Applications include switching power supplies (servers, data centres, communications equipment, etc); EV charging stations; photovoltaic inverters; and uninterruptible power supplies (UPS).

Toshiba (Australia) Pty Ltd

www.toshiba.com.au



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Bromelton, Qld, facility receives aerator upgrade

AJ Bush & Sons operates a large-capacity rendering facility at its processing facility in Bromelton, Qld, where it manufactures nutrient-rich protein meals and tallows/oils.

The factory is rich in organic material which it treats via anaerobic digestion and aerobic treatment processes, with treated water used to irrigate pasture surrounding the facility.

Byron Boyers, Plant Engineering Manager, wanted to upgrade his pond aeration system to a better and safer one, and reached

out to Hydro Innovations about its Echo-Storm venturi aerators from Gorman-Rupp for the upgrade. The aerators use a self-priming pump to draw water from the source to be treated. The water is then pumped at pressure through the Echo-Storm, which adds dissolved oxygen to it and 'conditions' it as it accelerates at more than 16 m/s through the unit.



Boyers wanted to try a unit because of the easier and safer access to the Echo-Storm for maintenance, as all required equipment can be mounted on the pond bank. He already had a self-priming Gorman-Rupp pump that could be used for the project. Boyers' pond is 200 x 40 x 4 m deep, with an inflow of 2 ML per day.

For the project, Boyers purchased a 4" VA4-550 Echo-Storm unit which he hooked to his Gorman-Rupp pump. He designed a floating suction

arrangement to keep the suction line off the bottom and fired it up.

Echo-Storm units are available in four sizes (2", 3", 4" and 6") and may improve safety and reliability while reducing maintenance costs.

Hydro Innovations

www.hydroinnovations.com.au



PoE SWITCHES

D-Link A/NZ has launched the DIS Series of industrial Gigabit Long Reach PoE+ switches consisting of the unmanaged DIS-F100G Series and the Layer 2 Smart Managed DIS-F200G Series, both with long-reach PoE support. The switches are designed for indoor and outdoor industrial network applications, including factory automation and warehousing.

The DIS-F100G and DIS-F200G Series switches are housed in a durable, industrial-grade enclosure with IP40 ingress protection. A fanless energy-efficient design and robust housing enable operation in harsh environments with wide operating temperatures.

For optimal reliability, the DIS Series provides cold start capability in environments with temperatures as low as -40°C with full-load operation at up to 75°C.

D-Link also designed the DIS Series with hardened components to withstand environments with high electromagnetic interference (EMI) that would damage ordinary enterprise devices. All switches in the DIS Series also support dual power inputs to provide power redundancy.

The DIS Series features models that support IEEE 802.3at PoE+ to deliver up to 30 W of power per port to connected PoE devices with a total PoE power budget of 120 or 240 W.

The DIS-F100G and DIS-F200G Series offer Long Reach PoE technology, allowing the use of longer network cable runs which are normally limited to 100 m. The Long Reach PoE technology supports cables up to 250 m long.

The RJ-45 Ethernet ports on the DIS-F100G and DIS-F200G Series feature embedded 6 kV surge protection. And the DIS-F200G Series also features carrier-grade RUN-Ring technology with 10–20 ms recovery for high-speed Ethernet ring resilience.

D-Link Australia Pty Ltd

www.dlink.com.au

**NEW
PRODUCTS**



AIR CIRCUIT BREAKERS

Siemens has launched two additional versions of its Sentron 3WA Power Circuit Breakers, alternatively known as air circuit breakers (ACBs). Series 3WA3 meets the requirements of UL 1066 and IEC 60947-2 standards, which enables it to be used worldwide. This is particularly advantageous for switchgear manufacturers and OEMs producing systems for both standardisation areas — IEC and UL. The 3WA2 series is designed exclusively for the UL 489 market. The two new ACB model series complement the 3WA1 version for IEC markets, which launched in autumn 2020. Siemens offers a full range of ACBs which are based on a consistent system and offer flexibility for applications around the globe.

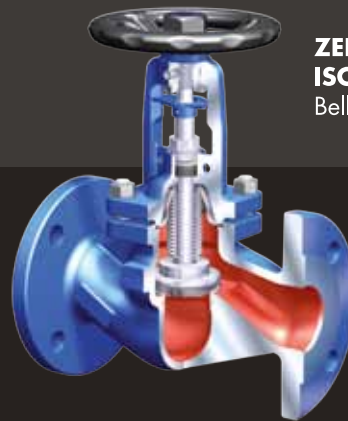
A core element of low-voltage switchboards, ACBs protect electrical installations in buildings, infrastructure and industrial facilities from damage caused by short circuits, ground faults or overload faults. This is essential also for critical infrastructure, such as hospitals or data centres. While built to perform over the lifetime of a facility, the Sentron 3WA circuit breakers also support software-based planning and engineering, digital testing and monitoring, and seamless integration in automation and IoT systems. Upgrades can be completed 100% digitally.

The Sentron 3WA ACB trip units' features include integrated arc energy reduction (Dynamic Arc Flash Sentry, DAS+), enabling Sentron 3WA ACBs to trip rapidly in the event of a fault during work being carried out in the immediate vicinity of live parts. In this way, the arc energy and thus the energy released in the power distribution equipment room is reduced. This technology complies with the National Electric Code (NEC) for the US market; it is designed to protect service technicians from serious injury resulting from arc flash hazards.

The Sentron 3WA ACB UL series 3WA2 and 3WA3 are available in three frame sizes with rated current ranges from 800 to 5000 A.

Siemens Ltd

www.siemens.com.au



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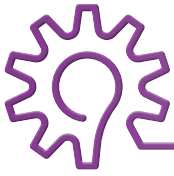


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Synthetic dye in wastewater threatening ecosystem

A study has found that dyes commonly used in textiles, food and pharmaceuticals pose a pressing threat to plant, animal and human health, as well as natural environments around the world.

Each year, billions of tonnes of dye-containing wastewater enter water systems. A group of researchers from the UK, China, Korea and Belgium say that new sustainable technologies including new membrane-based nano-scale filtration are needed to solve the issue, adding that legislation is needed to compel industrial producers to eliminate colourants before they reach public sewage systems or waterways.

Published in *Nature Reviews Earth & Environment*, the study highlights that up to 80% of dye-containing industrial wastewaters created in low- and middle-income countries are released into waterways untreated or used directly for irrigation. According to the authors, this poses a wide range of direct and indirect threats to human, animal and plant health.

Despite these threats to health and ecosystem, the authors say that there is inadequate infrastructure, investment and regulatory effort for making dye usage more sustainable, or for treatment of dye-containing wastewater.

Dr Ming Xie, a lecturer in the Department of Chemical Engineering at the University of Bath (UK), believes that a multipronged approach is needed to combat the issue.

"Dyes create several problems when they reach water systems, from stopping light reaching the microorganisms that are the bedrock of our food chains, preventing their reproduction and growth, to more direct consequences like the toxic effects on plants, soils, animals and humans," Xie said.

"There are several potential ways to remove dyes from water including chemical, biological and membrane-based techniques, but different dyes required different approaches, and once they reach wastewater systems treatment processes can be highly energy intensive.

"A worldwide regulatory effort is needed to stop dyes reaching wastewater or other water systems such as irrigation. Given the complexity of treating dye-containing wastewater, one solution would be

to shift from the concept of centralised or regional treatment methods, to decentralised and site-specific treatment at source, by compelling industries to remove dyes from the wastewater they create before it reaches public water systems."

Dyes are used in the rubber, leather tanning, paper, food, pharmaceuticals and cosmetic industries, while the biggest user, the textile business, consumes 80% of produced synthetic dyes and generates about 70 billion tons of dye-containing wastewater annually.

China, India and Bangladesh combined discharge around 3.5 billion tonnes of textile wastewater each year. In water bodies, untreated dyes can cause colouration, reducing visible light and hindering photosynthesis for aquatic plants.

The review explores the variety of remediation technologies for dye-containing wastewater, including chemical, biological, physical and emerging advanced membrane-based techniques. The authors found that no single technique presents a 'silver bullet' for removing dyes, while several promising methods are not yet ready at scale.

In light of this, the researchers suggest a collective effort, led by policymakers, to increase the adoption of advanced remediation technologies and change textile processing methods to minimise the use of the most toxic dyes.

The authors also highlight a potential commercial impetus with industries potentially able to create new revenue streams from the processing, separation and reuse of wastewater materials.

Dr Dong Han Seo, co-author of the study, said the research provides insight on how to effectively manage the challenge from the perspective of a circular economy, recycling dyes from wastewaters using strategies to recover both useful dyes and clean water.

"This review provides the examples on how we can reduce the dye footprints from production stages using new dyeing techniques. Guidance on effective solutions to dye-containing wastewaters could be used to treat other challenging wastewater streams, safeguarding lives and the environment for future generations," said Dr Jiuyang Lin, from the Chinese Academy of Sciences.

PLUGGABLE GLASS FIBRE CABLE CONNECTORS

Digitalisation in the industry is increasing rapidly. Data volumes are also rising quickly. A futureproof communication



infrastructure in factories with glass fibre cables is therefore essential. Recent additions to Treotham's range include the site-assembly EPIC DATA FFC-LC connector and EPIC DATA FFC-SC connector for GOF fibre-optic cables. These connectors simplify the establishment of a pluggable glass fibre connection and offer a high level of flexibility.

181 zettabytes (the number 181 followed by 21 zeros) is the prediction for the amount of digital data generated worldwide by 2025. How can this gigantic amount of data be transferred in a quick and stable manner? The solution is light, namely via fibre-optic, cables.

Fibre-optic cables transport data at up to 40 Gbps over different wavelengths simultaneously and are resistant to electromagnetic interference. As a result, there is no signal interference and no data loss. Furthermore, considerably longer installation lengths are possible than copper. Glass fibre cables can easily achieve 40 Gbps over 40 km at 1550 nm. This enables synchronised real-time capability and, therefore, efficient production through fast communication, even at very high data transmission rates such as those found in digital twins, robot AI and Industry 4.0.

Treotham Automation Pty Ltd
www.treotham.com.au

DOWNLIGHTS

Brightgreen's Plus 4.0 Downlight Collection comes in 11 styles with varied beam angles, multiple CCTs and hundreds of custom fascia colours. This allows for over 10,000 LED combinations.

The company's Tru-Colour 4 technology has achieved perfect (100/100) scores for colour accuracy (TM30 Rg) and natural materials (CRI R9).

The advanced optical-grade polymer lenses eliminate light degradation and colour shift issues, offering lossless light quality. The low-glare lights deliver 83 lumens per watt (lm/W) and are resilient against sustained voltages up to 285 V, with 3100 V surge protection and a power ripple-proof IC design. They feature a 360-degree, universally gimballed socket with a full 40-degree range of movement, allowing for versatile lighting solutions. Smart lighting control is available via app, voice or automation.

Designed to withstand the harsh Australian climate, the downlights are backed by a 10-year extended luminaire failure guarantee.

Brightgreen Pty Ltd
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OIL-FREE ROTARY SCREW COMPRESSORS

Kaeser Australia has released its latest class 0 oil-free compressor. The CSG.1 rotary screw compressors have air flow rates ranging from 4 to 15 m³/min and pressures up to 11 bar. Users are offered the choice of air- or water-cooling, and can select an optional integrated refrigeration dryer or an i.HOC (heat of compression) dryer.

The CSG.1 can be specified as a fixed speed, fixed flow rated machine or, for applications with fluctuating compressed air demand, variable speed controlled SFC versions are available with IE5 Ultra-Premium Efficiency synchronous reluctance motors.

The risk of potential product contamination by oil from the rotary screw compressor is evaluated and minimised by means of an HACCP analysis and certified by the TÜV Rheinland for a residual oil class 0 certificate in accordance with ISO 8573-1.

The CSG.1 has also been certified according to ISO 22000:2018, which covers the manufacture of food and beverage equipment. To further formalise the supply chain's integrity, users can also option the CSG.1 with pharmaceutical, food or engineering industry certification packages. Certification is also available that the machine is free of silicone contamination, as per VW PV 3.10.7.

Kaeser's Sigma Profile rotors now feature a wear-resistant PEEK coating, which results in an airend that will exhibit no air flow loss during its lifetime. Developed in-house, the coating has three layers; nanoceramic, PEEK basecoat and topcoat. This coating is biocompatible, FDA-certified and compliant with European requirement VO 1935 for food contact materials, making it suitable for use in the food and pharmaceutical industries.

Kaeser Compressors Australia
au.kaeser.com



ANTI-CORROSION PROTECTION FOR ELECTRICAL EQUIPMENT

Electrical failures and malfunctions due to corrosion can be easily mitigated with the proper preventive maintenance plans in place.

A form of protection suited to electrical enclosures is Cortec's Vapour phase Corrosion Inhibitor (VpCI) technology. This may be applied in the form of a VpCI-101 device, or a VpCI-105 or VpCI-111 Emitter cup placed inside the control panel or cabinet. Vapour phase Corrosion Inhibitors diffuse out of these devices, disperse throughout the enclosure and are attracted to metal surfaces where they adsorb, forming a protective molecular layer that inhibits the corrosion reaction. These molecules do not interfere with electronics performance and simply float away when the enclosure is opened.

VpCI Emitters can offer protection to electrical and electronic equipment during various important processes, including: shipment of new components; preventive maintenance of control panels, circuit breaker boxes and electrical enclosures; and the mothballing and layup of facilities.

Cortec
www.cortecvci.com/international/australia/



SIGNAL COLUMNS

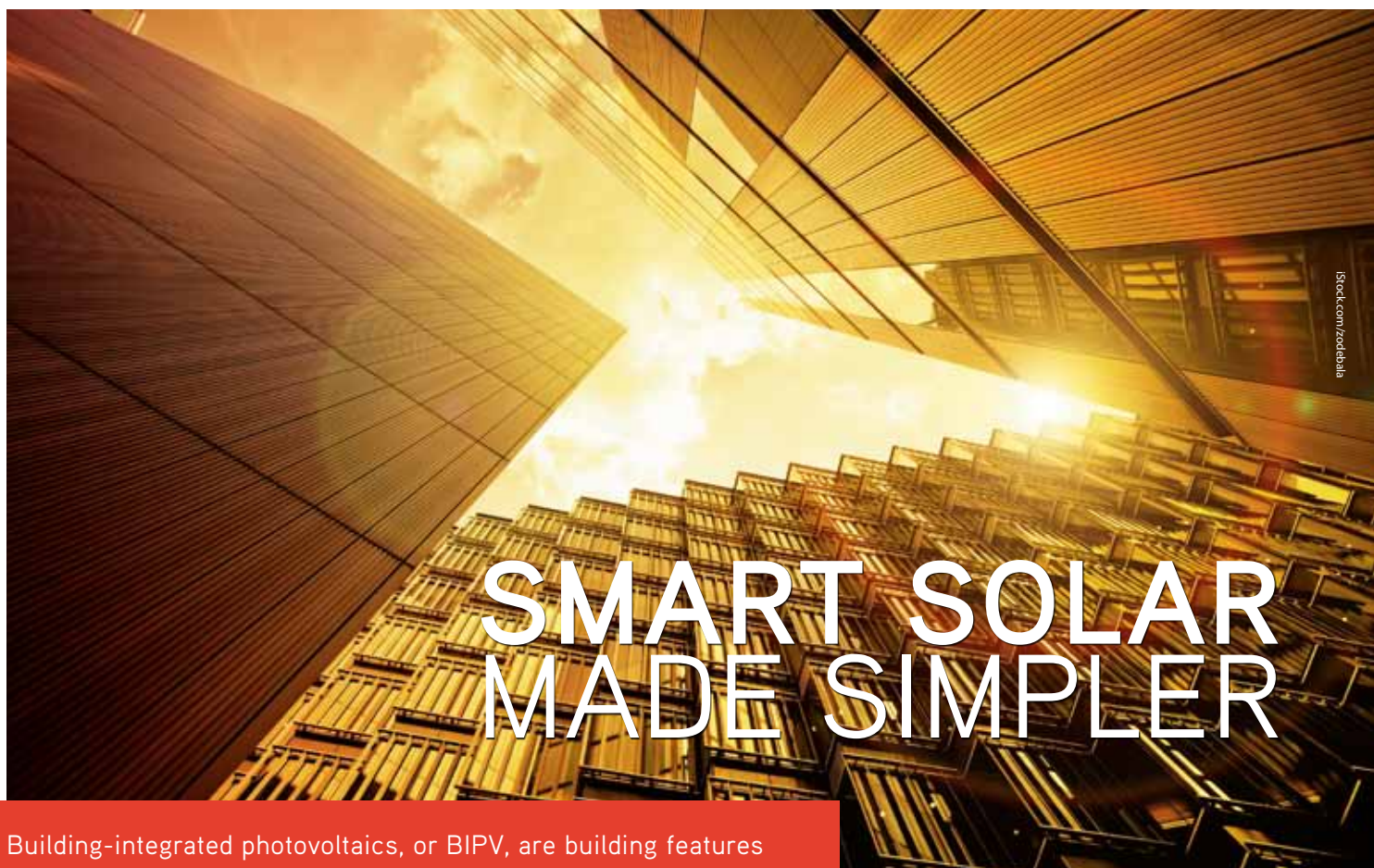
On machines or in automated processes, signal towers are important visual aids for controlling complex processes. Now, APS Industrial has brought to market a new range of Siemens SIRIUS signalling columns that are much more than just an on/off light.

Thanks to professional signalling technology, the SIRIUS signalling columns optimise visibility of plant operations and, in turn, increase plant availability. The new-to-market units are capable of signalling different states and offer a variety of signalling levels and functions for flexibility.

The wide range of signalling variants includes an individual mode that allows a user to activate each of the segments separately; and multicolour LEDs, enabling the setting of more than 1M colours. Different light effects encompass Continuous, Blinking (3/2/1 Hz), Flashing (1x/2x/3x) and Rotating light (70 rpm).

SIRIUS command, signalling and detecting devices are a good choice when it comes to control, command and monitoring.

APS Industrial
www.apsindustrial.com.au



SMART SOLAR MADE SIMPLER

Building-integrated photovoltaics, or BIPV, are building features such as roof tiles, cladding and windows that double as solar panels. They can be designed to cover a greater area of a building, generating solar energy from different angles. They are also customisable and visually striking.

However, BIPVs come with extra complexity in predicting performance and sourcing appropriate technology, which has made them a far less popular choice for new installations in Australia compared with conventional roof-mounted panels. But new technology devised by Australian scientists might be set to change this.

A team at RMIT has created a software tool — dubbed the BIPV Enabler — to help architects and engineers incorporate, source and cost BIPV in a building's conceptual design phase. The software, funded by RMIT and the Australian Renewable Energy Agency, is the first of its kind to be designed using Australian data.

The tool integrates product, regulation, technical, economic and construction data to create 3D models and detailed life cycle simulations tailored to each building's planned location. It comes as the construction of Australia's first office tower to be

fully clad in solar panels was announced last year.

"This is the perfect solution for building designers and developers looking to select the right solar option to suit their design," said project lead Associate Professor Rebecca Yang, from RMIT's Solar Energy Application Group.

"We're making integrated solar a more attractive option to developers, slicing the time it would normally take to research and implement incognito solar devices.

"This isn't just for new buildings either. Those looking to retrofit integrated solar into existing buildings will benefit too," added Yang, who is also the Director of the Australian PV Institute and driving the BIPV Alliance.

Nic Bao, a lecturer in architecture at RMIT, said having a tool to effortlessly incorporate factors such as climate, building code and materials would make solar-savvy design easier.

"There are so many technical factors to consider when integrating BIPV into a design that it hadn't been a popular choice, which was a missed opportunity," he said.

"Making BIPV design more accessible promotes sustainable development of energy-efficient buildings, while providing opportunities for low-carbon architecture."

Another challenge faced by designers and developers using integrated solar is choosing and sourcing materials. BIPV Enabler can assist with this through a photovoltaic product database where Australian suppliers can be easily identified.

Among the tool's features are maps, a 3D shape library, solar visualisations, hourly weather data, and pricing information for materials and feed-in tariffs.

Yang said BIPV Enabler also works with computer-aided design programs and could be scaled and customised to incorporate other open-source datasets to suit changing needs.

"We hope to see more buildings capable of generating solar electricity, while maintaining good design standards — a win for the planet and aesthetics," Yang said.

For more information about BIPV Enabler, contact the Solar Energy Application Group.

HIGH SOLIDS MEASUREMENT MODEL

Further extending its total solids product portfolio, Cerlic has released a newly developed CMC ITL (insertion type) model for the measurement of high solids (<30% TS).

Adding to its traditional 'flow through' models, the CMC ITL will bring built-in self-cleaning to the total solids range, reducing the need for operator intervention and manual cleaning in applications prone to build-up. As with the X-Sensors range of total suspended solids (TSS) sensors, customers can utilise either compressed air or pressurised water for the cleaning process, with no consumables or moving parts.

To simplify maintenance, service and periodical inspections, Cerlic incorporated a 'hot tap' mounting option, allowing site to isolate and remove the CMC from the process without having to stop flow or purge the pipe. For most installations this will remove the need for bypass pipework.

Cerlic will also offer a 24 VDC alternative of the CMC, alongside the standard 240 VAC unit.

Control Components Pty Ltd
www.controlcomponents.com.au



PLATFORM SUSPENSION SYSTEM

The modular design of energy chains facilitates this space-saving solution. For modern platform technology, such as theatre stages, a variety of cables and hoses that adjust the stage height must be accommodated. Stroke heights of up to 40 m are possible.

This is how the zig-zag system works: the unextended energy chain is placed in a custom-made basket. If the platform is raised, the energy chain unfolds, generating little or no noise. This construction is possible with the e-chains of the igus E4.1 system as well as many other types of chain.

The new zig-zag complete system is a standardised and modular energy supply for travels up to 15 m. It does not only include the energy chain, mounting brackets, interior separation, the guide basket and the strain relief preparation, but also the connection to common standard trusses. For overhead application, the energy chain is equipped with a safety steel rope following DIN EN17206.

Treotham Automation Pty Ltd
www.treotham.com.au



COMPACT INDUSTRIAL PC

Beckhoff has added the C6043 to its range of ultra-compact industrial PCs. This series is characterised primarily by the second board level for an NVIDIA graphics processing unit (GPU) integrated in the factory.

With the ex-factory assignable slot for a GPU, the C6043, which measures 132 x 202 x 127 mm, can be equipped with highly parallelising and long-term available NVIDIA GPUs in addition to its Intel Core processors. This makes it suitable as a central control unit for applications that place high demands on 3D graphics or with deeply integrated vision and AI program modules with minimal cycle times. The TwinCAT 3 automation software can map these functions fully integrated alongside the classic controller, without additional software or interfaces.

The Intel Core i5, i7, and i9 processors have been installed in a hybrid architecture. As with the previous processor generations, Intel Celeron, Pentium and Core i3 offer classic performance cores; Core i5, Core i7 and Core i9, on the other hand, also have 4, 8 and 16 efficient cores, respectively. This combination of performance and efficiency cores allows applications to be implemented on a total of up to 24 real processor cores. While performance cores are primarily suitable for high-performance, single-thread applications, many additional threads can be executed in real time or in user mode on the additional efficiency cores. Each individual core can be configured individually via TwinCAT.

Beckhoff Automation Pty Ltd
www.beckhoff.com

AOG ENERGY: POWERING THE FUTURE OF ENERGY

The AOG Energy Exhibition and Conference returns in 2024 energised for the future. Bringing the energy sector together for three days of collaboration, delegates will discuss the challenges and opportunities presented by the transition and work towards a decarbonised future.

Based in Perth, AOG Energy will open with strong support from government, project operators and global industry players, and include a world-class conference program. The three dedicated theatres will cover the entire value chain, with deep dives into wind power, renewable energy sources — including carbon capture and storage (CCS) — and strategic keynotes providing insights into how the industry is progressing environmental resilience and sustainable outcomes.

In 2024, AOG Energy will focus more than ever on connecting people, with over 200 exhibitors in attendance, including 30% from overseas. The global showcase will span smart technology, innovation, engineering solutions — and more — across the entire energy supply chain. AOG Energy presents an invaluable networking opportunity to connect both global and local markets and promote WA as an attractive investment location.

The Diversity & Inclusion Breakfast this year will explore the topic of ‘What’s my age again? Cultivating a future without bias’, covering the subject of generational diversity, intergenerational collaboration, lifelong learning, career transition, mentorship and ageism. The event will also see the return of the Subsea Welcome Drinks reception and a series of networking events.

“Western Australia is uniquely placed to support the global clean energy transition. Our natural gas reserves will play a criti-

cal role in the energy transition towards a low carbon economy and decarbonised world,” said Roger Cook, Premier of Western Australia. “WA has an abundance of all the minerals needed to create lithium ion and vanadium flow batteries, and we are blessed with consistent and low-cost renewable energy through wind and solar, which will allow us to produce green hydrogen at scale.”

Engagement of this size will position WA, and the nation, as a global leader in the continued developments that are integral to forming the industry collaboration required to accelerate the energy transition.

Australian Government and WA Government representatives will be in attendance, as well as keynote speakers from AOG Energy sponsors including the Department of Jobs, Tourism, Science and Innovation, Woodside and Chevron.

Diversified Communications Australia
www.divcom.net.au

Registrations for AOG Energy 2024 are now open — register at: aogexpo.com.au

What: AOG Energy 2024

When: 13–15 March 2024

Where: Perth Exhibition and Convention Centre





ARE VIRTUAL SITE VISITS

THE KEY TO A NET ZERO CONSTRUCTION SECTOR?

Almost all (95%) construction, engineering and property (CEP) business leaders in Australia say that decarbonisation and emissions reduction is central to their organisation's overall sustainability agenda, compared to just 86% of those from all other sectors, according to research commissioned by aerial technology company Nearmap.

The construction industry alone is one of Australia's largest industries, responsible for approximately 9% of the country's GDP. However, the built environment sector has a disproportionate amount of greenhouse emissions — reportedly being responsible for one-quarter of Australia's emissions. This presents a significant opportunity for the industry to lead in achieving net zero carbon for Australian buildings, and it could be a reality by 2040, as laid out in a guide produced by UNSW Sydney.

According to Nearmap, location intelligence technology tools that enable virtual site visits have the potential to help reduce carbon emissions, eg, cutting just two physical site visits each day that would normally require one hour of travel time can have a significant impact. Nearmap estimates that companies can potentially reduce up to 5280 kg of carbon emissions and save up to AU\$34,100 a year.

The company's research found that while 93% of CEP leaders believe technologies such as aerial imagery and geospatial analytics can help reduce carbon emissions and achieve sustainability goals, the reported usage of technology across the sector is currently only 75%. Barriers to adoption include limited awareness and understanding of available technologies (60%); lack of technology tools and solutions (57%); and financial constraints (56%).

The technologies deemed most useful by leaders from the CEP sector in helping reduce carbon emissions or achieving sustainability goals were:

- Environmental impact assessment and monitoring tools (57%).
- Geospatial analytics and insights powered by AI (49%).
- Advanced measurement and measurement tools (47%).
- High-resolution aerial imagery of areas across Australia (45%).

"It is encouraging to see that 93% of CEP business leaders believe technology can help reduce emissions — particularly as there has long been a misconception that deep technical or geospatial knowledge is needed to implement solutions that can help companies meet decarbonisation goals," said Daniel Paull, Executive Vice President and General Manager, Nearmap Australia and New Zealand.

"The power of making simple changes like switching to virtual site visits should not be underestimated — understanding this will help overcome the barriers to adoption identified by the research and lift usage of technologies that can help contribute to a greener future for all."

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