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JUNE 2019
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FROM THE EDITOR

Of the 38 large-scale renewable projects completed in Australia in 2018, 45% were located in Queensland, according to a report from the Clean Energy Council (CEC).

"The sunshine state is living up to its name. The incredible surge in large-scale renewables investment created more than 2000 new jobs across the state," said the Climate Council's CEO, Amanda McKenzie.

"It wasn't just large-scale projects surging ahead in 2018, the state is also home to some of the nation's top rooftop solar postcodes, with nearly 150 systems installed each day across the state.

"This year looks even brighter. Eighty-seven large-scale renewable energy projects are under construction or have been financially committed across Australia. More than a quarter of these will be in Queensland."

However, this positive outlook for renewable energy was recently brought to a halt when the Queensland Government announced a new electrical safety regulation that requires licensed electricians to mount, locate, fix or remove solar panels on projects of 100 kW and over. Safety was the motivation behind the regulation, but the industry is questioning its necessity. To hear about the regulation's expected impact on solar projects and jobs, and how industry has received it, head to page 14.

Safety goes hand in hand with security, which is one of the main topics that will be explored in this issue. Articles will discuss grid modernisation and cybersecurity challenges, compliance with the Notifiable Data Breaches scheme and opportunities for technicians to upskill in the security space.

Nichola Murphy – Editor
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SECURING THE MODERN GRID

Dan Agnew, General Manager of Power Distribution ANZ

Australia's electricity grid is undergoing its greatest transformation. Ageing infrastructure, environmental concerns, advancements in technology and changing consumer preferences are driving grid modernisation as utilities work to meet changing and growing demands.

As connectivity increases across critical infrastructure, cybersecurity has emerged as a concern for both the public and private sector. In Australia, an attack on the electricity grid could have far-reaching implications, with one of the world's longest interconnected power systems running between Port Douglas in Far North Queensland to Tasmania.

According to Accenture, Australia's critical infrastructure remains a significant target for malicious actors and foreign powers seeking to disrupt everyday life and the national economy.

The number of attacked infrastructure systems in Australia has grown to about 30% in 2019, with 730 incidents reported to the federal government's Australian Cyber Security Centre.

Renewable sources of energy are also creating diversification across the grid. While Australia's investment in renewable energy continues to grow, this growth must be matched with measures to protect the grid from the threat of cybersecurity attacks.

Evolution of the grid

By 2020, the number of connected devices is expected to grow to 31 billion, all of which will require power.

Climate change, rising energy prices and finite fossil fuel resources mean more people are opting for renewable sources of energy, which can be controlled and monitored by connected devices to increase efficiency.

This has resulted in diverse power sources fuelling Australia's energy demands, empowered by many different technologies and software. With connected devices rapidly increasing, a multitude of stakeholders need to take responsibility for cybersecurity.

IoT growth and emerging distributed renewable energy technologies working in tandem means that all kinds of power-generating systems can talk to each other, send and receive electricity, cover the power limitations of each other, and efficiently manage supply and demand everywhere. These trends can also have huge potential impacts on the electrical industry.

The fundamental connection risk

Control systems such as SCADA (supervisory control and data acquisition) are used by transmission and distribution network service providers (TNSP and DNSP) to deliver reliable and safe energy within technical limits, such as voltage and frequency on electricity networks.

The security of these control systems and the interfaces between them is crucial. While control systems and other related systems are designed and configured to reduce the number of potential entry points into a substation, utilisation of the most up-to-date software is essential for security.

Recent trends show that utilities are improving their SCADA systems and their ability to connect to devices to get more data.

When connecting to these devices in the past, serial communication was used. Serial communication is a point-to-point system that sends electrical signals through the wires. To hack this system, wires would need to be physically broken into.

Nowadays, IP (Internet Protocol) is the dominant form of communication between control systems and interfaces, which presents the most serious security challenges. IP has the advantage of speed and flexibility, but also presents a security risk because communication can be routed through multiple devices. Cybersecurity becomes a big issue as it may be routed to undesirable places.

For example, in the past if a SCADA system was sending communication to a relay, it was done through a serial connection with a single point-to-point cable that would have to be broken into to cause harm. With IP, the information being sent can be tapped into via a network switch, allowing the relay to be tapped into directly and power to be turned on and off. Adequate security systems, such as firewalls and routers, must be in place to avoid widespread disruption.

In some areas, the focus from the industry to date has been on delivering the equipment and getting renewable sources of energy working, and there has been less focus on dealing with the cybersecurity risks.

Legacy equipment

The significant installed base of legacy infrastructure throughout the grid poses a cybersecurity challenge. There are minimal security measures in place for older equipment and, because it is ageing, it cannot be easily added to existing equipment. This forces utilities to invest in modernised equipment that has cybersecurity features.

For example, a contemporary control system has built-in firewalls, whitelisting of files and very detailed logs to verify and help protect the equipment. The problem is that these kinds of security features cannot be retrofitted into older equipment.

The more modern equipment has this protection built in with security features that allow multilevel defence from cybersecurity incursion.

Sensors

Another trend is the adoption of IoT sensors which can collect data in real time and monitor utility assets. Data flows constantly between the grid and a SCADA, allowing the smart grid to be managed in real time. The same applies to the running of power stations, where IoT sensors can be used to manage operations. As renewable energy plants continue to evolve, data collected from IoT sensors will allow real-time decisions to be made to improve operations, reduce wastage and maximise power efficiency.

A downside of this is that sensor technologies can create vulnerabilities in the way that communications are sent.

Generally, sensors in a substation have an advantage as the communication from the substation to the SCADA is owned by the utility so they have control over it. However, a sensor on an overhead wire on the street is much more vulnerable to cyber attacks. This is especially the case with solar technology, where voltages and currents are fluctuating and therefore need to be monitored and managed. In the absence of a private communication network to get that information back in to a SCADA, public infrastructure is used.

Public infrastructure magnifies the threat because if the service provider doesn't have appropriate security measures in place, the infrastructure is more vulnerable to being hacked.

The sheer scale of sensors and number of IoT devices currently being deployed provides a much larger attack surface, with many more potentially vulnerable devices for attackers to target.

These risks have manifested in a series of serious incidents abroad. These include the 'Industroyer' or 'Crash Override' malware used to crash the Ukrainian electric grid in 2015, and the massive Mirai botnet of compromised IoT security cameras and routers that was used to launch several distributed denial-of-service attacks in 2016. While these attacks are larger and more damaging than many pre-IoT cyber attacks due to scale and physical system consequences, they have also proven much harder to mitigate.

The future needs harmonised regulations and skills

Harmonised standards and regulations have a significant role to play in ensuring security standards keep up with the pace in which the grid is modernising — covering the transmission and distribution network, right through to distributed energy resources and even electric vehicle charging stations.

Solar installations across Australia have resulted in an increase in demand for qualified solar installers and technicians. In order to continue to meet this demand and ensure that renewables that are added to the grid are secure, there is a need for qualified technicians with IoT experience to manage complex IoT systems.

Solutions to this market challenge include forging partnerships between companies and academic institutions to develop a strong pipeline of professionals in this area, as well as internal training programs to ensure installers and electrical contractors are equipped with knowledge and skills to keep up with advancements in technology.

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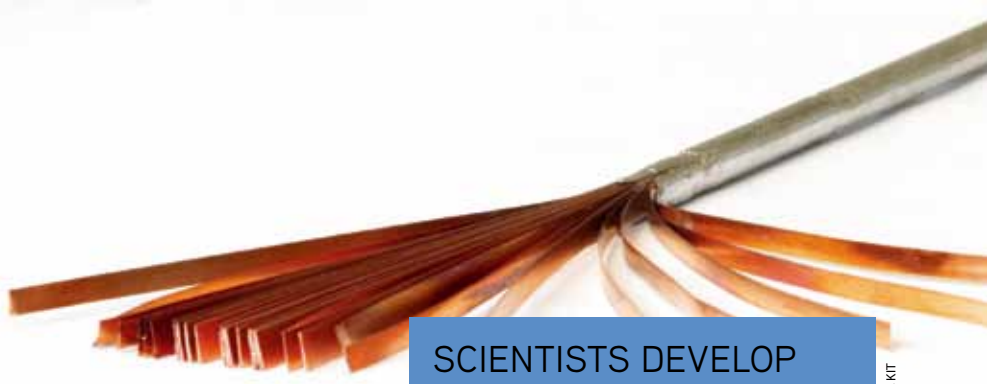

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SCIENTISTS DEVELOP ENERGY-EFFICIENT SUPERCONDUCTING CABLE

Scientists from the Karlsruhe Institute of Technology (KIT) have developed a superconducting cable that can transport electrical energy with hardly any losses.

The High-temperature Superconductor Cross Conductor (HTS CroCo) may be used to integrate large wind parks or solar power plants into the grid and to design leaner 'electricity highways' in the future.

Superconductors transport electrical current at low temperatures with almost no losses, which makes them attractive for a number of energy-efficient technologies, but they often require cooling with liquid helium to a temperature near minus 269°C. The HTS CroCo is based on rare-earth barium-copper oxide (REBCO) material, which means it can be used at minus 196°C.

However, long lengths of the superconductor can only be manufactured in the form of thin tapes.

"We have developed a method where several REBCO tapes are arranged such that they form a cross," explained Dr Walter Fietz of KIT's Institute for Technical Physics (ITEP).

As well as having a higher current-carrying capacity, the cable also requires less space and has a lower weight compared to conventional copper or aluminum cables. According to the researchers, CroCo is suitable for energy-efficient generation of high magnetic fields and for transporting large amounts of electric energy. If liquid hydrogen is used for cooling, it can transport chemical and electrical energy together.

"In principle, a CroCo can be applied wherever space is limited, but the amount of electrical energy to be transported is high," Fietz said.

Future applications could include connecting wind parks, for DC supply on ships, or for lightweight and compact high-current cabling in electric airplanes.

Dr Michael Wolf of KIT's ITEP noted mass production is prevented by the high costs for the complex manufacture of REBCO tapes, but industry is developing new processes to reduce costs.

ABB AND ROLLS-ROYCE ANNOUNCE MICROGRID PARTNERSHIP

ABB and Rolls-Royce have announced a global partnership which will offer an energy-efficient microgrid solution for utilities, commercial and industrial entities.

Microgrids offer reliable power supply, even with high penetration of intermittent renewable energy sources, as well as reduced costs and carbon emissions. Digital automation and control systems intelligently coordinate distributed energy resources and loads for the microgrid to function efficiently.

Under the partnership, Rolls-Royce will offer the MTU Onsite Energy brand power system solutions: from mission-critical, standby and continuous power to combined generation of heat and power, and microgrids. ABB will also provide its Ability e-mesh solution that enables the digitalisation of distributed energy resources. As well as reducing operational costs, the company said its cloud operations, site and fleet optimisation, weather and load forecast and machine learning algorithms offer insights for decision-making, such as how to increase revenue streams.

"Due to the transformation towards decarbonisation, customers need to pursue sustainable power options that also deliver utmost profitability. For this, we rely primarily on microgrids, which are autonomous energy supply systems that are efficient, reliable and environmentally friendly," said Andreas Schell, CEO, Rolls-Royce Power Systems. "Combining our integrated MTU diesel and gas genset system technology and our control solutions, with ABB's modular microgrid solution, control capability and remote service, will offer customers the combined strengths of the two world leaders in technology."

"ABB Ability e-mesh can ensure a stable power grid, even with a high share of renewable energy from various sources, working smoothly together with already installed gas or diesel engines," said Massimo Danieli, Head of ABB's Grid Automation business line within the company's Power Grids business. "ABB has a vast number of microgrid installations globally and through our partnership with Rolls-Royce Power Systems, we will further support the growing interest for microgrid solutions globally."

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ARENA FUNDING FOR RELOCATABLE ROOFTOP SOLAR TRIAL

Australian start-up Solpod has received $975,000 from the Australian Renewable Energy Agency (ARENA) to trial installing redeployable rooftop solar on commercial and government buildings.

Solpod has developed a way of fixing prefabricated commercial-scale solar panels to roofing using a redeployable racking and mounting system, meaning they can be relocated. The 'pods' of 12 panels (4.56 kW per pod) are craned into position and fixed with industrial-strength adhesive, with each pod taking about 10 minutes to install.

In partnership with ERM Power, the company will install nearly 2.5 MW worth of its portable systems at 25 sites across Victoria, NSW and Queensland. Each site will have up to 100 kW of solar PV.

"Despite rooftop solar being cheaper and more sustainable than the grid, many businesses have made the rational decision to not adopt solar because of other factors such as length of commitment, disruption on site and damage to buildings," said Solpod founder and CEO James Larratt.

He described the pods as a "game changer" offering businesses that rent their premises short-term contracts, while landlords have the flexibility to change sites without damaging the roof.

ARENA CEO Darren Miller said they open up new markets for rooftop solar installation.

"This Australian start-up will help to accelerate solar PV innovation and allows for renewable energy alternatives in niche markets, providing a cost-competitive alternative to standard methods of fixed mounting for delivering rooftop grid-connected solar PV."

ERM Power predicts that Solpod could double the scale of 100 kW–5 MW commercial solar installations in Australia from 113 MW in 2018 to closer to 250 MW by 2021. CEO Jon Stretch said the pods could also impact the way large-scale commercial solar energy is rolled out globally.

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GERARD LIGHTING CHANGES ITS NAME TO GLG

Gerard Lighting has announced changes to its brand, including changing its name to GLG and introducing a new website.

The group, which is responsible for brands including Pierlite, Sylvania, Austube and Inlite, said its new name encapsulates a move from being a product provider to an organisation with an innovative solutions-based approach.

The changes to the group company brand will see the business brands elevated and go to market as 'Pierlite' and 'Sylvania', servicing the market's indoor and outdoor lighting needs respectively.

Inlite, Sylvania Connected Solutions, Austube and Integrated, as well as the New Zealand operation, will continue trading as part of the comprehensive GLG solutions offering.

"We might have a new group name, but we carry forward almost a century of experience with us and a portfolio of proven and trusted brands like Pierlite and Sylvania that our customers know and trust," said GLG CEO Les Patterson.

Its transformation to a technologically savvy business has also been demonstrated by the investment in Sylvania Connected Solutions — which offers intelligent IoT devices, systems and technologies that address urban challenges — expansion of the GLG Innovation Centre and upcoming launch of the online configurator tool GLG Composer.

The GLG Innovation Centre, which is claimed to be the largest lighting lab and testing facility in the Southern Hemisphere, enables GLG to develop high-quality lighting solutions. It encompasses photometry, thermal and endurance chambers, IP chambers and more.

According to the company, the GLG Composer is a digital configurator which enables design on demand with technical documentation, compliance, 3D models, pricing and codes available in moments of submitting product requirements. The product can then be delivered within weeks.

"Composer is like nothing else on the Australian lighting market," said Patterson. "GLG is the only company with the scale and ability to provide such a unique design-on-demand system. This is just one example of how we are working to change our industry for the better, with greater flexibility and shorter lead times."

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ALLIANCE TO BOOST AUSSIE BATTERY SUPPLY

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Perth-based Lithium Australia and Chinese battery producer DLG Battery have partnered to address the demands for lithium-ion batteries in Australia, particularly with the growth of the energy storage industry.

Lithium Australia is a provider of battery materials and recycling solutions to the fast-growing energy storage industry, while DLG is one of the 10 largest battery manufacturers in China, offering products for consumer electronics, electric vehicles, energy-storage systems, e-bikes and many other applications.

The two companies have signed a letter of intent (LoI) to form a joint venture, called Lithium Australia DLG, for the supply and sale of DLG lithium-ion batteries, packs and modules in Australia. Under the LoI, the two will also form a technology alliance to fast-track the commercialisation of Lithium Australia subsidiary VSPC's cathode powders, which will be used to manufacture DLG batteries in China.

Lithium Australia DLG will manufacture packs and modules within Australia, produce an Australian DLG/VSPC battery for both local and global markets, and offer a battery-recycling solution through Lithium Australia's recycling business unit.

Adrian Griffin, Lithium Australia Managing Director, said the partnership provides the company with "first-mover advantage in the supply of batteries designed specifically for Australian conditions and create a stable supply chain. That will provide equipment manufacturers with regular and reliable supplies of LIBs held as stock in Australia.

"Australia is already established as a world leader in the take-up of energy storage using LIBs. Lithium Australia, through its subsidiary VSPC, has developed superior cathode materials that provide the performance required for this application, under conditions of high ambient temperatures. Our partnership with DLG, a leading Chinese battery producer, vindicates the development efforts undertaken by the company to commercialise this opportunity."

HOW ARE TELCOS PREPARING FOR 5G?

The 5G evolution is expected to begin in the next couple of years, and while telcos are optimistic about the future, they are also aware of the energy and connectivity challenges ahead. Research from Vertiv and technology analyst firm 451 Research looked at how global telecom operators are preparing for the transition, particularly which enabling technologies and services will affect their 5G success.

A survey of more than 100 global telecom decision-makers with visibility into 5G and edge strategies and plans found 70% of participants were overwhelmingly optimistic about the 5G business outlook.

While only 12% of operators expect to roll out 5G services in 2019, 86% expect to be delivering 5G services by 2021.

As networks continue to evolve and coverage expands, 5G itself will become a key enabler of emerging edge use cases that require high-bandwidth, low-latency data transmission, such as virtual and augmented reality, digital health care and smart homes, buildings, factories and cities. However, the majority of respondents (68%) stated they do not expect to achieve total 5G coverage until 2028 or later.

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"In Asia, operators are optimistic that they are ready to deploy 5G in the next few years. But with the growing reality comes a new set of challenges including increasing energy consumption, existing infrastructure readiness and visibility as well as manageability of sites," said Danny Wong, Senior Director for Telecoms at Vertiv Asia.

The report found telcos are ramping up the deployment of multi-access edge computing (MEC) sites to support 5G services, with 37% already deploying MEC infrastructure ahead of 5G deployments and an additional 47% intending to deploy MECs.

In terms of remote management, data centre infrastructure management (DCIM) was identified as the most important enabler (55%), followed by energy management (49%). Remote management will be critical, as the report suggests the network densification required for 5G could require operators to double the number of radio access locations around the globe in the next 10–15 years.

Almost all respondents (94%) said they expect network energy consumption to increase with 5G deployments. The survey asked them to identify their plans for dealing with energy issues over the next five years and found three main focuses: reducing AC to DC conversions, new cooling techniques and upgrading batteries to lithium-ion.

"5G represents the most impactful and difficult network upgrade ever faced by the telecom industry," said Brian Partridge, Research Vice President for 451 Research. "In general, the industry recognises the scale of this challenge and the need for enabling technologies and services to help it maintain profitability by more efficiently managing increasingly distributed networks and mitigating the impact of higher energy costs."

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INDUSTRY PUSHES TO SCRAP QUEENSLAND'S SOLAR REGULATION

Master Electricians Australia (MEA) has joined the opposition against the Queensland Government's new solar regulation, agreeing that it could be devastating to solar projects and jobs, and is largely different to what was proposed in the consultation process.

The Electrical Safety (Solar Farms) Amendment Regulation 2019 came into effect on 13 May and requires licensed electricians to mount, locate, fix or remove solar panels on projects of 100 kW and over.

It was supposedly driven by the need for greater safety during solar farm installations, particularly in relation to untrained workers. Key concerns include: the inability to isolate individual solar panels while they are being mounted or removed; over-tensioning of the fixing bolts resulting in damage to the solar panel; and mounting of damaged solar panels that may pose a risk of electric shock to others or be a fire risk.

The government has released guidance notes specifying what tasks a trades assistant or general labourer are allowed to perform. They can: assist the licensed electrical worker in terms of lifting, passing and handing a solar panel; support a panel for them provided it occurs at the same time the licensed electrical worker is locating, mounting and fixing the solar panel on the PV array structure; help install electric cables where the licensed electrical worker is in the process of laying, placing or fixing the cables in position; and support electrical equipment while electrical connections are being made by the licensed electrical worker. However, they are not permitted to use a rattle gun to mechanically bond the panel to the PV array structure.

MEA believes the rules merely add red tape. Chief Executive Officer Malcolm Richards said: "They don't enhance safety, they don't improve performance and they don't boost clean energy production.

"What they will do is drive up the cost of building a new solar farm and tie up electrical businesses in unnecessary regulation.

"And by requiring electricians to perform work that has traditionally been done by trades assistants — lifting solar panels into place — they are already leading to job losses in some sectors of the industry.

"Our members didn't do a four-year electrical apprenticeship so they could lift heavy solar panels. They want to be part of an efficient and productive solar industry in Queensland."

According to the Clean Energy Council (CEC), the new regulation has already begun impacting labourers and trades assistants across the state.

"Across Queensland in the last few days, businesses have been asking labourers to down tools, and scrambling to source electricians to take over the straightforward task of panel mounting," said Anna Freeman, CEC's Director of Energy Generation.

"The affected workers were trained, experienced and entirely capable of doing the mechanical tasks of mounting unconnected solar panels. The mounting of electrical equipment is not even classed as electrical work under the state *Electrical Safety Act 2002*, and it could easily be performed by local labourers and trades assistants as it has to date."

Freeman described the new regulation as "absurd" and likened it to requiring university librarians to be fully qualified professors and cafe wait staff to be qualified chefs. She also previously stated it is the equivalent of a home owner requiring an electrician hang a new TV on the wall.

Queensland has set a 50% renewable energy target by 2030, but Freeman said the implementation of the regulation will delay projects in search of electricians and expose businesses to hefty penalty payments.

"The higher costs associated with imposing this change mean that investment in Queensland will slow and some investment decisions will be shelved. We have already been told by a number of our members that their projects now look more uncertain due to this new regulation.

"We are particularly concerned about this regulation locking communities out of many employment opportunities at solar farms in regional parts of the state, in return for expensive fly-in fly-out arrangements with electricians from metro areas. We need to be doing more — not less — to maximise the local employment opportunities from the clean energy transition.

> CEC WAS QUICK TO VOICE ITS CONCERNS WHEN THE NEW REGULATION WAS ANNOUNCED IN APRIL, STATING IT IS LARGELY UNJUSTIFIED AND HAS BEEN INTRODUCED WITH LITTLE INDUSTRY CONSULTATION.

"In the short term, Queenslanders can expect the asking price of electricians to increase, due to the sharp increase in electricians that will be required to complete large-scale solar projects," she said.

CEC was quick to voice its concerns when the new regulation was announced in April, stating it is largely unjustified and has been introduced with little industry consultation.

Although MEA was one of the industry associations the government said it had consulted with, Richards said the final regulation was vastly different to what industry had been told would be implemented.

"The government promised to consult with the industry, and paid lip service to that idea. But the devil is always in the detail, and now we can see the detail is no good," he said.

Both the CEC and MEA agree that parliament should scrap the regulation. Freeman stated: "We are calling on the government to rethink this costly and pointless regulation and come back to the table to find an alternative approach to dealing with its stated safety concerns."

Handheld spectrum analyser

Anritsu has introduced the Field Master Pro MS2090A RF handheld spectrum analyser. With high continuous frequency coverage up to 54 GHz, real-time spectrum analysis bandwidth up to 100 MHz and a ruggedised design to withstand the demands of field test, the product is suitable for a range of current and emerging field applications, including 5G, broadcast, regulatory compliance, aerospace/defence, satellite systems and radar.

A good test tool for the rollout of 5G New Radio (5G NR), the Field Master Pro MS2090A supports 5G NR demodulation, including cell ID, beam ID, RSRP/RSRQ, SINR and EVM in all 5G bands (sub-6 GHz and millimetre-wave).

3D indoor and outdoor coverage mapping for 5G NR allows wireless professionals deploying 5G NR to conduct more accurate measurements than conventional instruments using 2D data. This ensures 5G NR networks meet performance specifications both indoors and outside.

Real-time spectrum analysis spans up to 100 MHz are possible for interference monitoring in the cellular bands or full ISM band. A spectrogram display and low noise floor make it easy for field technicians and engineers to conduct RF spectrum monitoring and locate intermittent or interfering signals.

The high performance of the Field Master Pro MS2090A makes it suitable for general spectrum analysis applications. Integrated channel power and occupied bandwidth (OBW) measurements simplify the characterisation of common radio transmissions.

The large 10″ colour touchscreen allows users to swipe and scan across the frequency range, or pinch and zoom to quickly view signals of interest.

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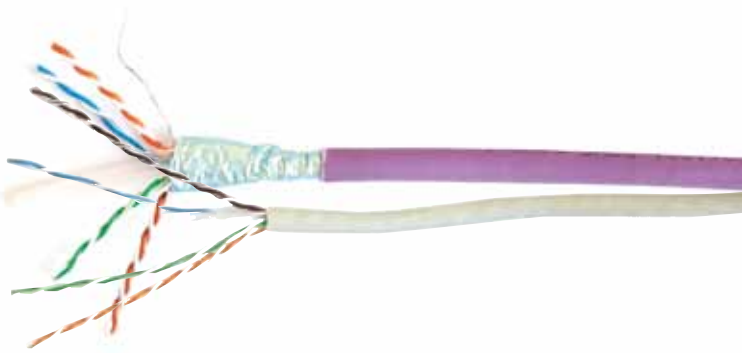

Bulk LAN cables

Warren & Brown Technologies (WBT) LAN cables are regulatory compliant as well as meeting and exceeding all Australian and international standards including ISO/IEC 11801.

WBT's range of bulk LAN cables provides value for networks that require cabling over long distances or flexible cabling lengths. Available in Category 6 (CAT6) and Category 6A (CAT6A), all of the cables are provided with low smoke zero halogen (LSZH) sheath as standard. LSZH considerably reduces the amount of toxic and corrosive gas emissions during a fire.

The range includes a variety of colours and the bulk packs are supplied in a heavy-duty speed reel box designed for easy unspooling and deployment of cables. The quality and inspection procedures employed ensure high-quality, individually inspected and approved cables are supplied.

Warren & Brown Technologies
www.wbnetworks.com.au

New features for distribution software

Epicor Software Corporation's latest version of its distribution software solution, Prophet 21, is designed to fit the needs of distributors confronting fast-paced market changes disruption.

It is optimised for cloud deployment on Microsoft Azure and further empowers distributors to take advantage of the benefits of cloud computing and adapt to competitive pressures. This version delivers fast time to value, fosters growth and enables a more mobile, productive workforce.

It features the Epicor Rentals Management (ERM), a cloud-based solution that helps distributors easily manage the scheduling and assignment process, from rental start to rental completion.

Other new features include: Epicor Virtual Agent (EVA), an enterprise-wide digital agent using artificial intelligence to help users work smarter by processing commands and providing recommendations based on user behavior; Epicor mobile proof of delivery, a fully integrated mobile companion that enables enhanced service responsiveness for more efficient deliveries and pick-ups; and TrackAbout, a new integration that allows welding and industrial gas distributors to manage, track and maintain portable returnable assets such as cylinders and containers.

Epicor Software (Aust) Pty Ltd

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Installation tester

The Fluke 1663 FVF is a multifunction installation tester. Suitable for professionals that need full-featured functionality and advanced measurement capabilities, it is intuitive and easy to use for workers of all skill levels. It is available to rent from TechRentals.

The product is compact, lightweight and capable of continuity tests, loop impedance, insulation resistance measurement, earth resistance and voltage measurements.

Safety-rated to CAT III 500V and CAT IV 300V, the unit comes with a hard carrying case, padded carrying and waist strap, and remote control probe and lead. It also includes a number of helpful features, such as on/off switchable auto-start for RCD and loop test.

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TED: THE NEW KID ON THE BLOCK

In 2018, 51.2% of electricity in South Australia was generated by renewable energy, according to data from the federal government's Department of the Environment and Energy.

One way the state has been harnessing renewable energy is through the Hornsdale Power Reserve (HPR), installed in 2017, which is claimed to be the world's largest lithium-ion battery energy storage system. An Aurecon report found that after one year of operation, the 100 MW/129 MWh Tesla Powerpack system contributed to a reduction of close to $40 million in the frequency control ancillary services (FCAS) market. But is there a new kid on the block?

South Australian company CCT Energy Storage has revealed a new way to store electricity in a thermal battery, which may offer a cheaper, more sustainable energy storage solution.

Claimed to be "the world's first working thermal battery", the company's TED (Thermal Energy Device) accepts any form of electrical input — including solar, wind, waste, fossil or grid energy — to store energy as latent heat and convert it back into electrical energy on demand.

According to CCT, TED uses a unique phase change material (Silicon) that is melted and stored as heat energy before being extracted by a thermic generator when needed. The battery, which fits into a 20-foot container, can store 12 times more energy than a lead–acid battery and 5–6 times more than a lithium-ion battery.

CCT Chief Executive Serge Bondarenko said it has the ability to change the global energy market.

"We believe energy is a resource that should be accessible to all corners of the globe — and that means it's vital to provide an energy source that's cost-effective, environmentally safe and sustainable," he said. "TED is the first battery of its kind and will be a game changer in the renewables space, with the ability to significantly reduce power costs while providing versatile and long-lasting energy with little to no environmental effect."

At least 10 TED units will be supplied to commercial customers this year, but CCT expects production to increase to more than 200 units by 2020. It is readily scalable and can be used to power remote communities, commercial businesses, telecommunications networks and transport systems.

"TED's scalability means it can be used in small-scale 5 kW applications to large-scale applications of hundreds of megawatts of instantaneous power," Bondarenko said. "And unlike some renewable energy sources, TED can manage input variations, produce base load output and charge and discharge simultaneously — minimising energy wastage and making it applicable to numerous commercial industries."

Minister for Energy and Mining Dan van Holst Pellekaan said CCT's energy storage solution helps ensure South Australia's abundant renewable energy delivers cheaper and more reliable energy for consumers.

"We already know South Australia is leading the world in the generation of renewable energy, but to maximise the benefits for consumers it must be harnessed with storage to make variable renewable energy dispatchable on demand," he said. "That's why projects like this one — leveraging cutting-edge storage technology — are so exciting and so necessary."

SECURE YOUR DATA & EQUIPMENT

A data enclosure is your last line of defence, so it needs to be strong enough to stop unauthorised access.

The MFB range of Class B and Class C enclosures are purpose built frames fitted with key locks and boltwork approved by the Australian Government Security Construction and Equipment Committee (SCEC)

All enclosures are fitted with tamper evident cable entry systems, high impact clear polycarbonate panels on doors, secure venting systems and certified combination locks.

An alternative product, the MFB range of High Security enclosures provides a lower level of security and is not SCEC approved. Effectively construction methods mirror the Class B and Class C series, however the doors are fitted with a cheaper bilock keying system. Also additional flexibility with the design regarding cable entry encourages effective quick installation and high volume data cable installations.

With over 50 years in the business, and backed by the SCEC approval for manufacture, these Australian built 19"rack mount enclosures provide peace of mind in relation to the security your data needs.

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CRACKING DOWN ON DATA BREACHES

With the Notifiable Data Breaches (NDB) scheme revealing more than a third of all data breaches in the last year were due to human error, this underscores the importance of effective training, processes and technologies to support data protection in the future.

Introduced in February 2018, the NDB scheme requires entities to notify the Office of the Australian Information Commissioner (OAIC) and individuals if a data breach involving their personal information is likely to result in serious harm.

Statistics from the 12-month Insights Report, released by the OAIC, revealed that 964 data breaches were reported from 1 April 2018 to 31 March 2019. This marks a 712% increase in notifications compared with the previous 12 months under the voluntary scheme, which the report said is "a clear sign of their awareness of, and compliance with, the NDB scheme".

Of the 964 notifications, 60% were due to malicious or criminal attacks, 35% were human error and 5% were system faults. The report also revealed the health sector reported the most data breaches, and human error accounted for 55%.

Phishing was found to be the leading cause of data breaches (153), while 97 breaches were the result of personal information being emailed to the wrong recipient.

Australian Information Commissioner and Privacy Commissioner Angelene Falk called on regulated entities to heed the lessons from the NDB scheme's first year of operation.

"Our report shows a clear trend towards the human factor in data breaches — so training and supporting your people and improving processes and technology are critical to keeping customers' personal information safe," she said.

Training employees was recognised as one of five best practice notifiable data breach tips for entities. The report suggested: all employees should be trained on how to detect and report email-based threats (such as phishing), understand basic account security (such as secure passwords) and how to protect their devices; a dedicated training program comprising face-to-face training and e-learning; and entities should consider their broader workforce, including contractors, when setting awareness strategies.

Other best practice tips were: preventative technologies and processes, such as multi-factor authentication; effective preparation, such as a data breach response plan; an assessment process that can determine whether a data breach is notifiable or not; and post-breach communication that promotes transparency and simplicity.

After more than 12 months in operation, entities should now be well equipped to meet their obligations under the scheme, Falk said. Her office has worked with more than 1000 organisations that notified a breach, helping to ensure they were contained and measures were put in place to prevent a recurrence.

"This approach has been successful in elevating the security posture in those organisations and increasing transparent and accountable personal information handling practices," she said.

The OAIC will continue to take a proportionate and evidence-based regulatory approach to data breaches, exercising enforcement powers where necessary.

Moving forward, organisations should move beyond a purely compliance mindset and view data protection as an opportunity to enhance consumer trust, the report concluded.

Cybersecurity - Automation Securely

With PFC100 and PFC200 Series Controllers

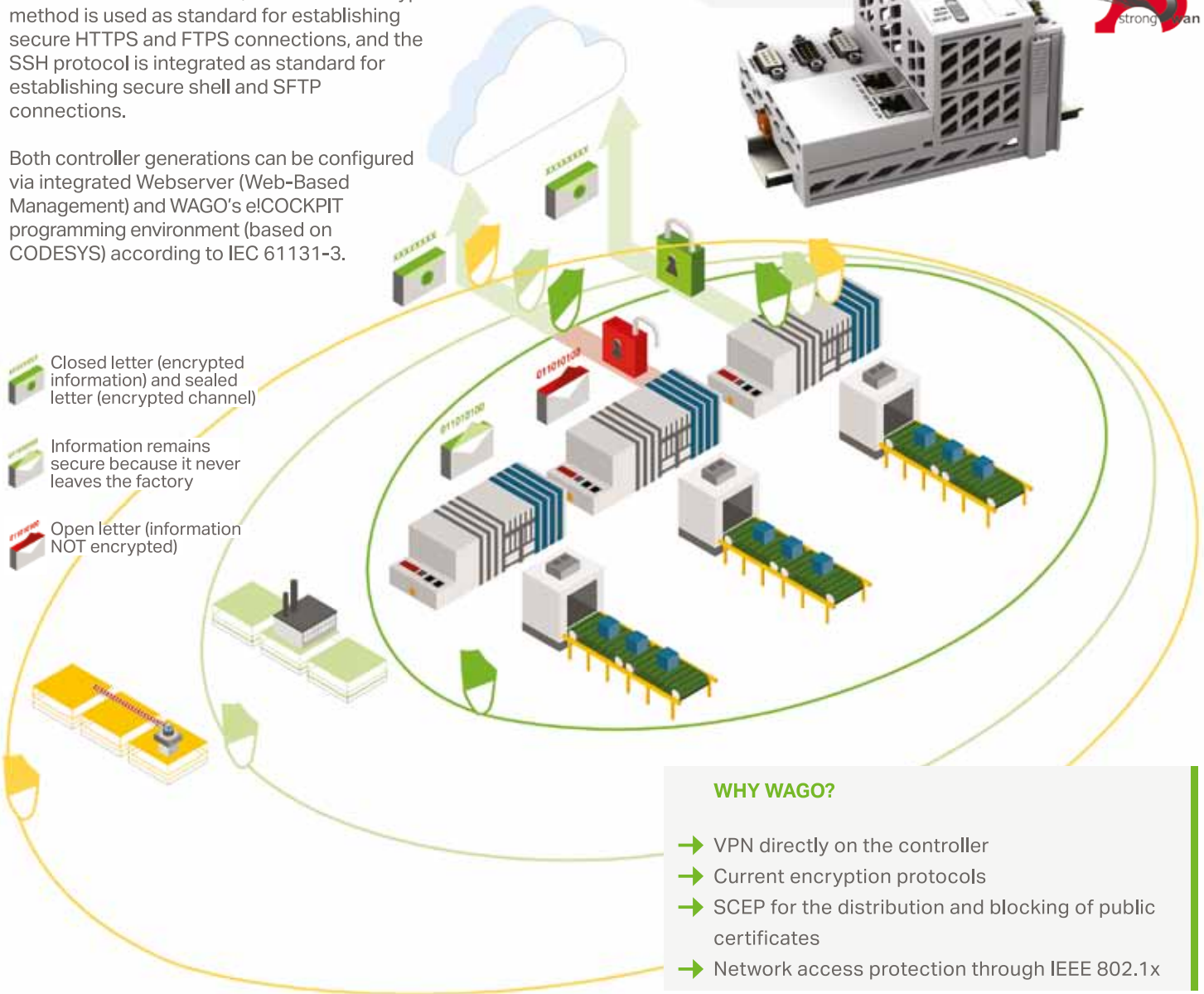
Increasing networking and advanced connection to the Internet that is already nearly standardized and now rightly propagate the trend to secure data storage and data transmission in all areas, including automation technology.

WAGO has responded to these requirements for automation components with the PFC100 and PFC200 Controllers. Linux® provides the basis that allows security mechanisms (e.g., IP tables (firewall), VPN, IEEE 802.1x and SCEP) to be implemented. An IPsec or OpenVPN connection can be implemented directly from the PLC via which data are sent encrypted.

In addition, a standard integrated firewall provides protection against unauthorized access. Users thus have the option of upgrading controllers according to the requirements stated in the BDEW (Federal Association of Energy and Water Industries) white paper and the BSI-IT (Federal Office for Information Security) security catalog.

Both the PFC100 and PFC200 Controllers support all TCP/IP family protocols for the simple connection to a network: DHCP, DNS, SNTP, FTP, Telnet, http and Modbus TCP/UDP. In order to ensure information security and integrity during Web access and data transfers, the TLS 1.2 encryption method is used as standard for establishing secure HTTPS and FTPS connections, and the SSH protocol is integrated as standard for establishing secure shell and SFTP connections.

Both controller generations can be configured via integrated Webserver (Web-Based Management) and WAGO's e!COCKPIT programming environment (based on CODESYS) according to IEC 61131-3.



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- Network access protection through IEEE 802.1x

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Multi-fibre connector inspection system

AFL has introduced the FOCIS Lightning Ultrafast MPO/MTP connector inspection system with twin 5 MP CMOS sensors to image the entire MPO end face simultaneously and perform fast multi-fibre inspections.

The use of advanced liquid lens optics, dual image sensors and FPGA-based image processing make it both small and lightweight.

The adapter tips support both MPO-12 and MPO-16 connector types, and both flat and angled end faces. The product is also available with a single fibre coupler.

Other key features include: key up/key down polarity capture with clear fibre one identification; support for all MPO fibre configurations, including Base-8 and Base-10; auto-focus and auto-analysis compliant to IEC MPO standards; and Bluetooth connectivity to AFL's FOCIS Flex mobile app.

AFL Telecommunications Pty Ltd
www.aflglobal.com

Extra-deep rack cases

METCASE has launched an extra-deep 24″ version of its COMBIMET 19″ enclosures, suitable for server rack type applications.

COMBIMET is METCASE's range of aluminium 19″ rack cases. Applications include networking, communications, AV and studio systems, laboratory instruments, industrial computers and control systems.

The latest cases are 610 mm (24″) deep — much deeper than the existing standard depths of 265 and 365 mm. This depth is suitable for deep 19″ racks, eg, 1000 mm.

The enclosures offer complete access to the PCBs: the top, base and rear panels are removable. The top and base can be specified as either vented or unvented. Other features include ergonomic front panel handles and mounting holes for PCBs and chassis. M4 earth studs on all components ensure electrical continuity.

The models are available in all heights from 1U to 6U and are painted in black, RAL 9005. The front panels are also in black. Cases are supplied fully assembled.

The cases can also be supplied fully customised. Services include CNC punching, folding, milling, drilling and tapping; fixings and inserts; painting and finishing, digital printing of legends and logos.

ROLEC OKW Australia New Zealand P/L
www.metcase.com.au

Industrial imager

The Fluke ii900 Sonic Industrial Imager allows maintenance teams to quickly pinpoint the location of compressed air, gas and vacuum leaks.

With SoundSight technology, users can see the sound a leak produces, even from a distance and in noisy industrial environments. A leak location is determined by discerning the direction from which a sound originates by the time delays that occur as the sound passes over an array of microphones. A SoundMap is displayed in colour over a visual image allowing for easy visual location.

Features include: lower energy costs; reduced leak detection time; minimal training required; and validate repairs on the spot.

Fluke Australia Pty Ltd
www.fluke.com.au

2-channel isolation transceiver for RS485

MORNSUN has announced the TDx22D485H-A series 2-channel 485 isolation transceiver module, to assist fast signal response in industries including power grid, industrial control, transportation and instrumentation. The main function of the series is to convert a logic level signal into isolated RS485 differential level signals.

The special integrated IC technology of the RS485 transceiver achieves isolation between the power supply and the signal lines isolation, enables RS485 communication and protects the bus all in one and the same module. The transceiver adopts MORNSUN's fixed input R3 technology by applying an independent oscillator instead of the Royer circuit, integrating internal discrete components. This is better suited to full dynamic load applications, according to the company, and is designed to increase the communication reliability of products.

Product advantages include: a high baud rate up to 120 Kbps; 2-channel isolation, supporting full-duplex communication mode; and highly integrated internal construction.

The product's isolated power supply withstands a test voltage of up to 3000 VDC. In addition, the product features an automatic switching function that no longer requires the need to pass through the node to send and receive control signals; this reduces design complexity. It can easily be embedded in the end-user's equipment, to achieve fully functional RS485 network connections.

Other features include: an integrated, high-efficiency isolated DC/DC converter; three-port isolation of 2.5 kVDC; an operating temperature range of -40 to +85°C; and ESD protection, complete EMC recommended circuit. The bus is able to support a maximum of 32 nodes.

DLPC Pty Ltd
www.dlpc.com.au

Junction box

TE Connectivity has announced the SOLARLOK PV Edge decentralised junction box that can be attached to glass-to-glass photovoltaic panels without drilling holes.

It can be mounted on the edge of the PV panel without the panel manufacturer having to drill any holes or use a potting resin that can take over 6 h to cure.

The junction box has a flap design, which protects the foils while facilitating attachment to the PV panel. The flaps are available in different shoulder heights to fit panels of diverse thicknesses.

Other features include: a lid with cooling ribs to improve heat dissipation; elimination of X-connect to facilitate lay-outs; cost reduction through shorter foil lengths; shorter connections that increase efficiency and improve output; and defined bottom roughness that eliminates the need for pre-treatment of the product.

It also has a separate compartment for the diode for better heat transfer in case of shading, and an optional thermal pad to increase power handling by 2 A.

TE Connectivity
www.te.com

DIN rail power supply

The PULS DIMENSION QT40.241-B2, available from Control Logic, is a 3-phase 960 W (24 V, 40 A) DIN rail power supply with an I/O-Link interface.

Users can obtain application data quickly and easily, such as the load level of the power supply, the network quality, remaining lifetime, temperature and output current.

High immunity to transients and power surges, as well as low electromagnetic emissions, makes usage possible in the majority of environments. In an event of an overload, upcoming maintenance, excessive temperature or voltage, the device provides a warning with plenty of time. Its remote function makes it possible for the power supply to be switched on and off remotely as well as setting the output voltage if required.

The data can assist in increasing the availability and efficient utilisation of the system, reducing maintenance and operating costs.

Control Logic Pty Ltd
www.controllogic.com.au

Platform for micro data centre and edge computing

R&M has launched EdgeGo Basic, a ready-for-connection micro data centre that is used as a platform to provide infrastructure for edge computing.

It is a ready-wired, soundproof micro data centre for creating infrastructure at the edge site. It could be implemented in industrial companies in leased buildings. There would be no need to plan and integrate additional server rooms with raised floors, and it can be disassembled and moved.

Further areas of use are in trade, banking, law firms, hospitals, authorities and the transport industry, as well as in the military.

The product's housing is equipped with sound protection, cooling and a security camera. Users add cabling and IT equipment as required and can start operating the micro data centre immediately.

It reduces the noise of the active equipment by 31 dBA, meaning it is suitable for noise-sensitive environments. A temperature-regulated controller controls the speed of the ventilators. The active cooling attains a performance of 12 kW and the capacity of the passive cooling is 2.75 kW.

Reichle & De-Massari Australia P/L
www.rdm.com

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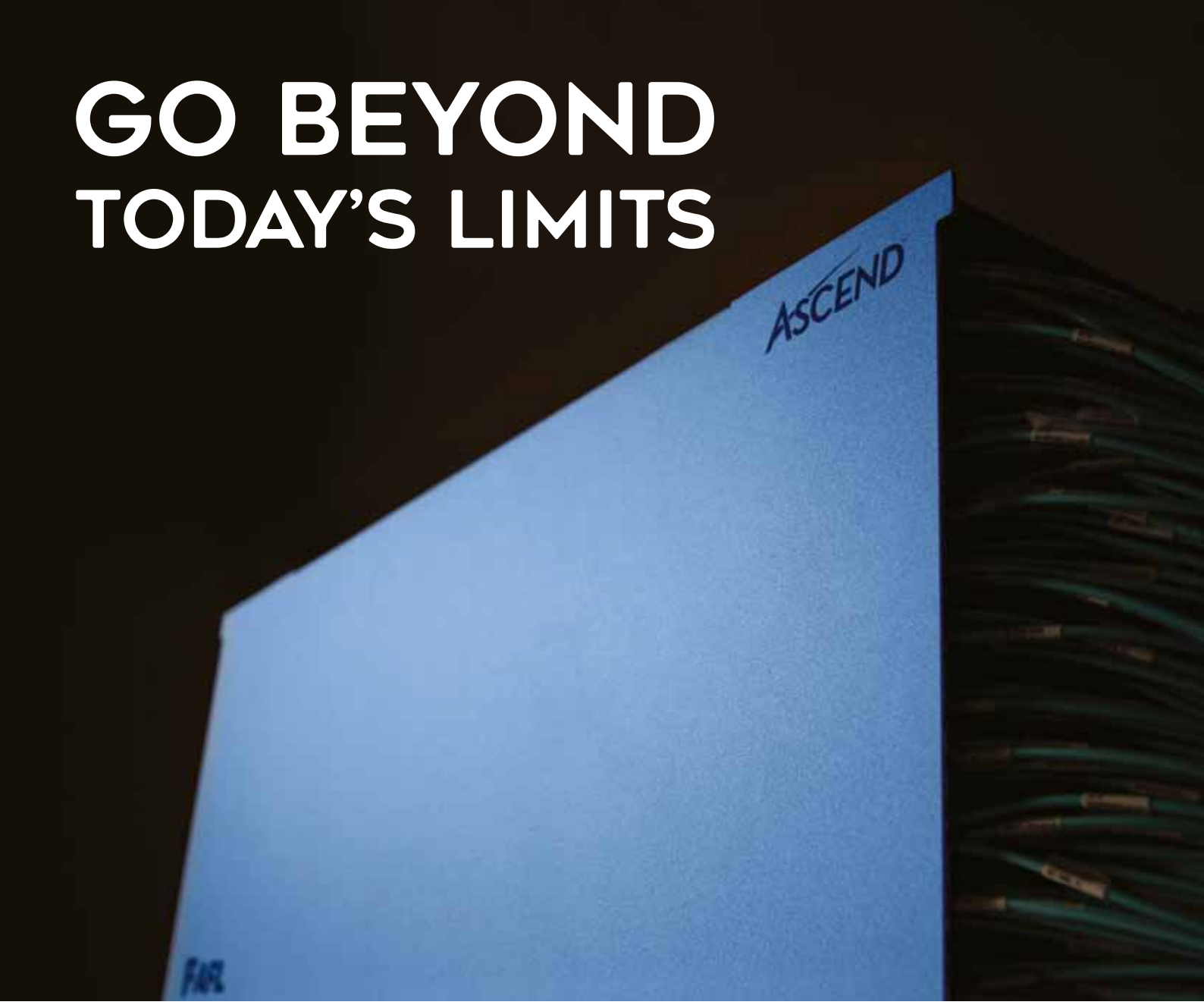

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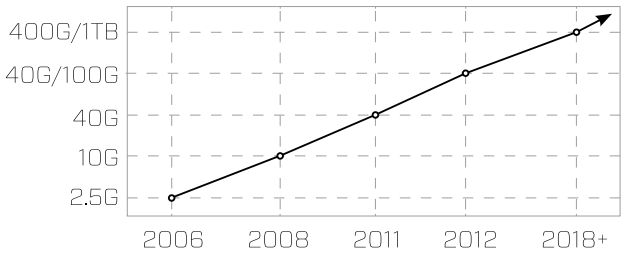

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AFL

DIGITAL POWER: A NEW SAFETY FRONTIER — PART 2

Paul Stathis, CEO

Reflecting on where technology has taken us, even over the past few years, tells us that change is inevitable. As industry professionals, we have a responsibility not only to keep up with these changes, but to keep up with the risks that emerge with them, as well as the strategies to mitigate them.

This article, the second in a two-part series, addresses the risks and mitigation strategies for digital power — an alternative to mains electricity in safely delivering power to devices over telecommunications cabling. Part 1 outlined the risks of remote powering (aka PoE or Power over Ethernet), what the ICT standards said about the risks and suggested steps we could take to diminish these risks.

Let's put it simply to help distinguish the two technologies:

- Remote powering 'adds power to data transmission'; and
- Digital power 'adds data to power transmission'.

You may be more familiar with the term 'Digital Electricity', a name trademarked by VoltServer, the company that pioneered the technology, but we'll use the term 'digital power' to remain generic.

Digital power typically involves transmitting energy in data packets, with each packet being verified at the receiver. So when there's a short circuit, or someone touches live conductors, the transmitter recognises the fault condition within a few milliseconds and immediately stops sending any more energy packets — faster than conventional safety switches and with a wider scope of fault conditions. This enables 'touch-safe' electrical transmission at high, even hazardous, power levels.

VoltServer succinctly outlines the intent of digital power on its website, stating: "Digital Electricity™ solutions deliver touch-safe electricity where and how it is needed. Digital Electricity™ can be delivered using off-the-shelf data cable, at significantly reduced cost, and with greater speed…and flexibility, when compared to electrical installations."

So it's positioned as an alternative to conventional mains cabling, using data cables. And it's gaining support. For example, property developer Sinclair Holdings recently deployed both digital power and remote powering in a luxury 165-room Marriott hotel in Texas to help improve customer experience, while optimising energy conservation.

"We installed the VoltServer transmitter in the basement next to the electrical switchgear and then ran digital power throughout our 10-storey building using 18/2 speaker wiring," said Sinclair Holdings CEO Farukh Aslam, who presented a case study on this project at the BICSI Conference in January 2019.

"This feeds power to Cisco PoE switches, which then powers all the devices in the rooms using 'category' data cable. Because it was all Class 2 power, we didn't need any electricians.

"On top of that, we're aiming to save more than 50% energy, compared to traditional methods, by centrally monitoring and managing everything through the IP network, capturing consumption patterns and optimising everything."

This is just one example of a growing trend in utilising digital power instead of mains power. But can this technology be safely

deployed? After all, buildings that size and complexity must consume huge amounts of power and therefore present dangers to installers, maintainers and users.

ICT digital power safety standards

Let's start with the AS/NZS 62368.1:2018 standard — a localised version of IEC 62368.1:2018, currently being adopted globally as the electrical and electronic safety standard for AV, ICT and business equipment. It introduces a hazards-based safety engineering approach using a three-stage risk model against potentially increasing risks from rising energy levels. It classifies energy sources, prescribes safeguards against those energy sources, and provides guidance on the application of, and requirements for, those safeguards — all intended to reduce the likelihood of pain, injury and property damage.

AS/NZS 62368.1:2018 classifies energy sources ES1, ES2, ES3 and their controls to safely deliver digital power:

ES1 – Class 1 electrical energy source:

- Touch-current or prospective touch-voltage levels don't exceed ES1 voltage limits (60 VDC or 30 VAC RMS with no current limit) or ES1 current limits (2 mA DC or 0.5 mA AC with no voltage limit) under normal and abnormal operating conditions and single-fault conditions of elements not serving as safeguards.
- Doesn't exceed ES2 limits under single-fault conditions of safeguards.
- Accessible to 'ordinary person'.

ES2 – Class 2 electrical energy source:

- Both touch-current and prospective touch-voltage exceed ES1 limits but don't exceed ES2 voltage limit (120 VDC or 50 VAC RMS with no current limit) or ES2 current limit (25 mA DC and 5 mA RMS with no voltage limit) under normal and abnormal operating conditions and single-fault conditions.
- Accessible to 'instructed person' and 'skilled person', but at least one basic safeguard required between ES2 and an ordinary person.
- A circuit with telephone ringing signals as defined in AS/NZS 62368.1 is an example of ES2.

ES3 – Class 3 electrical energy source:

- Hazardous, where both touch-current and prospective touch-voltage exceed ES2 limits.
- ES3 generic circuit defined as a metallic circuit utilised for communications or remote-powering, or both, that exceeds ES2 voltage and touch-current limits, but doesn't exceed 400 VDC between conductors and 750 mA per conductor.
- ES3 special application circuit defined as a circuit intended to support ES3 service over special application cable that is not generic cabling.
- Accessible only to suitably qualified skilled persons.
- RFT-C and RFT-V circuits are examples of ES3.
- Cables intended to carry ES3 must be clearly identified at all access points and separated from other services and telecommunications circuits. Cable route must be marked at regular intervals, noting the potential presence of hazardous energy sources.

This ACMA-mandated standard has introduced significant changes to the soon-to-be-published AS/CA S009:2019 Wiring Rules. The 'Public Comment Background Paper' issued with the draft AS/CA S009 standard addresses the impact of AS/NZS 62368.1 and how industry should deal with potential hazards, particularly energy sources and personnel classifications. It states in part:

"ES1, ES2 and ES3 are defined in DR AS/CA S009, while a new Appendix P provides information on the equivalence of these terms and the terms ELV, SELV and TNV used in AS/CA S009:2013.

"ES3 is considered hazardous and represents equivalent hazardous energies in AS/NZS 60950.1. Previously, where voltages exceed TNV limits on customer cabling, LV Telecommunications circuits were used, eg, EWIS, which is classified as a 'hazardous service'.

"DR AS/CA S009 supports ES3 circuits over generic cabling limited to maximums of 400 V and 750 mA per conductor. Exceeding these on generic cabling is deemed as not fit-for-purpose as it does not provide adequate safeguards to ensure the safety of customers, cabling providers, carrier staff and general public.

"New requirements have been specified for cables that are intended for ES3 generic circuits. In addition to existing requirements in AS/CA S008, these cables now are required to have a maximum conductor resistance (equivalent to 0.5 mm conductor diameter), an identifiable sheath colour ('Homebush Gold') and be clearly labelled 'ES3 circuit' every 2m in the colour 'Homebush Red'. ES3 generic cables are not to be used for ES3 special application circuits.

"DR AS/CA S009 [also requires] subducting ES3 circuits when installed with other cables, and preventing access to sockets capable of carrying ES3 circuits.

"Separation of telecommunications and electrical circuits for indoor cabling listed in Appendix G has been revised to reflect ES1, ES2 and ES3 energy levels."

DR AS/CA S009 has also introduced the terms 'ordinary', 'instructed' and 'skilled' persons to associate risk controls with individuals' skills and education, relating distinct levels of protection, based upon how much each person understands the relevant risks.

Ordinary person (formerly 'end-user') generally applies to equipment users, but can also apply to bystanders. Cablers can be instructed persons or, with additional training, skilled persons.

Instructed persons are trained by a skilled person, so that they know what energy sources in the product may cause pain, and they know how to avoid unintentional contact with them.

Skilled persons may have access to ES3 parts, so they must have the appropriate training, qualifications and experience to be able to recognise where and what hazards exist within the equipment, and be able to apply knowledge and skills to safeguard against pain and injury.

Wireless technologies

Many argue that the increasing deployment of wireless technologies like Wi-Fi and LTE (ie, 4G/5G) has significantly diminished ICT infrastructure risks. It's true that wireless isn't electrically conductive and doesn't carry current or pose the risk of electrocution in the proximity of mains cabling like copper cabling. But wireless technologies rely heavily on wires.

Wi-Fi 6 Access Points (APs), defined by the yet-to-be-released IEEE 802.11ax standard, typically need two Cat 6A data cables to handle the data bandwidth. And these APs are also mostly PoE enabled, so as Wi-Fi deployment increases, so too will the risks associated with data cables carrying power, particularly on older cabling not designed to do so. A common enterprise trend is overlaying Wi-Fi over wired ICT infrastructure — wireless isn't replacing wired, it's augmenting it.

5G — touted by some as the 'nirvana' of modern data access — will require a massive increase in the number of antennas for both external carrier-based networks and in-building networks, simply because of the greater attenuation of RF signals at frequencies higher than 4G networks. More antennas mean more wires. 5G will mostly be connected with fibre-to-the-antenna (FTTA) technology, but many in-building networks will likely connect via copper cabling. Again, this increases the number of current-carrying cables in a building, probably in proximity to mains cabling, thereby increasing risks.

These wireless market trends will be eclipsed by the Internet of Things (IoT). Part 1 of this article stated that IoT will introduce billions of low-cost devices in many diverse applications, mostly connected wirelessly. Many of these remote devices will be battery powered, but the complex infrastructure to connect them — millions of Ethernet switches, RF extenders, remote PCs, etc — will need greater power, typically using PoE. Once again, more current-carrying cables.

Put simply, the increase in wireless networks will see a massive increase in remote powering and digital power and their associated safety risks.

The true value of standards

The committees that write these standards are professionals with many years' experience in ICT. Their collective views are representative of best practice on what to state in standards for the long-term benefit of industries.

So when we see so much emphasis placed on the risks associated with ES1, ES2, ES3 in AS/NZS 62368.1, AS/CA S008 and AS/CA S009, we can be sure that this is important to our industry.

Standards have a big role to play in risk mitigation. Ultimately, adherence to these standards by all will ensure our safety along with the safety of those affected by our work.

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Less is more: mini patch cords

Our constantly evolving business world requires technology that is capable of keeping up with the rapid changes, increasing information demands, as well as future proofing the network. Today's data centres and enterprise networks are responsible for an increasing number of bandwidth-intensive applications which rely heavily on the networking infrastructure.

The physical cabling infrastructure is the backbone of every high performing ICT network so must be reliable, scalable and manageable. And while the cabling portion may be quite small relative to the total data centre capital expenditure, the space within the data centre can be very expensive. If there's a way to reduce the overall space required and therefore associated costs, why install thick and bulky cabling if you don't need to?

Cable congestion in data and network racks can present a variety of challenges. In pursuit of maximum density, utilisation of rack and floor space, cable congestion has become an ongoing issue to deal with. In these instances, it can be quite difficult to keep cabling neatly organised and to effectively manage a network.

Since higher port densities contribute to cable congestion in and around patching fields and cable routing areas, it is important to look for solutions that are space saving as well as offering ease and flexibility to work with.

Copper patch cords with a smaller outside diameter (OD) can offer great advantages in any network environment. Warren & Brown Technologies' (WBT) range of high-performance mini patch cords (also known as slimline patch cords) have a reduced OD, which is obtained by using 28 AWG copper conductors in place of 24 AWG copper conductors used in regular patch cords. The use of a smaller conductor means higher attenuation, particularly at higher frequencies. To accommodate this higher attenuation, WBT recommends using a de-rating factor of 1.9 compared to a 24 AWG standard cord when designing channels.

Using mini patch cords in today's high-speed networks provides a number of key operational and performance advantages when compared to standard patch cords. The reduced OD provides a smaller cable surface area, which improves airflow (cooling) and minimises the space your cabling infrastructure occupies, reducing power consumption and decreasing your costs of ownership.

The mini patch cords provide a superior space saving solution and better cable management, while delivering the same high-level performance as standard diameter patch cords. The smaller diameter and tighter bend radius make the patch cords incredibly flexible for simplified routing, saving valuable time and labour, and reducing crowding in racks. By reducing congestion inside racks and along pathways, mini patch cords allow for faster cable identification and patching in high capacity racks.

WBT's patch cords meet all the relevant cabling standards, provide reliable network connectivity and are available in various lengths and colours to suit your network requirements. Providing local technical and network design support, stock availability, as well as fast production and delivery times, WBT deliver a level of expertise and service that allows you to deploy your network on time, on budget and without headaches.

For more information: https://wbnetworks.com.au/products/copper-structured-cabling/patch-cords/cat6a-u-ftp-mini-patch-cord-28awg-lszh.html.

WARREN & BROWN NETWORKS

Warren & Brown Technologies
www.wbnetworks.com.au

Automatic direction-finding antenna

Narda Safety Test Solutions has developed an automatic direction-finding antenna (ADFA) that delivers stable results quickly. Insensitive to reflections, it precisely determines the direction of a detected signal.

When coupled with the powerful SignalShark real-time receiver, the system is suitable for automatic direction-finding of signals in the frequency range from 200 MHz to 2.7 GHz. As well as for cellular network providers and the military, it is primarily aimed at PMR and BOS radio operators with applications that involve safety and security.

At the heart of the product is an array of nine antenna elements around an omnidirectional reference antenna optimally arranged to achieve stable measurement results. The reference antenna allows test engineers to observe the spectrum at the same time as direction-finding. The principle of automatic direction-finding for a single-channel receiver is based on the measurement of the phase difference between antenna elements. The nine antenna elements are measured against the central reference element. The greater the distance between them and the greater the recorded phase difference, the better the bearings.

As well as stationary applications, the antenna can be attached to the roof of a vehicle using a magnetic mount. When connected to the SignalShark, a bearing cycle takes just 1.2 ms and achieves an accuracy of up to 1° RMS (typical). Along with the simple display of the determined direction, the receiver can also overlay a heat map on a stored map. The powerful localisation software on the SignalShark can thus show the most likely location of the interferer directly on the screen during mobile operation, all in real time. A handheld antenna can be used with the receiver to determine the exact location of a signal source over the final few metres, so that the test engineer can enter a previously localised building in order to determine the exact room where the source is located.

Narda Safety Test Solutions GmbH
www.narda-sts.de

Industrial edge device

The Schneider Electric Magelis IIoT Edge Box, with Node-RED pre-installed, is an industrial edge device that requires no maintenance.

It is designed to run in harsh environments, and the device stands alongside (in parallel to) the existing automation control system, minimising plant disruption. It connects to and collects data from field devices, and provides a wide array of connectivity options, hard-wired I/O and remote access via Wi-Fi or 4G, plus options including blind box or local operator screen, expansion accessories and operating system options for Windows 10 and Linux. It is natively cybersecure.

Node-RED can be configured for one-way communications only, so device data is accessible in read-only mode. IIoT Edge Box also incorporates cybersecurity features such as end-to-end data encryption.

The Magelis IIoT Edge Box provides a first step towards IIoT and IT/OT integration without the need to change or stop the existing control system.

Schneider Electric
www.schneider-electric.com

CASE STUDY

Fruit farmer cuts energy costs by 30% with solar installation

A Goulburn Valley pear and stone fruit farming family has saved more than $62,000 a year in electricity after installing a solar PV system across its two cold storage sheds.

For more than 50 years, the Rachele Family has been growing, packing and transporting pears, nectarines, plums and peaches to supermarkets shelves from its 300 acre farming operation, but it has recently struggled with rising energy costs.

"We pick our fruit and then we have to pull it down to zero degrees immediately," Co-owner Matthew Rachele said. "This refrigeration takes a lot of energy, it's the most energy-intensive part of our operations."

However, the family was wary that the farm's aging electrical switchboard couldn't support new infrastructure, and lacked the internal knowledge to assess or manage potential technology suppliers.

Australian energy services business Verdia was asked to investigate technical solutions and provide funding via the Clean Energy Finance Corporation-backed Westpac Energy Efficiency Program. The company is a key partner in the program, which has provided almost $400 million to fund projects to reduce energy use and costs over the past three years.

Verdia CEO Paul Peters said it selected the best of three proposals from its suppliers to install two separate 100 kW solar PV systems at the Rachele Group's Central Park Orchards and Mountain Valley Produce Centre.

The 500 solar panels are connected to the local electricity network via the farm's internal electrical network and will produce 263,072 kWh of clean, renewable electricity in the first year; enough to power 45 typical homes. As well as cutting electricity costs, excess energy produced during non-peak farming periods is sent back to the grid, earning a small feed-in tariff.

According to Peters, the initial capital investment in the solar system will pay itself off in five years and earn an additional $1.07 million in benefits over the life of the assets.

"It's helping to take the volatility out of the farm's future electricity contracts, which is becoming an increasing risk for many Australian businesses — particularly energy-intensive operations driven by heating and cooling."

After the initial investigations, Verdia managed the RFQ process and all aspects of the installation, connection and commissioning of the systems. It will continue to monitor the performance of the systems, with regular dashboard reporting showing energy production and cost reductions, and manage potential warranty issues.

Verdia
verdia.com.au

DIN rail enclosures

The Warren & Brown range of DIN Rail Enclosures allows for flexible, pay-as-you-grow network design and is suitable for housing pre-terminated cable assemblies and direct fusion splice cable assemblies. These compact and versatile enclosures support a full range of optical fibre connectivity including LC, LCA, SC, SCA, ST and MPO adaptors.

Warren & Brown's range of DIN Rail Enclosures is designed for easy installation, operations and maintenance within DIN Rail cabinets and provides maximum flexibility and scope to meet specific user requirements. The enclosures can vary in size, port density and configuration depending on the required application.

The enclosures are backed up by local technical support and innovative design solutions. The company's designers and engineers will worker with users to solve their network needs.

Warren & Brown Technologies
www.wbnetworks.com.au

High-voltage measuring system

The TD60 Tan Delta Management System is a high-voltage measuring system. It is available to rent from TechRentals.

The product is suitable for testing cables such as XLPE, PE, EPR, PILC and other electrical equipment, including capacitors, switchgear, transformers and rotating machines. It detects insulation defects before the cable fails in service and can be directly connected to the HV Diagnostics and HVA series of VLF test systems.

The TD60 provides TD measurements up to a maximum voltage of 44 kVrms (or 62 kV peak). It uses standard C Type alkaline batteries which last for 10 h, providing the capacity for various tests. It is supplied with operating software which gives a complete picture of the tan delta measurement and real-time waveform of the output voltage and current. The data can be transmitted to a PC or PDA via Bluetooth, reducing hook-up time and operator errors.

TechRentals
www.techrentals.com.au

Digital multimeters

Fluke Calibration has introduced two long-scale precision digital multimeters, both of which offer long-term stability over a wide measurement range.

The 8588A Reference Multimeter, designed for calibration standards laboratories, is said to hold the industry's best one-year DC voltage accuracy and produces a stable 8.5-digit reading in one second. With more than 12 functions, the digitising multimeter helps consolidate a lab's cost of test into a single measurement instrument.

The 8558A 8.5-Digit Multimeter digitises five million readings per second, for high-resolution system automation in calibration labs and manufacturing test environments. It further supports a minimum of 100,000 readings per second at 4.5 digits across GPIB, USBTMC or Ethernet, and a 15 million reading data storage in the instrument memory, allowing full flexibility to make timely and correction decisions for system throughput and efficiency.

The instruments offer a straightforward, intuitive user interface and colour display with an easy-to-access configuration menu that makes it easy to train users. A graphical display allows easy visualisation of trends, histograms, complex waveforms and statistics. Repeatable system-specific tasks can be automated quickly and easily. Fast, high-resolution data capture delivers the quantity and quality of information needed for increased productivity and fast access to results and answers.

The products work with Fluke Calibration MET/CAL Calibration Software, in 8508A emulation mode, allowing increased throughput while ensuring calibrations are performed consistently every time. This powerful software documents calibration procedures, processes and results for ease in complying with ISO 17025 and similar quality standards.

Fluke Australia Pty Ltd
www.fluke.com.au

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PEOPLE ARE HINDERING ENERGY STORAGE GROWTH

Regulators and politicians need to do more to help integrate new energy storage technologies into the grid, and industry must stay informed about trends in order to harness the opportunities in this space, according to Robert Morgan, CEO of Energy Storage at GE Renewable Energy.

Ahead of his keynote presentation at the Australian Energy Storage Conference, he suggested the biggest obstacle to integrating storage into the grid is people as opposed to hardware, as the base infrastructure already exists.

"What is really needed is system operators and interconnection rules to recognise that energy storage both generates electricity and demands electricity — it flows both ways," Morgan said. "Control systems and grid software need to be updated but the wires can fundamentally handle energy storage — incumbent operators often have a resistance to change."

With an ever-increasing penetration of renewables, he said energy storage is "a natural progression" of the industry. However, it is up to industry and regulatory forces to ensure this transition occurs.

"We already have the control systems and software to enable more energy storage, but regulators and politicians need to help push system change."

In addition to rallying behind these critical system reforms, he emphasised the importance for storage companies to keep abreast of industry trends, which can aid decision-making and make it easier to spot market opportunities. Lithium-ion batteries and the growing synergy between energy storage and renewables were identified by Morgan as current energy storage trends.

"Right now, the trends in energy storage are twofold. First, electric vehicles are advancing to a scale that makes lithium-ion batteries the cheapest and most effective of the proven storage technologies at modest durations — less than six hours.

"Second, customer demand for shaped energy supply products means that we can offer wind, solar and gas technologies in combination with energy storage to create a hybrid renewable solution that meets customer needs."

Morgan also highlighted the 'three Ds' — decarbonisation, digitisation and decentralisation — which he said are creating key opportunities in energy storage.

"The three Ds, along with electrification of vehicles and other goods, are driving consumer behaviour and making it a necessity to ramp up volumes of renewables, as well as smaller scale projects and automation," he said. "This creates the opportunity for energy storage to enable more consumer choice, eg, 'sun and wind when I want it', and more localised energy system deployment and control."

Morgan has over 30 years' experience in global energy markets, and joined GE in early 2018 to grow the company's energy storage start-up unit into a self-sufficient division within GE Power. He will address these issues as well as critical questions about corporate strategy and project development in the storage sector at the Australian Energy Storage Conference, held from 13–14 June at the International Convention Centre in Sydney.

Exhibitions & Trade Fairs Pty Ltd
www.etf.com.au

Data acquisition and protocol conversion

The Data Station DA10D and DA30D data acquisition and protocol converters from Red Lion are designed to bridge the communication gap between serial, Ethernet and fieldbus devices to unlock data from field equipment such as PLCs, drives and controllers.

Features of the range include point-and-click built-in MQTT connectors and embedded OPC UA server functionality to easily connect to cloud platforms as an IIoT gateway utilising the Red Lion's Crimson 3.1 software.

With a growing list of over 300 serial, Ethernet and fieldbus drivers, the Data Station provides the freedom to choose best-in-class components for a given application, regardless of vendor.

The protocol converter and data acquisition platforms can act as a part of any plant's industrial data collection, visualisation and management system, to provide real-time data from virtually any industrial equipment.

Additional options include a data, event and security logger with cryptographic signature support and SQL queries that can be executed periodically or on demand. The platform also offers an optional web server with mobile responsive design, full-screen display suitable for tablet or mobile viewing, HTTPS operation with the provision of certificates, HTTP redirect, CSS and JavaScript support.

Control Logic Pty Ltd
www.controllogic.com.au

Weatherproof wire connectors

The IP68 rated IDEAL TWISTER WeatherProof Wire Connectors range is designed for interior/exterior cable connections when exposed to damp/wet and corrosive environments. In many cases, traditional screw or tunnel type connectors are not suitable for these applications and require additional materials like heat shrink, resin packs or tape to ensure a safe connection.

IDEAL TWISTER WeatherProof Wire Connectors are 100% silicon filled, eliminate the need for additional materials and provide a safe, durable and long-lasting connection in harsh environments in one easy step. The twist is savings in time, money and energy.

Applications include but are not limited to: outdoor lighting and signage, outdoor power outlets, deck and patio lighting, pool filters and pumps, parking lot and street lighting, sump and well pump installations, security systems, bathroom/spa vent fans and irrigation systems.

For the user's peace of mind, the connectors comply to AS/NZS IEC 60998.1 and AS/NZS IEC 60998.2.4 standards, are rated and tested to IP68, suit various cable types with voltages up to 32 A 450 V and have a temperature rating of 105°C.

IDEAL INDUSTRIES (AUST) Pty Ltd
www.idealind.com

Modular training system for safe automation

Pilz Education Systems (PES) is a modular training system that helps institutions of training/further education improve practical training in the field of safe automation technology.

There are nine different control panels that can be combined with one another from the sensor technology, control, operation and maintenance sectors as well as a board that simulates a real plant.

The modules of the training systems can be used straight away and combined in different ways without any further installation work. The exercises can also be completed by self-study, without instruction.

Apprentices can learn the practical basis of safe automation, for example. With the help of wiring examples, they execute their own projects and solve tasks based on predefined sample exercises. The level of difficulty can be varied; by way of an easy entry point, the trainer can use the modules with the basic sensor technology functions and relays. That enables them to explain the basics of machinery safety engagingly without any programming knowledge being necessary.

As the tuition progresses, modules with more complex controllers are then used.

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

Network performance monitoring tool

The Viavi Solutions Observer GigaFlow delivers enriched flow records to stitch together user, network and infrastructure data into a single record.

The product delivers analytics and deep insight in a single enriched flow record, providing end-to-end visibility beyond the core to the farthest reaches of the IT network for fast, simple and effective troubleshooting and forensics investigations.

As an integrated part of the Observer platform, GigaFlow enriched records complement GigaStor wire data to present comprehensive operational visibility for management of user experience, network performance and security incidents. With the product's user-centric approach, visibility is simple, only requiring a user's name to call up complete details including client devices, performance issues, access behaviour and activity.

Other features include: high-fidelity forensic visibility into every network conversation over time; advanced service path visibility designed to ensure immediate problem domain isolation across a complex hybrid IT environment; and automated threat assessment.

Viavi Solutions Inc
www.viavisolutions.com.au

Screw bit set

Many different screw profiles are required for work at different locations such as construction sites, solar power systems and electrical enclosures.

The 31-piece bit set (Order-No.: 43465) covers all standard screw profiles and is thus flexible in its use. Safely stored away and tidily arranged in a functional bag, these electrician tools are suitable for portable use. Another benefit is the multifunctional use of the bag. When opened, it acts as a workbench stand for easy removal of tools. The strap to hang the bag on the wall and the removable base create extra added value.

The tool set optimises space owing to a comprehensive interchangeable bit system. Thanks to Wiha slimTechnology, the contained slimBit blades are up to 33% slimmer according to the company, and can thus also easily reach deep-set screw and spring elements. When these slim blades are used with the extra short stubby handle, screws can be effortlessly reached even in confined spaces.

The PicoFinish handle is suitable for delicate and high-precision fastening tasks. The large SoftFinish long handle is used when greater force needs to be applied with larger slimBit profiles. Each tool in the set has undergone an individual piece test as per the international IEC 60900 standard, allowing users to work safely on live parts up to 1000 VAC.

The 6 mm slimBits and nut driver inserts can only be used with speedE, slimVario or TorqueVario-S electric tools.

Premium Tools
www.wiha.com

Cable slitter

Ripley Tools has introduced the Miller brand MB04 'Twister' Flat Drop Cable Slitter. Engineered for quick one-handed operation, its blades easily cut through both sides of the cable jacket on cable mid-spans and ends safely exposing the fibre within without damage.

Its articulating hinge opens and closes around the cable without disassembling the tool or the need for a latch. The ergonomic tool promotes safe operation with shielded blades that prevent cuts and lacerations. It is compatible with a wide range of flat cable brands including Commscope, Corning, Draka/Comteq, OFS, Prysmian, Superior Essex and more.

The tool accommodates cable widths ranging from 0.305 to 0.350″ (7.7 to 8.9 mm), cable heights ranging from 0.155 to 0.185″ (3.9 to 4.7 mm) and jacket thicknesses from 0.03 to 0.04″ (0.76 to 1.0 mm).

Every MB04 includes two reversible spare blades and an installation tool, in addition to the two blades already installed.

Ripley Tools
www.ripley-tools.com

KEEP YOUR EYE ON SECURITY OPPORTUNITIES

John Fleming, General Manager

With annual revenues in excess of $2.5 billion, the electronic security industry is a growing and increasingly complex sector. As a result, the skills required by security technicians installing these systems need to constantly evolve to keep pace with technology.

Security systems can protect confidential business data, track unauthorised access to business-related information, and secure people and property when implemented correctly. They can be employed for the detection of intrusion, video surveillance and controlled access.

Video Surveillance Security (VSS) systems — the term now used instead of CCTV to reflect the rapid changes to the use of IP products and networks — are growing in use for both residential and commercial properties, with applications such as video monitoring from on site or from a control room.

In today's rapidly changing environment, IP-based systems scale easily from one camera to thousands of cameras in increments of a single camera. This makes IP-based solutions ideal for expanding a system as the budget allows. With IP video surveillance, live and recorded video from the VSS can be set up for remote viewing via authorised desktop computers, laptops and smartphones.

These systems form a major part of security infrastructure, providing not only benefits for workplace health and safety, but security surveillance of assets including public areas. VSS also acts as a deterrent for antisocial behaviour.

IP cameras enable greater functionality than just a video image. Advanced software using video analytics digitises video from cameras to detect, recognise and analyse objects and events. Video analytics can identify a variety of different behaviours, actions and objects, such as:

- people loitering in a given area
- an object left behind
- illegal parking in a restricted area
- people gathering in a crowd
- people counting the number of people entering and leaving a building
- licence plate recognition
- facial recognition.

All of these elements serve up powerful systems that are much more than simply motion detection.

Businesses should have a policy in place to cover matters such as the responsibility of the systems and how they will interact with law enforcement agencies. There needs to be an evaluation process of the VSS to ensure that the systems are meeting the stated aims and objectives.

Also, businesses need to have a process in place to cover the management of staff and contractors who have access to the VSS in relation to viewing and controlling video information. The information recorded should be protected and managed in accordance with privacy laws. Retention of the video is typically 30 days and access to the video footage should be administered by authorised personnel only. Law enforcement agencies may need access to the images for investigation and detection of crimes committed.

The increasing adoption of security systems by government, business and residential sites has driven the growth of the electronic security market, with key problem areas including robbery, terrorist attacks, illegal activities, antisocial behaviour and public safety.

For electrical professionals, there is an opportunity to enter this market space and provide security services. But before doing so, they will need to:

- hold a current security licence in the state or territory in which they perform security activities;

• hold a current Australian Communications and Media Authority (ACMA) Open Cabling Registration with the appropriate cabling competencies, such as structured, fibre and coaxial cabling.

Failure to do so will result in penalties and may compromise their insurance policy.

As electronic security systems become more complex and sophisticated, attracting and retaining suitably qualified and competent security technicians has never been more important. Technological developments such as the rollout of the National Broadband Network and the emergence of IP-based solutions are driving changes to the skill sets required by security technicians.

Regrettably, there are individuals installing security systems who do not possess the required skills and security licences, which not only places themselves at risk, but also their customers.

To address this issue, and the shortage of suitably trained security technicians capable of meeting future needs of the electronic security sector, the Australian Security Industry Association Ltd (ASIAL) is delivering the Security Technician Certification (STC) training program nationally in conjunction with Comtech Training.

The STC program is a national recognition program initiated by ASIAL to recognise technicians who have the relevant industry experience and training in the electronic security sector.

It incorporates three levels of recognition:

Level 1 — Certified Security Technician

This covers security fundamentals associated with the installation and maintenance of security equipment and cabling. It is designed for technicians who have at least 12 months' field experience, a White Card and an Individual Security Licence.

Prerequisites: ACMA Open Registration; and structured, optical fibre and coaxial cabling endorsements.

Course content:

- Installation Practices: Cabling standards, cabling practices.
- Intruder Alarm Systems: Cabling standards, basic electronics, static electricity, termination techniques, components, design principles, commissioning.
- CCTV Systems: Understanding resolutions and compression, understanding lighting for CCTV applications, CCTV components (cameras, lenses, housings, power), data storage, design.
- IP Networking for the Security Industry: What is a network?, IP addressing and subnet masks, port forwarding, design a network.

Level 2 — Advanced Security Technician

This is designed to formalise and expand on the existing knowledge that most experienced electronic security professionals already have. Completion of this course will ensure individuals have the required skill set and knowledge to work on more complex systems.

Prerequisites: Successful completion of Level 1 — Certified Security Technician; Individual Security Licence; ACMA Open Registration; and structured, optical fibre and coaxial cabling endorsements.

Course content:

- Advanced IP Networking: Setting up domain-based servers, care for computer hardware, design a commercial-based network.
- Wireless Networks: Build a wireless local area network, build an enterprise wireless network, commissioning.
- Introduction to Cyber Security: Assessing the risk, the anatomy of a cyber attack, hardware protection, software protection, policies.
- CCTV Advanced: Design a wide area data network, compression and storage calculators, design principles for commercial CCTV systems, design a network.
- Access Control Systems: Design, interconnecting protocols, network integration.

Level 3 — Master Security Technician

This qualification is based on demonstrated knowledge and experience and recognises industry participation and excellence.

Prerequisites: Completion of level 1 and level 2; an Individual Security Licence; ASIAL Individual Membership; and a minimum of 10 years' proven industry experience.

The electronic security sector is at an exciting stage in its evolution as new and innovative solutions arrive on the market. To keep pace with the rapidly changing market, individuals and businesses operating in the security sector need to embrace new technologies and adopt a strong training and professional development mentality. In doing so, businesses will be better placed to attract and retain skilled employees and grow their market share. Those who don't will be left behind their competitors.

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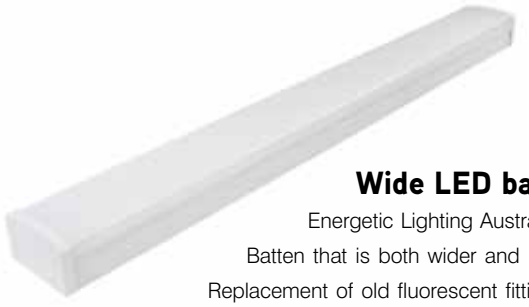

Wide LED batten

Energetic Lighting Australia has released its Wide Bodied Stellar Batten that is both wider and longer than a normal LED batten.

Replacement of old fluorescent fittings with energy-saving LED fittings can be expensive because the ceiling often needs repainting if the new fitting does not cover the old fitting footprint.

Contractors working on refurbishment projects can now save costs and time by installing the Wide Bodied Stellar Batten, which will cover the area previously occupied by the old fitting and eliminate the need for painting.

Other features of the batten, designed for easy installation, include a 6 mm terminal block and dual 25 mm side-entry knockout holes plus multiple holes in the back that ensure wiring is a simple process.

Additionally, the entire product is modular with tool less end caps and the LED light source chips are protected within a translucent capsule to avoid any accidental damage during installation.

Energetic Lighting Australia Pty Ltd

www.energeticlighting.com.au

Online double conversion UPS

Eaton has introduced the 9SX Tower Uninterruptible Power Supply (UPS) portfolio in Australia and New Zealand. It offers flexibility and protection for IT and small data centre infrastructure, as well as for networking, storage, industrial, medical and telecom applications.

The new model extends the existing badged UPS to the online double conversion UPS models across a power range from 700 VA to 6 kVA in pure tower form.

The 9SX Tower series is the successor to the company's 9130 Tower UPS range. New features include: energy metering to track energy consumption by monitoring kWh values at the UPS level; improved LCD display with more parameters to give quick and precise UPS status updates; display information on recommended battery replacement dates; and Automatic Extended Battery Module (EBM) recognition.

It has a power factor of 0.9, which means it provides greater real power (watts) to ensure more protection of equipment. It uses double conversion technology to constantly monitor power (voltage and frequency) conditions and initiate automatic bypass in the event of an overload or UPS failure.

Eaton Industries Pty Ltd

www.eatonelectric.com.au

Tablet analyser

The Rover HD Tab 7 Lite is an advanced and accurate tablet analyser used for the installation, maintenance and commissioning of terrestrial, satellite and DVB T/C/S/S2 cable TV systems. It performs measurements that include power level, MER, BER, noise margin, SNR, error constellation chart, network and streams IDs as well as MPEG4 HD programs for DVB — T&C. It is available to rent from TechRentals.

This Foxtel-approved unit includes a Rover autodiscovery system that automatically detects and selects analog and digital COFDM/QAM TV signals in both measurement and spectrum mode. It also includes a high-resolution 7″ TFT touch-screen display.

The Rover HD Tab 7 Lite features a help function that automatically identifies all signals with digital modulation SAT, TV and CATV. It also includes an automatic assistant for signal quality analysis and channel scan memorisation. Other special features include a Barscan TV and CATV function from 10 to 100 channels on one screen, as well as a buzzer and noise margin real-time graph.

TechRentals

www.techrentals.com.au



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GENDER CONCERNS IN SMART HOME TECHNOLOGY

Early adopters of smart home technologies have reported they reinforce gender stereotypes and could pose security threats to women, according to a study.

Research by Monash University, RMIT and Intel Corporation found smart home technology continues to be associated with expressions of masculinity, and there are concerns that it could worsen domestic violence.

The study examined smart home technology adoption for 31 high-income (in excess of $156,000) households across Australia, with participants mostly aged 35–54 years. It looked at their experiences in relation to three concepts central to Intel's ambient computing vision for the home: protection, productivity and pleasure.

While there were a number of benefits associated with the technology — including the convenience of smart lighting, protecting the home and its occupants via security cameras and providing aesthetic pleasure — the study found it "failed to deliver on many of their promises for effortless and easy living". This is partly due to poor understanding of household diversity and different people's desires and needs.

"In the current smart home market, it is mainly men who are designing and selling smart home technologies, and also mainly men who are responsible for setting up, maintaining and introducing smart home to other householders," said Associate Professor Yolande Strengers from Monash University's Faculty of Information Technology. "This affects the types of devices that get designed, and their potential benefits and usefulness to other householders. In particular, women on the whole are currently underrepresented and underserved by the industry."

Consistent with gender stereotypes, the study found participants noted the increased 'digital housekeeping' needed to keep smart home devices running. This is predominantly done by men, who get pleasure from setting up and playing with these devices.

One busy CEO and single mum also explained she used her Google Home's scheduling, voice calendar entries, shopping lists and timers to help coordinate her business, housekeeping and parenting duties. However, she was one of many women who were frustrated that digital voice assistants tend to be female. Study co-author Dr Jenny Kennedy, from RMIT's Digital Ethnography Research Centre, said: "She had deliberately changed their voices to a man's to challenge gendered stereotypes of feminised cleaning and administrative roles and avoid reinforcing these assumptions with her two sons."

Privacy and security risks of these devices were another key concern for participants. "Some householders were concerned that these devices could be used to invade the privacy of others without their knowledge or consent, and potentially exacerbate domestic violence situations by, for example, using a smart lock to restrict access to the house. The potential for uptake in smart home technology is huge, but there are also a number of important gender concerns that need to be explicitly considered by the human computer interaction design community in the further development of these devices," Strengers said.

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Subscriptions:
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Audited Media Association of Australia cab

March 2018 Total CAB Audited Circulation
4,673 (80% personally requested)

ECD [ELECTRICAL+COMMS+DATA]: ISSN 2201-2702
Printed and bound by SOS Print & Media

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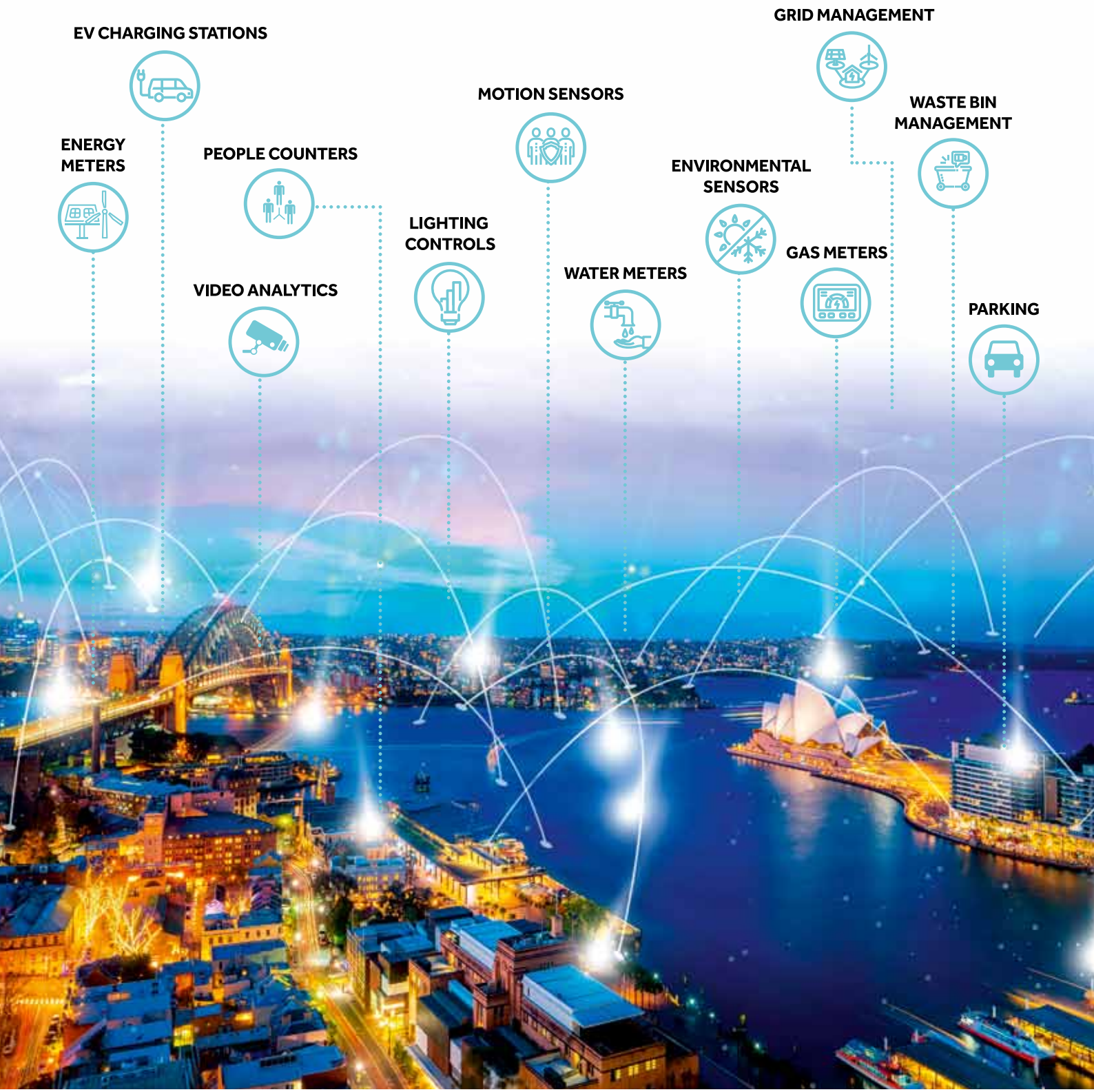
Contact us to discuss your specific needs and challenges and to arrange a technology / solution demonstration.



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