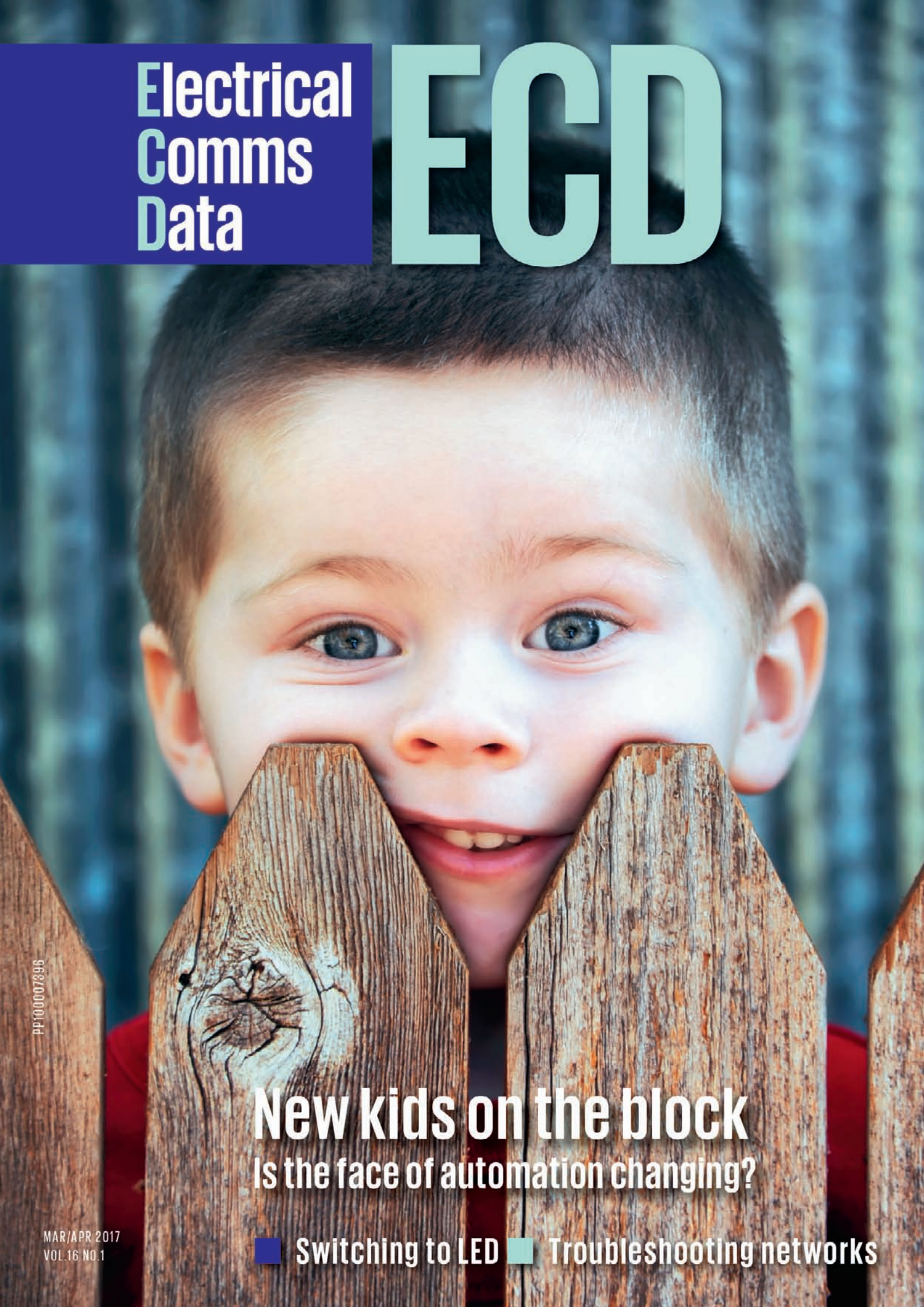

Electrical Comms Data

ECD

New kids on the block

Is the face of automation changing?

Switching to LED

Troubleshooting networks

MAR/APR 2017
VOL.16 NO.1

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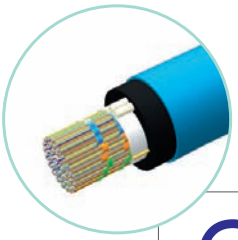

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MARCH/APRIL 2017

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FROM THE EDITOR

There can be no doubt, we are living in very interesting times. It's only been 10 years since the first-generation iPhone was released, which seems an unbelievably short time frame, given how much we now rely on smartphones and other mobile devices in every aspect of our lives. From non-existence to world domination in less than a decade. Not a bad business model.

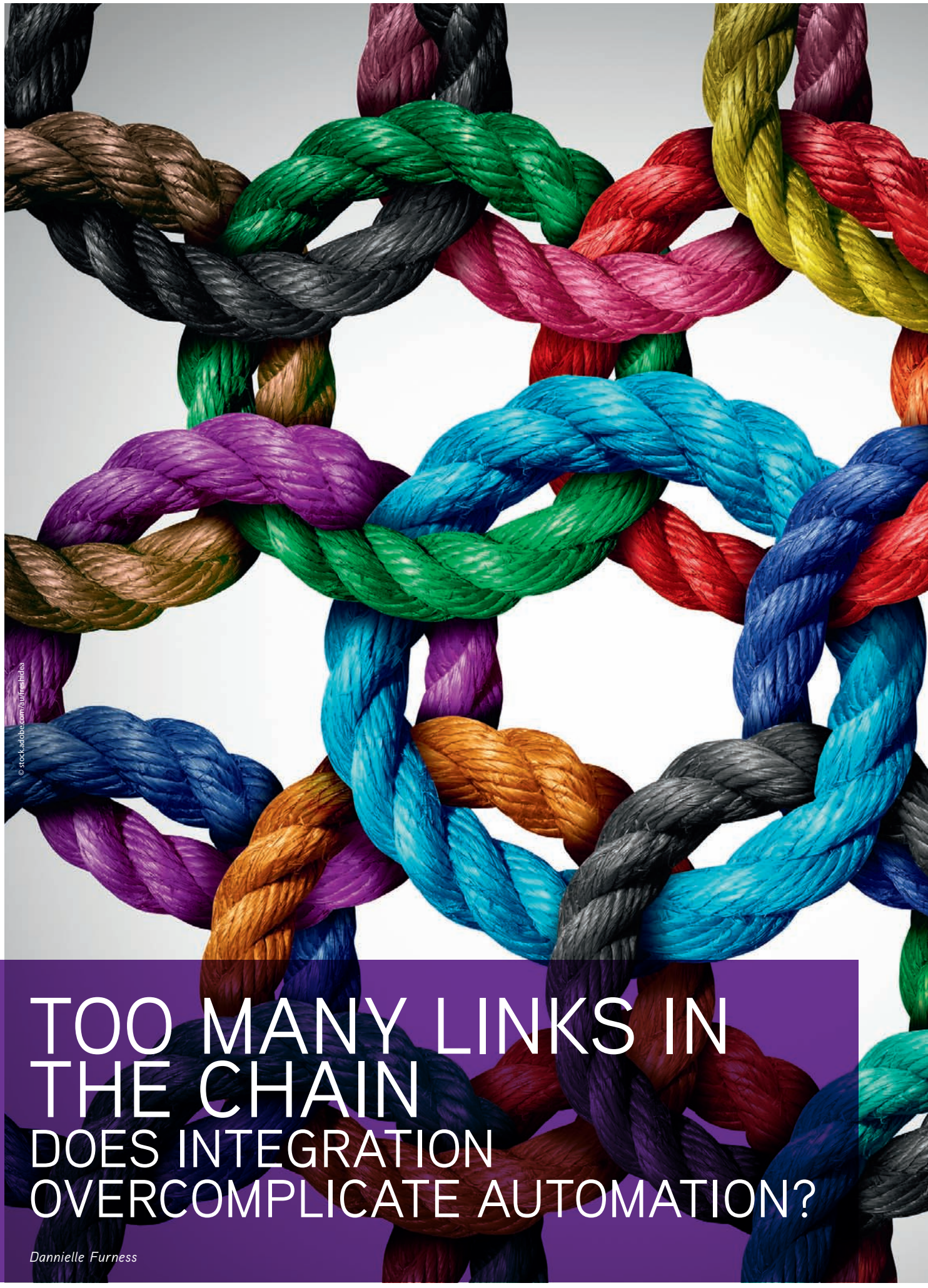
The incredible growth of companies like Google, Apple and Amazon, combined with levels of market penetration that are no doubt approaching full saturation, has meant that tech giants are branching out into other arenas to keep the coffers full. It's no surprise they've all made a move into smart home technology, but the alternative approach looks set to change the home automation market for good. We've taken a look at how this might pan out inside.

The uptake of solar systems continues to escalate. With energy storage becoming more affordable, it looks like the sale of solar batteries is set to triple in the year 2017. If you want to stay ahead of the game, you'll need to know what's happening now and where it's all headed. The Solar Energy Exhibition and Conference is on in Melbourne 3–4 May, so make sure you register to take part.

This is my final issue at the helm of *ECD*, as regular editor Mansi Gandhi will be returning to reclaim her rightful seat before too long. It's been a pleasure to bring you all the latest information from the electrical, comms and data industry over the last 12 months — thanks for reading.

Best regards,

Dannielle Furness – Editor
ecd@wfmedia.com.au



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TOO MANY LINKS IN THE CHAIN

DOES INTEGRATION OVERCOMPLICATE AUTOMATION?

Dannielle Furness

Intelligent buildings, home automation, smart cities, the Internet of Things. With the promise of more connectivity and a better life, these topics have been talking points for decades, but will new arrivals in the automation market change our approach for good?

At the beginning of the 21st century we were promised a future of convenience and connectedness, with appliances that would talk to one another and take the drudgery out of everyday life. Somewhere in all the talk of driverless vehicles, wearable devices and robot workers, the 'futurist' was born.

As the title suggests, futurists make fairly sweeping statements about what our projected lives might look like 5, 10 or 20 years from now. For every prediction that has been on the money, there are plenty that have proven to be spectacularly wrong. Nice work if you can get it. Accuracy is apparently not an intended by-product of futurism, the value is in the act of considering these predictions and seeing the potential for change.

The two faces of automation

Automation has always been depicted as a bit of a double-edged sword — it came with a promise of an easier life, yet equally threatened to kill off jobs. You don't have to search too far to find lists of professions slated for extinction in the next decade or two courtesy of advances in technology. The reality is probably a little less dramatic, with many suggesting that increased automation will create role metamorphosis rather than the outright disappearance.

An article published by Greentech Media in late January proposes that further automating buildings will create jobs, rather than kill them off. It suggests that the provision of economically employable technologies — particularly software used to analyse equipment and systems — is effectively reducing the number of hours that need to be spent on troubleshooting, freeing up facility and network managers to actually carry out the work required. The change here, it says, is that automating operations will enable staff to concentrate on strategic issues which are at present unaddressed due to workload.

This may be the case, but the propensity for developers to treat each subsystem within a building as a separate standalone entity (and to create a specification and sales process that largely encourages this) means it is all much easier said than done.

Conquering communication

Interoperability has always been a problem area, as everyone comes at it from their own angle. Every discrete system — lighting control, access control, audiovisual systems, building management, HVAC — uses its own proprietary protocol and hardware, creating a need for integration devices, customised software and device firmware to facilitate communication and to create the illusion of a seamless network that is somehow greater than the sum of its parts.

There are also different wiring topologies from system to system, which not only makes it potentially difficult to achieve faultless operation, it also serves to muddy the waters when things don't come to together as expected. Too many cooks, as the saying goes.

From an operational perspective, building managers will often have to run disconnected specialist software programs and view several different dashboards to get a full overview of a facility's performance.

Opening up to open source

To alleviate the obvious problems this situation continues to present, new associations such as Project Haystack are springing up. Project Haystack is an open source initiative that aims to streamline working with the increased amount of data generated by the Internet of Things.

The association says that the sheer amount of operational data collected in today's buildings is creating a new problem — how do we make sense of it? According to the Project Haystack website, "Most operational data has poor semantic modelling and requires a manual, labour-intensive process to 'map' the data before value creation can begin. Pragmatic use of naming conventions and taxonomies can make it more cost effective to analyse, visualise, and derive value from our operational data."

It says that all members of the intelligent building value chain can reap the benefit from participation in the project:

- Building owners and consultants can specify that Haystack conventions are used in automation systems, which will provide cost-effective analytics and building management and a degree of future-proofing.
- System integrators and vendors or manufacturers can integrate support for Haystack into their products and position themselves for future value-added services.

Current members include some familiar names from the building management, services

and controls sectors, so it will be interesting to see how this plays out.

The new kids on the block

High-end luxury homes are essentially smaller versions of commercial intelligent buildings, comprising many of the elements found in hotels and office towers, so the same integration issues can apply. Early home automation designs featured a centralised controller, but most vendors moved away from this methodology and into a distributed architecture over the years, ensuring that the system remains operational in the event of a single device failure.

At the other end of the spectrum lies the new wave of home automation products, where the emergence of players such as Google, Apple and Amazon in this market signals a significant change in direction.

For starters, the underlying motivation is different. Home automation was once the domain of indulgence and extravagance, while commercial applications were all about saving energy, reducing emissions and lowering costs. That same energy management focus started to apply in the residential landscape, but the devices being pushed by tech behemoths in recent times are probably more aligned with the vendor's own self-interest. 'Traditional' home automation manufacturers just wanted to sell products, but these guys want users... and they want every part of them and their lives.

It's no coincidence, for example, that the latest Google Pixel smartphone phone comes with a dedicated cable to transfer existing data from an iPhone — including contacts, music and messages — making it extremely simple to transition out of the iOS environment into Android and away from Apple altogether.

These new product offerings are still in relative infancy and receiving mixed reviews as they come to market, but the Amazon (Echo) and Google (Home) devices share a similar launching point. Both feature dedicated speaker devices that operate via voice commands that activate 'personal assistants' to do the user's bidding. Of course, we've had Siri and Cortana lining up to help users for a while now, so the act of speaking to an inanimate object has already become familiar enough to anyone with a fondness for gadgets.

Again, each of these vendors is coming at it from their own point of view.

Apple

Apple wants to keep selling iPhones, iPads and AppleTVs, so it's still uncertain whether it will deliver a voice-activated speaker equivalent to the Amazon and Google offerings, but rumours are swirling in the IT world that something is in the works.

> AT THE OTHER END OF THE SPECTRUM LIES THE NEW WAVE OF HOME AUTOMATION PRODUCTS.

They currently offer a solution that incorporates the Home app and HomeKit-enabled accessories. The accessory products are sold via the Apple online store and the existing Australian line-up includes light sources manufactured by Philips Lighting, wireless sensors from Elgato (including door and window sensors) and door locks from Schalge.

In keeping with the company's attitude to app development and certification for iOS, Apple takes a closed shop approach to integration. To create HomeKit-enabled accessories, vendors need to be an MFi licensee to access the resources for manufacturing hardware that integrates HomeKit technology, including specific chip sets to work with the system, as well as stipulated Wi-Fi and Bluetooth networking devices.

Once you've jumped through all the hardware hoops and developed the code, working samples need to be sent to Apple HQ for testing and verification, a process that can take up to five months, and you can't publicise the fact that you are seeking certification until the entire process is finalised.

Once connected, HomeKit-enabled accessories are operated via an Apple device (iPhone, iPad or TV) using group commands, voice commands or time- and location-based triggers.

Amazon

Amazon is slightly more relaxed when it comes to integration. The Echo speaker and its miniature cousin the Echo Dot are ably supervised by Alexa, the company's version of Siri. To achieve certification, vendors write code for their devices and submit it to Amazon for review. To take it to the next level and earn the right to display the coveted 'Works with Alexa' branding, the product must be submitted for testing by Amazon or a third-party facility — a process which is apparently significantly quicker than under the Apple scheme. Earning this tag has the added advantage of direct promotion on the Amazon website.

Google

Somewhere in the middle of the two extremes sits Google. Globally, it's estimated that 250 products are certified to 'work with Alexa' and around 100 are certified as HomeKit-enabled. Google Home was only released in late 2016 and currently only offers integration with a handful of products including Nest thermostats (Nest is owned by Alphabet Inc, which owns Google), a range of Hue light sources from Philips Lighting and the odd Belkin switch or plug to enable control of other electrical devices. All three companies will probably continue to add products to their bank of supported devices.

So... what next?

Regardless of the differing levels of stringency in achieving integration certification, all three are leveraging off their huge existing customer bases and betting on that being attractive enough to get others on board. By putting the onus back on manufacturers to incorporate automation functionality into their products, they are free to concentrate investment into intelligent assistant software and to let everyone else develop appropriate hardware with built-in voice-activated capability in order to firm up the overall offering.

These systems are retrofittable; there is no requirement for additional cabling or any type of system design, no load controllers, dedicated push-button wall panels or touch screens and the user 'commissions' their own system via an app on their smartphone. It's a substantially different approach. At this stage, it may not impact on the high end of the market, but is certainly making home automation more widely available and likely to draw users that would otherwise not have even considered smart home technology.

Mid last year, a report published in *Smart Buildings Magazine* announced that the global structured cabling market was in decline. It also suggested that the strongest area of growth "is expected to be in the cabling of wireless access points and other distributed building services such as CCTV, access points, access control, AV, whiteboards, digital signage, lighting and BACS/HVAC controls". So, there's life yet in the commercial sector, but we'll just have to wait and see what the next five years brings to the residential market. Maybe we should ask a futurist.

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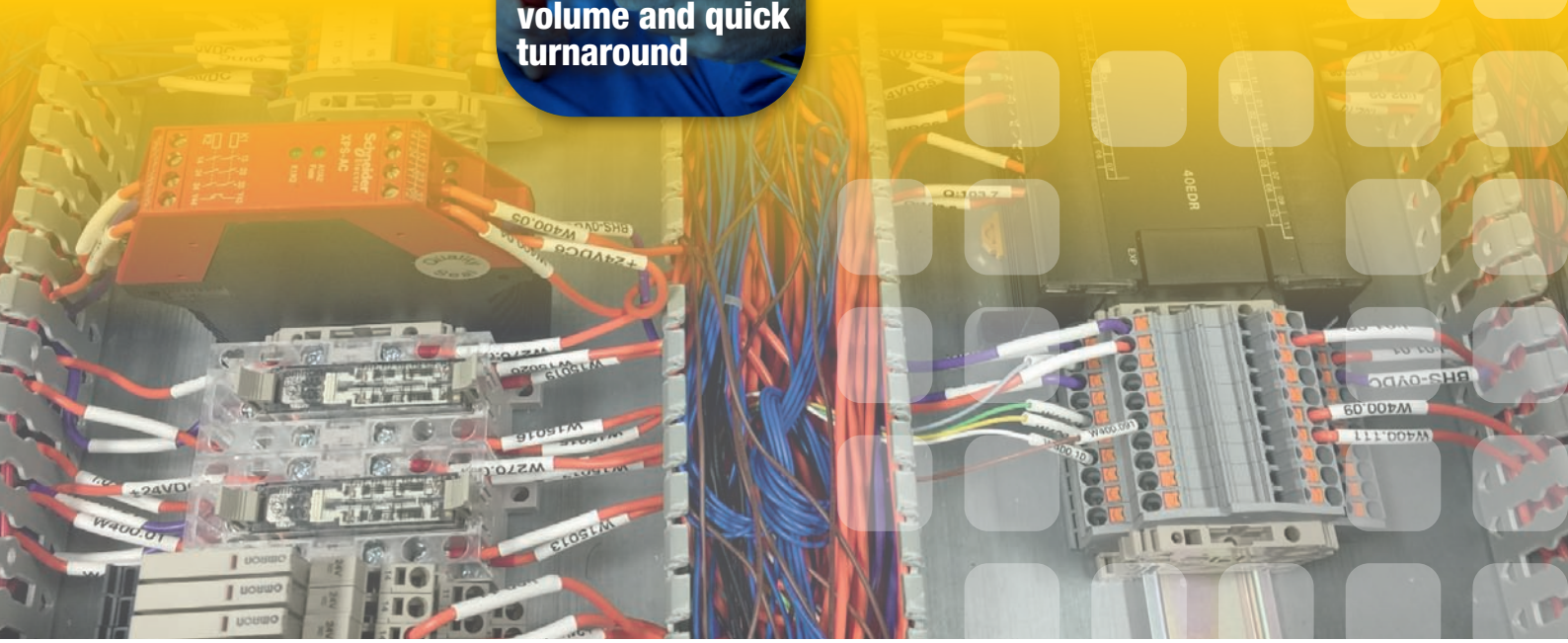

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ABB SECURES LONG-DISTANCE POWER TRANSMISSION LINK PROJECT

ABB has teamed up with India's national electricity grid operator, Power Grid, in a mega project worth over $640 million for the delivery of a transmission link that will have the capacity to bring reliable electricity to more than 80 million people.

The Raigarh-Pugalur 800 kilovolt (kV) ultrahigh-voltage direct current (UHVDC) system will connect Raigarh in Central India to Pugalur in the southern state of Tamil Nadu.

The 1830 km link will be among the longest in the world. With a capacity of 6000 MW — the equivalent of more than six large power plants — it will be enough to meet the electricity needs of over 80 million people in India. The two-way link will integrate thermal and wind energy for the transmission of power to high-consumption centres located thousands of kilometers away, supporting electricity demands in the south (when wind strength is low) and transmitting clean energy to the north (when there is excess wind power).

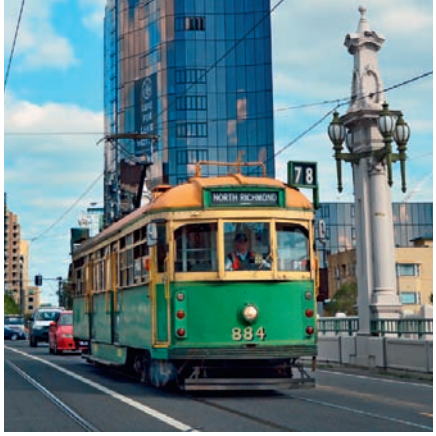
"ABB is honoured to partner with Power Grid for this smart long-distance transmission project," said ABB CEO Ulrich Spiesshofer.

"Delivering reliable electricity to India's energy demand centres is a top priority for the Indian Government to support the country's impressive growth momentum. ABB is strongly committed to India for more than a century and, with this new long-distance transmission link, we are delivering the benefits from the energy revolution to the country building on the strength of our strong local manufacturing footprint. With our state-of-the-art UHVDC technology, we enable the balancing of renewable and conventional electricity supply over long distances in a smart and reliable way," Spiesshofer said.

UHVDC transmission is a development of HVDC, a technology pioneered by ABB more than 60 years ago. ABB has been awarded about 110 HVDC projects, which represents a total installed capacity of more than 120,000 MW and accounts for around half the global installed base.

HVDC transmission links help to conserve land, as they occupy only one third of the space compared to the alternative. In this case, that amounts to a saving of approximately 244 km^2 of space — around one third of the area of Bangalore or the entire city of Kuala Lumpur. The mega project will also feature technologies selected to minimise the footprint of the transmission stations.

The project is expected to be completed in 2019.



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MELBOURNE TRAMS TO GO SOLAR

The Victorian Government is planning to build a new large-scale solar plant in a regional area of the state, with part of the electricity generated used to run Melbourne's tram network

According to the Clean Energy Council (CEC), the 75 MW plant will be built via a tender process and is expected to generate $150 million in new investment, create around 300 jobs and reduce emissions by 80,000 tonnes per year.

Victorian Minister for Energy, Environment and Climate Change Lily D'Ambrosio said that the state is being positioned as a leader in climate change mitigation, reducing emissions and adapting to the impacts.

The tender process will kick off in the first half of 2017, with an expected project completion date toward the end of 2018.

PHILIPS LIGHTING APPOINTS NEW COUNTRY MANAGER

Philips Lighting has appointed David Gardner as country manager and managing director for Philips Lighting, Australia and New Zealand.

Gardner's appointment comes following the retirement of Rob Fletcher from the GM role, which he had held since 2013. Gardner will oversee the Philips Lighting businesses in Australia and New Zealand, leading a team of over 120 employees.

With more than 30 years of experience in the electrical industry, Gardner joins Philips Lighting from Schneider Electric where he most recently held the role of vice president of Clipsal & Schneider Electric Partner Business.

"I am excited to join Philips Lighting at this important time in both the company and the industry's transformation. The coming years will focus on significant evolution through lighting innovations exploring data and connected living. I look forward to leading a passionate team and collaborating with leading partners across a variety of sectors," he said.

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WILL NEW REFORMS IMPROVE APPRENTICESHIP OUTLOOK?

The National Electrical and Communications Association (NECA) remains hopeful of a brighter year for apprentices in 2017, following declines in the take-up and completion of apprenticeships in the June Quarter of 2016, said CEO Suresh Manickam.

"The release of the quarterly National Centre for Vocational Education Research (NCVER) statistics continues to highlight apprenticeship declines on a year-on-year basis for trades-related commencements, in particular for those aged 25 and over.

"For the June quarter, the number of apprentices and trainees in training as at 30 June 2016 was 282,900, a decrease of 7.8% from June 2015, and a decrease of 1.3% from the March 2016 quarter.

"However, we remain hopeful that reforms put in place to strengthen the performance and reputation of the VET sector will bring some cheer for apprentices in 2017," Manickam said.

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"The government's new VET Loans program has recently passed the Senate and will commence on January 1. These reforms aim to better target the right students for courses that provide the greatest opportunity to realise employment outcomes by limiting eligibility to courses such as Electrotechnology, where there's a greater likelihood of apprentices finding employment, deliver higher standards of compliance and enrolment access for training providers and the banning of brokers, cold calling and incentive-based sales tactics to attract students. Students will now have to regularly engage with the VET Student Loans portal to ensure their enrolment remains active and legitimate.

"NECA has been a strong advocate for the reform of the VET sector and the removal of platforms that enabled poorly performing providers to enter the system to deliver below quality education through the lure of free laptops funded by Australian taxpayers. We believe the new arrangements will deliver certainty for the sector and will ultimately deliver improved outcomes that will lead to an increase in the take-up and completion of apprenticeships across the nation," said Manickam.

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SMART CITIES MOVEMENT NEEDS MORE SUPPORT

Two mission-critical support initiatives will help Australia build smarter, more sustainable cities, says the body representing the smart cities movement in Australia.

Smart Cities Council Australia New Zealand (SCCANZ) has given its full backing to the Australian Government's $50 million Smart Cities and Suburbs Program, but calls for a Smart Cities Leadership Incubator and Smart Cities Project Exchange to accelerate action.

Adam Beck, founding executive director of SCCANZ, acknowledges the importance of the government's funding to catalyse the smart cities market in Australia and says that additional support programs will strengthen the program's ability to shape the marketplace.

"The Australian Government's Smart Cities and Suburbs Program represents a significant milestone for the smart cities movement and for Australian cities and towns. It is fundamental that it receives the support needed to not only survive, but thrive beyond the federal government's allocated funding.

"In our submission to the Australian Government, SCCANZ recommends the government establish a Smart Cities Leadership Incubator. This would support a unified approach to smart cities planning and action by coaching and mentoring leaders on the use of smart cities standards, performance indicators, collaborative governance processes, solutions road mapping, and performance monitoring and reporting," Beck said.

In addition, the council recommends that a Smart Cities Project Exchange be established to amplify opportunities for projects to attract additional support, funding and partnerships.

"We see the Smart Cities Project Exchange as a critical market-building opportunity, whereby government can seek out partnerships for their projects, attract potential investors, report on their project's performance and build a culture of information exchange and peer learning.

"We have been involved in similar national smart cities funding programs around the world, and our experience shows that without smart leadership, we can't have smart cities."

Beck advocates "embracing technology, data and intelligent design to accelerate the sustainability of our cities and towns. That's what the smart cities movement is all about."

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UNLOCKING THE VALUE OF AUTOMATION

Ben Green, Director, Smart Space

Thanks to the proliferation of IoT in recent years, automation today is part and parcel of an electrical contractor's toolkit. Indeed, an electrician's role is so much more than lights, switches and power points.

Contractors today are in the business of creating smart spaces: intricate and intuitive ecosystems that respond to the wants and needs of occupants. Awareness is growing and with good reason: there's an endless list of benefits to using the technology, whether in residential, commercial or industrial settings. As we continue to ride the wave of digital disruption in 2017, the uptake of automation technology by Australian businesses, organisations and home owners will reach new heights.

Getting the most out of technology

So how can today's contractors take advantage of this increased interest in smart technology? To get the most out of automation technology, transitioning to a smart space mentality is crucial. The first step in this process is to educate oneself on the many types of solutions on offer and how these work in sync with one another. Whether it's BMS (building management system), energy management software or straight-up smart lighting management, getting your head around how these technologies work, what objectives they serve, the kinds of insights they provide and how they interact with each other will give you a grounded and holistic understanding. By realising when, where and how to utilise these automation technologies, you'll be in the best position to speak about the automation with authority.

Educate the customer

Second to this is, of course, having the ability to articulate this technology and how it operates. Being able to explain to potential customers what the Internet of Things really is, in layman's terms, is something that's often overlooked but is fundamental to our capacity to sell (and upsell!). While many of us in the 'tech circles' have known of IoT for years, it's important to remember the common consumer is only

new to the game and they're craving someone that can lay out the pros and cons of one solution over another. After all, making a foray into the world of automation can be daunting for Joe Blow down the street and he wants to ensure his investment will be worthwhile.

To help educate my customers — especially those that have a minimal understanding of automation — I usually begin by illustrating what differentiates a smart device from an ordinary device. Put simply, a smart device, which leverages the IoT, is able to communicate with other devices and respond accordingly. While many smart devices can be standalone and work independently from others, the best ROI is seen when multiple smart devices work in conjunction with one another. For example, a lighting control system such as Clipsal SILC enables control of individual lights, groups of lights or groups of groups. When paired with C-Bus, however, this lighting can be programmed to work in unison with other smart devices — like audiovisual systems and air conditioning — to create a 'scene' at the touch of a button. This essentially allows users to create a specific mood or atmosphere with ease and is something we're beginning to see growing demand for among home owners as we head into 2017.

Automation advantages

Indeed, the advantages of automation are diverse so being to recognise the needs of your client is crucial in being able to convince them of a particular product or solution. One of the biggest benefits — whether in commercial or residential environments — is that it gives users unprecedented control over their surroundings by enabling easy regulation of things like lighting, heating and cooling from a mobile or tablet. With increased control and greater visibility of energy consumption, users can not only enjoy the convenience of automation solutions but utilise them to be more environ-conscious.

In my experience, home owners love things like being able to disable home security, turn lights on and regulate air conditioning directly from an iPhone, as can be done with Push Controls. What we're seeing recently, however, is an increasing push towards sustainability. Facility managers and operators have already begun to cotton on and now it's time for the contractors to make themselves a key player in the conversation.

The implementation of sustainable business solutions has been felt in boardrooms across Australia, and the electrical contractor has a large role in educating their customers. Of course, the impact of the environment of a sustainable business option cannot be underestimated. We are living in a world where the butterfly effect has never been more acutely felt. Our actions in energy management within Australia need to be considered carefully. By installing environmentally sound automated technology, home and business owners can be reassured that their carbon footprint is significantly diminished. Hearing this from their electrical contractor only makes the case more compelling.

Create an impact

Automated technology installed in a building has the potential to create significant impact, not simply to the environment, but to a home or business owner's financial bottom line. An electrical contractor has the potential to educate clients on the increased control they will have, which will ultimately save money on energy expenditure. Regardless of where the building owner is, they will have the gift of control, managing their energy output.

An electrical contractor is in a position of trust. You are valued by your customer not simply for your technical excellence in your craft, but also for your advocacy on products. It is essential that you stay on top of industry trends that allow you to share personal experiences and information with your customers to make your pitch more compelling.

By working with Schneider Electric, electrical contractors have access to our EcoXpert program. EcoXpert contractors are not only endorsed by Schneider Electric, they have access to endless marketing resources and tech support to help them get all-important deals across the line. In addition, members have access to coaching, training and specialist tools they need to deliver on energy-efficient and renewable solutions that facility managers are hungry for. By referencing the program, contractors have expertise at their fingertips that can create an even more positive case for sustainable automation.

Clipsal by Schneider Electric
www.clipsal.com

Fibre termination system

The Siemon LightBow mechanical splice termination kit includes a patent-pending, easy-to-use termination tool that dramatically reduces termination time while ensuring reliability.

With universal LC/SC compatibility, the product simplifies fibre insertion and avoids end face damage when terminating pre-polished mechanical splice connectors.

The cost-effective mechanical splice termination system cuts field termination in half. The product has enhanced performance and reliability of LC/SC multimode and singlemode fibre termination.

Fast deployment and reliability are of the utmost importance in today's fibre networks. While fibre field terminations offer the flexibility to meet a variety of installation scenarios, they need to be quick and easy while ensuring consistently high-performance connections. With its patent-pending termination tool and pre-polished mechanical splice connectors, the product significantly reduces termination time, prevents fibre end face contamination and air gaps, and enables easy verification of termination quality.

Siemon Australia
www.siemon.com.au

Slimline directional downlight

Brightgreen has released the latest edition to its range of architectural lighting products — the Tru-Colour D900S Curve surface-mounted LED downlight — which offers a slimline alternative to bulky surface-mounted lighting.

The D900 S Curve is 90% thinner than standard surface-mounted LEDs, providing designers with a pared-back look that suits modern interiors. Pure glass optics have been incorporated to minimise glare and provide a smooth directional beam in either 40° or 25° angle options.

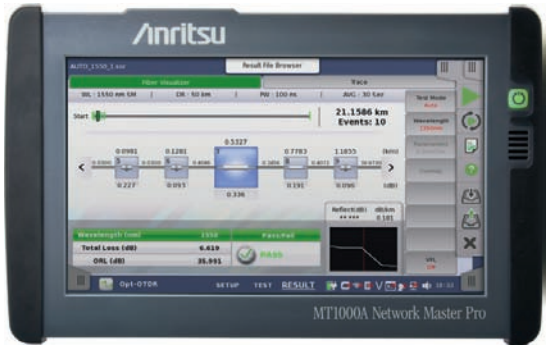
Operating on 50% less energy than recessed downlights, the surface-mounted D900 S Curve eliminates the need for cutouts and gaps in insulation and reduces the costs of energy consumption associated with heating and cooling.

Designed for hassle-free installation, the luminaire features a 3-pin, twist-lock mounting system, allowing it to be safely removed.

Brightgreen Pty Ltd
www.brightgreen.com

Test automation tool for both optical and RF testing

Anritsu has released another version of its SkyBridge Tools Test Manager that supports OTDR measurements to establish a comprehensive field test automation tool that supports both RF and optical testing. By reducing test time by as much as 90% and increasing accuracy more than 10 times, the product simplifies network installation verification, allowing contractors to close out projects more efficiently, receive prompt payment and start new projects faster.



The product brings full test automation to the Access Master MT9083 OTDR and Network Master Pro MT1000 optical transport tester. By allowing users to quickly create detailed test plans, script one-off field tests, judge the results and create reports, the product is a cloud-based solution suitable for RF contractors who must test DAS and cellular towers, as well as fibre contractors working in data centres, hybrid DAS, fronthaul, and backhaul or metro and core networks.

The product now has numerous features for more efficient testing of fibre-optic cables. A fibre test wizard automatically generates test plans that include fibre naming conventions, test set-up, judgement criteria and bidirectional test support. The new and complete OTDR criteria has a standard mode to simplify setting up test criteria and an advanced mode that offers full control of all the testing parameters, covering even the most demanding testing requirements. The instrument automation mode test feature completely automates the field test set-up and process. This supplies a single icon which eliminates all optical configuration, threshold settings and file naming processes. Pass/fail trace judgement is completed based on the test plan and criteria. VIP pass/fail judgement and easy reporting are also provided.

The product brings simplified testing processes to the network installation workflow, resulting in less time testing, more accurate tests and reliable payment for work done.

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Four mode LED search light

Milwaukee Tools has introduced the M18SLED-0 four mode search light. Designed to provide maximum performance in tough job-site environments, the light boasts a beam distance of more than 640 m and 1250 lm of light, allowing users to spot further and flood brighter.

It is a suitable solution for users who need to illuminate or spot an area at long distance or overhead, but also often need flood-lighting for task work. The light features four modes: Spot mode helps identify problems from afar; a patent-pending Spot/Flood mode assists in viewing issues from 640 m but also provides a wider view of the surrounding area, reducing tripping hazards; Flood mode provides a broad beam for area and task lighting; and Strobe mode is for communication and safety needs. A 198° head rotation gives users the flexibility to tilt the direction of the lens to where they need light most.

The device features TRUEVIEW technology, utilising advanced LED and optical designs to deliver a consistent beam, optimised colour temperature and true representation of colour and detail to create a more productive work area.

The M18SLED-0 features a durable high-impact polycarbonate lens and an IP54 rating for all-weather use. It is compatible with the M18 cordless system, which features more than 100 power tool products.

Milwaukee Magswitch & Milwaukee Power Tools
www.milwaukeetools.com

The handheld TDR2010 and TDR500/3 units have the following features:

- 2 ns minimum pulse width finds close-in faults
- Trace hold allows comparison between cables
- Large high-definition display for detailed analysis of results
- Dual cursors on model TDR2010 enhance pinpointing faults
- Compact, lightweight, durable for reliability and ease of use

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TROUBLESHOOTING COMPLEX NETWORK ISSUES

Amit Rao, Director – APAC Channels

Troubleshooting complex and sprawling networks can be difficult, with network professionals spending up to 25% of their time trying to get to the bottom of an issue, according to network performance management experts NETSCOUT.

Finding the root cause of network issues is time-consuming. If they're intermittent issues, it can seem almost impossible to find the cause and resolve the problem. However, by taking a methodical approach, it's possible to effectively troubleshoot enterprise network problems. We've identified the six most common network issues and how to troubleshoot them.

1. Infrastructure performance

End-user complaints often signify that there is an infrastructure issue. However, when application servers and infrastructure devices are operating normally, obvious error states can't be located, and legacy network monitoring tools report 'green'. Finding the root cause can be challenging, but possible causes include bad cabling, network congestion, server network adapter issues or DNS issues.

There are four steps to troubleshooting these issues:

1. Use existing monitoring tools and extract information from SYSLOG receivers.
2. Check server and network device log files to understand if there are connectivity issues from the NIC side.
3. Examine WAN links and logs to understand whether traffic-shaping devices or policies are affecting performance.
4. Check errors including web server, load balancer and application log errors.

2. Network services

There are numerous issues that can affect network services, such as DHCP issues or a slow DNS response. Possible causes include misconfigured DHCP or DNS servers, duplicate IP addresses caused by overlapping DHCP scopes, rogue DHCP servers or users manually assigning static IPs. This can enable a 'man-in-the-middle' attack and create significant security issues. To troubleshoot, first confirm proper configuration of authorised DHCP servers.

3. Prove it's not the network

Most of the time, the network is not to blame for performance issues. People blame the network due to lack of visibility into network operations, not enough bandwidth, network complexity, insufficient network expertise and lack of effective, easy-to-use troubleshooting tools.

To troubleshoot, the IT team should use packet captures, gather network data, review dropped packets and check for excessive retries and congestion in capture files. They should also check network device logs and ping to check response times, as well as using tracert to verify that the network path is correct.

4. Wi-Fi and BYOD threats

Wi-Fi networks, combined with bring your own device (BYOD) policies, can create security and performance issues if not managed carefully. These can include chatter, dropped connections, excessive bandwidth issues, poor device behaviour from users (such as streaming music) and congestion. The sheer number of devices can swamp the network.

To troubleshoot, conduct regular Wi-Fi SSID surveys to detect rogue access points and routers. Look up MAC addresses to discover the types of devices attached to networks and implement MAC address filtering if necessary. Also, understand that some devices are well known for causing problems if improperly configured, for example, Apple TV Airplay can badly impact performance.

5. Poor Wi-Fi performance

When the Wi-Fi network is underperforming, network teams should check for frequency interference, rogue routers (such as phones being used as hotspots), misconfigured Wi-Fi routers and compatibility issues between certain Wi-Fi clients and routers. Even excessive heat can cause strange symptoms.

> MOST OF THE TIME, THE NETWORK IS NOT TO BLAME FOR PERFORMANCE ISSUES

To troubleshoot, teams should regularly use an SSID scanner to identify rogue routers and APs in infrastructure; remember that strange DHCP behaviour is an indicator of rogue DHCP servers. Relocate routers that may be suffering interference due to proximity to EMI sources and ensure that all Wi-Fi devices are within their designed operating environment.

6. Intermittent performance issues

Transient issues can take time, and, sometimes, luck, to capture, diagnose and resolve. Causes can include cabling issues, external sources, power fluctuations, hardware failures and excessive heat.

To troubleshoot, rule out logical sources, then look for illogical sources of interference. Track occurrences of the specific performance issue and look for patterns. As always, start at the physical layer, using a cable tester to see if the issue is related to cabling.

Understanding how to effectively troubleshoot the most common issues can potentially reduce the amount of time network professionals spend on issue resolution, so it's well worth the effort.

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Is home automation worth the hype?

Malcolm Richards

Voice activation for taps, lights, music, (even the toilet flush!), lowering the too-high clothes rail, lighting, speakers, sprinklers and movie theatre; facial recognition; switch lights in the bathroom glass panels — *The Block* 2016 shone a spotlight on few lust-haves in the home automation market.

But is it really worth all the hype?

It's certainly a juggernaut that's bringing incredible opportunity to the electrical industry, and with so many elements working together, the need for a licensed electrician or smart home automation specialist is paramount, but consumers' ideas about what's useful, and constitutes value for their investment, can be vastly different from what we see on television shows.

Everyone can dip their toe in with a little smart (ish) technology, and the advertising industry has swung into overdrive, promising all manner of seemingly wondrous items to improve consumers' everyday lives.

From the 'smart' Breville toaster retailing in the US for hundreds of dollars with LED progress lights to stop you burning your bread, to those robotic vacuum cleaners everyone films their cat riding around the house on, to the Belkin WeMo Switch — a small, Wi-Fi-enabled plug that fits between a power point and the plug of an electrical device that allows the user to switch on or off using a smartphone app.

Items like the WeMo are certainly appealing and can offer a great return on the investment for those not quite in the same market as those buying a *Block* apartment.

The Amazon Echo is also proving popular for its functionality. It's a two-way audio device with mid-range to highish-quality speakers and with in-built microphone and voice recognition software so users can ask it to turn on the lights in the kitchen as they head in for a midnight glass of water, put on their favourite playlist or even call them an Uber.

Consumers in the high-end market are certainly tending towards integrated wiring for things like lighting and audiovisual — where everything talks to each other, to enable an entire, integrated and seamless system of operations.

Push controls — certainly not new — are also still leading the pack in terms of usability and desirability, and it's functionality is only improving, with seamless integration with automated lighting control systems, wireless speaker systems, CCTV, security systems etc.

In order to really work out what's worth the hype, a great deal of time will be spent on planning.

Creating an automated home that is highly functional, finds solutions for their needs and is a system they'll consider to be a highly valuable investment into the future involves understanding their unique needs.

How do they live, what do they do each day, how do they move within their space, how much time do they spend entertaining friends, watching television, using their sound system, and most of all — what's important to them in their everyday lives?

At the end of the day though, home automation is expensive to set up properly, can be dangerous if not done by a licensed electrician and can end up costing consumers an absolute mozza when it's not designed properly from the outset.

The expense is also spurring a worrying amount of DIY in this field as people try to get in on the action without breaking the bank.

There are enormous hazards in this field for customers who believe even part of these types of projects can fall into the DIY category, or for those who attempt DIY work later down the track.

Home automation systems can require the installation of low-voltage electrical components that need to be incorporated into the existing or new electrical installation, or have components installed in close proximity to existing electrical equipment.

So in essence, it all works together, which means there's a high potential for electricity to flow through the wires in a house. This creates hidden dangers for home owners, particularly when trying to access a roof space of wall cavity. And we need to make sure they are fully aware of the dangers (and, of course, that they all have safety switches installed!).

There are still also a great deal of associated products in this field made overseas by companies that are not working towards Australian compliance; the vast majority are simply unsuitable for use in Aussie homes. So what they want, and often believe they can have, may not be an option.

For this reason, our clients are still relying heavily on us to take their overall plan and turn that into reality. What do they want, but what do they need as well, how will we deliver it? And what inclusions will be value for money and remain functional for years to come, rather than being a quick gimmick they can impress the neighbours with?

It's up to us to stay up to date with the latest advancements, and to use that knowledge to guide our clients towards the simplest, safest, most cost-effective and, of course, the most functional options for their homes.

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CASE STUDY

Crisis averted

Fire & Rescue NSW (F&RNSW) is the seventh largest urban fire service in the world, with over 6800 firefighters serving at 339 fire stations across the state. When dealing with life or death emergencies spanning over 800,000 square kilometres, efficient operation is essential, ensuring that emergency services reach callouts quickly and arrive with the necessary equipment.

F&RNSW Field Service Manager Marcus Swansborough manages the field service team that looks after two communication centres and all fire stations and specialist divisions.

"We're responsible for a wide range of technology," said Swansborough.

"We look after PMR networks and all fixed and portable radiocommunications in all our stations and vehicles. This includes satellite and phones, automatic vehicle location and mobile data technology. We also provide specialist support for our two emergency 000 communication centres in Sydney and Newcastle.

"When it comes to dealing with maintenance or service issues across F&RNSW infrastructure, the team has various bits of equipment that they use. Currently we use Marval, which is an integrated IT service management ticketing system. All faults are reported to our service desk and a ticket is raised. The field service team have the ability to remotely access these tickets through their Toughbooks and iPhones.

"Our Toughbooks include diagnostic software for all the various bits of equipment and we also use them to interface into or test equipment — so that's anything from spectrum analysers to cable testers for the network.

"F&R field service management is quite different to, say, a utilities company, for example. We look after everything from power in the station with backup UPS systems to the CAD systems in our communications centres.

"System monitoring is extremely important to us. Currently we've got software that monitors our CAD systems, station turnout equipment, the communication centre systems and our PMR networks. This monitoring and testing ability allows us to plan routine maintenance runs and also to respond field teams to our stations that have had turnout equipment storm damage.

"To be able to monitor equipment remotely is critical for us. Enhancing and automating monitoring technologies is always a focus — we're looking at shifting maintenance from the reactive to the proactive by pre-empting maintenance requirements.

"Updating and developing a ticketing system that is remotely accessible via an app to the guys out in the field is a huge priority. Ideally, instead of trawling through all the outstanding maintenance jobs on the service desk, we're looking into a system that will categorise jobs based on location; multiple jobs in an area will be highlighted and repeat jobs flagged so that when I send a team member out into a regional area he doesn't go out for one job, he can see all the others that might be along the same route. This will save not only maintenance time, but resources too.

"Secondly, we're looking to automate the tracking of assets. Stations are full of IT equipment that is crucial to the operation of a station and its ability to respond quickly to firecalls. At the moment I'm looking into the tracking of assets via either Bluetooth or a 'scanable' app that automatically transmits asset status into our system, so that if something does become faulty we can be ready and have a new bit of kit back at the office ready to take back out to the station. Being able to know at any given time the status of our technology assets at a particular site would provide a huge maintenance and safety advantage," he said.

Admittedly, F&RNSW doesn't have customers in the traditional sense and, while automated processes are definitely the way of the future, the importance of building rapport with clients is the defining element of the team's field service operation.

"For us, the interaction with out clients — operational and admin staff within F&RNSW — is very important. When we arrive at a fire station we always present ourselves to the Station Office and look at developing a rapport with them.

"By liaising in person with staff, we know what is unique to particular stations, and from these relations we've developed with each station, we can better meet their needs and make improvements. As we cover such a large area, we also rely on local contractors in regional areas. It is important we build up good relations with them so they understand our technologies, our operational requirements and can provide support when we cannot get our own field service tech to site.

"For me, catching up on a regular basis with operational staff and external contractors is very important. Liaising with the operational staff helps me to understand the challenges they may be encountering with our communication and turnout technology. They can also provide us with some great feedback on how we can make technology work even better for them.

"As Zone Commanders have information passed on from individual stations, it's always good to catch up with them — instead of visiting 10 stations individually. By getting out and liaising with them, you get a great cross-section of information and the ability to see if a pattern of issues is developing, especially when it comes to radiocommunications coverage.

"At the end of the day, we're an emergency service and it's crucial we have everything up and running 24/7," he said.

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Universal high-voltage insulation dielectrics test set

The portable HV Diagnostics HVA60 60kV VLF/DC test set provides real-time data of actual output waveform. Available to rent from TechRentals, the product is suitable for testing and commissioning electrical plant equipment including cables XLPE, PE, EPR, PILC, capacitors, switchgear, transformers, rotating machines, insulators and bushings. All test results are stored on an on-volatile memory for downloading to a PC for review and analysis.

DC testing of aged, extruded cables such as XLPE and EPR is potentially damaging due to premature failure of the cable under service conditions. Any form of DC testing has been found to be ineffective in detecting even serious faults in such cables. VLF testing is a preferable alternative as it enables the cable test engineer to detect insulation defects before the cable fails in service.

Features include true sine wave low-frequency output; 1 μF (approximately 3000 m of cable) testing at 0.1 Hz and 60 kV peak; fully automatic or manual cable test sequences; and compliance with international standards/guides such as IEEE 400.2, VDE 0296 and CENELEC.

TechRentals

www.techrentals.com.au

Hybrid console manager and remote network power switch

The Interworld Electronics CPM-800 Series hybrid console manager and remote network power switch provides secure remote access to RS232 console ports as well as the ability to power cycle remote IT equipment. The product provides eight RJ45 serial ports and eight reboot power outlets.

Suitable for small to medium-sized server rooms, the product delivers security, accessibility and control of critical network equipment via a secure Ethernet connection. Power switching capabilities include outlet sequencing with delays, scheduled outlet switching or rebooting and ping-no-answer monitoring with auto rebooting.

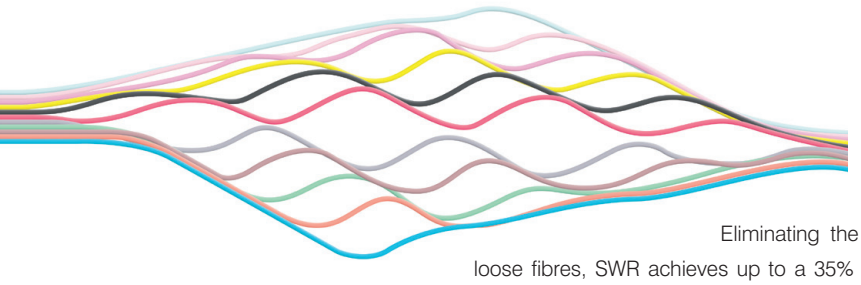
The product offers a range of model options including single and dual Ethernet ports, split bus power distribution, current monitoring and automatic power transfer switching.

Security options include SSHv2 encryption, address-specific IP security masks and multilevel passwords. Remote authentication is also supported.

The product monitors network equipment, constantly watching for significant changes. Network managers can be notified via SNMP trap or email if invalid access attempts occur, temperature limits are exceeded, port buffers are full, ping-no-answer and other events are detected.

Interworld Electronics and Computer Industries

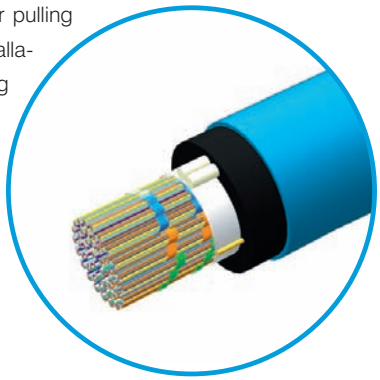
www.ieci.com.au



Ribbon cable

Spider Web Ribbon (SWR) from AFL represents advancement in fibre density, whereby fibre-optic cables are weaved rather than produced inline, as in conventional 12F ribbon alternatives. Eliminating the high portion of lost space using traditional round tubes with loose fibres, SWR achieves up to a 35% reduction in cable diameter. This means more cable per drum, for less weight — SWR is up to 55% lighter than loose tube cable of the same capacity.

The smaller cable diameter also increases cable bend performance, and means faster pulling speed and conduit feed. All these features combine to deliver reduced freight and installation costs, storage space, installation time and reduced space requirements for splicing enclosures.



SWR allows mass ribbon splicing as well as easily separating to single fibre elements for single fibre splicing. Ribbons are ring-marked for easy identification. SWR dry core eliminates the use of water blocking gels, further reducing installation time and costs. SWR is available in outside plant, premise and microcable options.

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2017 DATA CENTRE TRENDS

As the Internet of Things continues to dominate discussion, today's data centres need to keep up with the change. Here's a look at what 2017 holds in this space.

Vertiv (formerly Emerson Network Power) has identified six data centre infrastructure trends to watch in 2017. Following are the infrastructure trends the company says will shape the data centre ecosystem in the upcoming year.

Infrastructure races to keep up with connectivity at the edge

Distributed IT and the Industrial Internet of Things (IIoT) are pushing IT resources closer to users and industrial processes. While the data centre remains core to delivering applications and services, such as point of sale and inventory management, network closets and micro data centres are growing in number and importance as internet-connected sensors and devices proliferate and remote users demand faster access to information. Responding to these changes, organisations will turn to preconfigured micro data centre solutions that support fast deployment, greater standardisation and remote management across distributed IT locations. Standardisation and modularity are becoming as important in distributed IT locations as they are in large data centres.

Existing network closets and remote IT locations will also be re-evaluated to ensure the power and cooling provisions are adequate to meet the increased criticality of these locations as they begin to provide localised collection and analysis of real-time data from connected sensors and devices.

Thermal management expands to sustainability

Data centre cooling has changed more in the last five years than any other data centre system. Fuelled by the desire to drive down energy costs, traditional approaches that focused on delivering 'maximum cooling' have been displaced by more sophisticated approaches focused on removing heat as efficiently as possible. Increased use of advanced economiser technologies and the continued evolution of intelligent thermal controls have enabled highly resilient thermal management strategies that support PUEs below 1.2.

Now, while energy efficiency remains a core concern, water consumption and refrigerant use have emerged as important considerations in select geographies. Thanks to the expanded range of thermal management strategies available today, data centre operators are tailoring thermal management based on data centre location and resource availability. Global market trends show an increase in the use of new technologies leveraging evaporative and adiabatic cooling that use water to cool the surrounding air. These

technologies are delivering highly efficient, reliable and economical thermal management.

Where water availability or costs are an issue, waterless cooling systems have gained traction. A traditional open-loop chilled water-based system uses about 4 million gallons of water to cool 1 MW of IT capacity in one year. New technologies featuring pumped-refrigerant economisers that use no water and introduce no outside air into the data centre will save over 1 billion gallons of water in North America in 2016.

Security responsibilities extend to data centre management

While data breaches continue to garner the majority of security-related headlines, security has become a data centre availability issue as well. The 2016 Ponemon Institute Cost of Data Centre Outages study revealed that cyber attacks accounted for 22% of the data centre outages studied.

As more devices get connected to enable simpler management and eventual automation, threat vectors also increase. Data centre professionals are adding security to their growing list of priorities and beginning to seek solutions that help them identify vulnerabilities and improve response to attacks. Management gateways that consolidate data from multiple devices to support DCIM are emerging as a potential solution. With some modifications, they can identify unsecured ports across the critical infrastructure and provide early warning of denial-of-service attacks.

DCIM proves its value

DCIM is continuing to expand its value, both in the issues it can address and its ability to manage the increasingly complex data centre ecosystem. Forward-thinking operators are using DCIM to address data centre challenges, such as regulatory compliance, Information Technology Infrastructure Library (ITIL) and managing hybrid environments. Finally, colocation providers are finding DCIM a valuable tool in analysing their costs by customer and in providing their customers with remote visibility into their assets.

DCIM has emerged as the precursor to IIoT in the data centre, delivering the visibility, increased coordination across systems and support for automation that are at the core of the IIoT value proposition.

Alternatives to lead-acid batteries become viable

New solutions are emerging to address the weak link in data centre power systems as operators seek to reduce the footprint, weight and total costs of traditional valve-regulated lead-acid (VRLA) batteries. The most promising of these are lithium-ion batteries. With prices decreasing and chemistries and construction continuing to advance, lithium-ion batteries are becoming a viable option for the data centre and are being scaled to handle row- and room-level requirements. While this battery technology has been available previously, the improving economics have spurred increased commercialisation efforts in the data centre industry.

Data centre operators have long been interested in alternatives to lead-acid batteries, but available technologies have not been able to match the value and storage capacity of traditional batteries. Now, real alternatives are emerging that can reduce footprint, expand runtimes and enhance sustainability.

Data centre design and deployment become more integrated

Technology integration has been increasing in the data centre space for the last several years as operators seek modular, integrated solutions that can be deployed quickly, scaled easily and operated efficiently. Now, this same philosophy is being applied to data centre development. Speed to market is one of the key drivers of the companies developing the bulk of data centre capacity today, and they've found the traditional silos between the engineering and construction phases cumbersome and unproductive. As a result, they are embracing a turnkey approach to data centre design and deployment that leverages integrated, modular designs, off-site construction and disciplined project management. Vendors that bring together infrastructure expertise, design and engineering capabilities and sophisticated project management to deliver a turnkey capability can build better data centres faster.

Vertiv Co
www.vertivco.com

Plug-and-play microgrid solution

ABB has released a modular and scalable plug-and-play microgrid solution to address the globally growing demand for flexible technology in distributed power generation. The containerised solution is intended to maximise the use of renewable energy sources while reducing dependence on fossil fuels used by generator sets.

The technology incorporates the PowerStore battery and dedicated Microgrid Plus control system and a cloud-based remote service that not only provides power access to remote areas, but also offers secure, cost-efficient, uninterrupted power supply during both planned and unplanned power outages from the main grid supply.

All the equipment required to run the microgrid is integrated into a container for faster, easier and safer deployment and can be configured to integrate energy from solar, wind, main grid or diesel generator supply, based on the application and local conditions.

The modular microgrid is has four predesigned variants in the range of 50 to 4600 kW to meet varying customer needs. Standard integrated functionality includes grid-connected and off-grid operation with seamless transition.

ABB Australia Pty Ltd

www.abbaustralia.com.au

Magnetic drill press

The MagDrill Disruptor 30 from Magswitch Technology utilises patent-pending rotating magnet technology to provide a tool that is capable of quick and safe drilling on both curved and flat surfaces. The magnetic base requires no electricity for a powerful hold on a wide range of steel thicknesses, requires no electric power and will not release in the event of a power failure.

The drill features an 8.2 A motor, weighs just over 10 kg and automatically pivots to conform to any pipe 3″ or larger. It can cut holes up to 1-3/16″ diameter up to 2″ deep.

Magswitch Technology Pty Ltd

www.magswitch.com.au

Server racks and cabinets

The 007 series server racks and cabinets are available from Rack World Systems.

The 007 floor-mount cabinets are tough, resistant and designed to be easily deployed for quick delivery across Australia. The cabinets are available in the following sizes: height: 18RU to 47RU, 1090–2290 mm (overall height including castors); depth: 600–1200 mm; and width: 600 and 800 mm.

The 007 server racks are pre-assembled and include: top and base; removable side panels, glass or vented metal front door and rear-vented metal door, pre-installed roof fans, castor wheels, levelling feet and cage nuts, and 8-port surge protected PDU (x1) and shelf (x2).

A wall-mount version is also available.

Rack World Systems is a specialist manufacturer of 19″ rackmount cabinets, which are suitable for a variety of applications. The company can also provide turnkey solutions including customised metal racks/cabinets, storage products and enclosures that are suitable for all industries.

Rack World Systems

www.rackworld.com.au

Energy management software

NHP has partnered with Switch Automation to deliver InfoSyte, an energy management software solution tailored for the Australian and New Zealand markets.

The cloud-hosted platform has the ability to integrate with energy, water and gas measuring devices, along with other facility systems including building management systems (BMS) and heating, ventilation and air conditioning (HVAC).

It offers a comprehensive range of features including in-built reporting for NABERS, advanced analysis and trending functionality. It also offers fault detection and diagnosis and features configurable user dashboards.

Responding to the growing challenge and need to interpret collected data for real-world application use, the platform enables the visualisation of data to provide an engaging and intuitive real-time user interface.

Users will gain insight into their facility operations, empowering them to identify process improvement opportunities and effective management of energy consumption where significant financial savings can result.

NHP Electrical Engineering Products Pty Ltd

www.nhp.com.au

Temporary emergency lighting

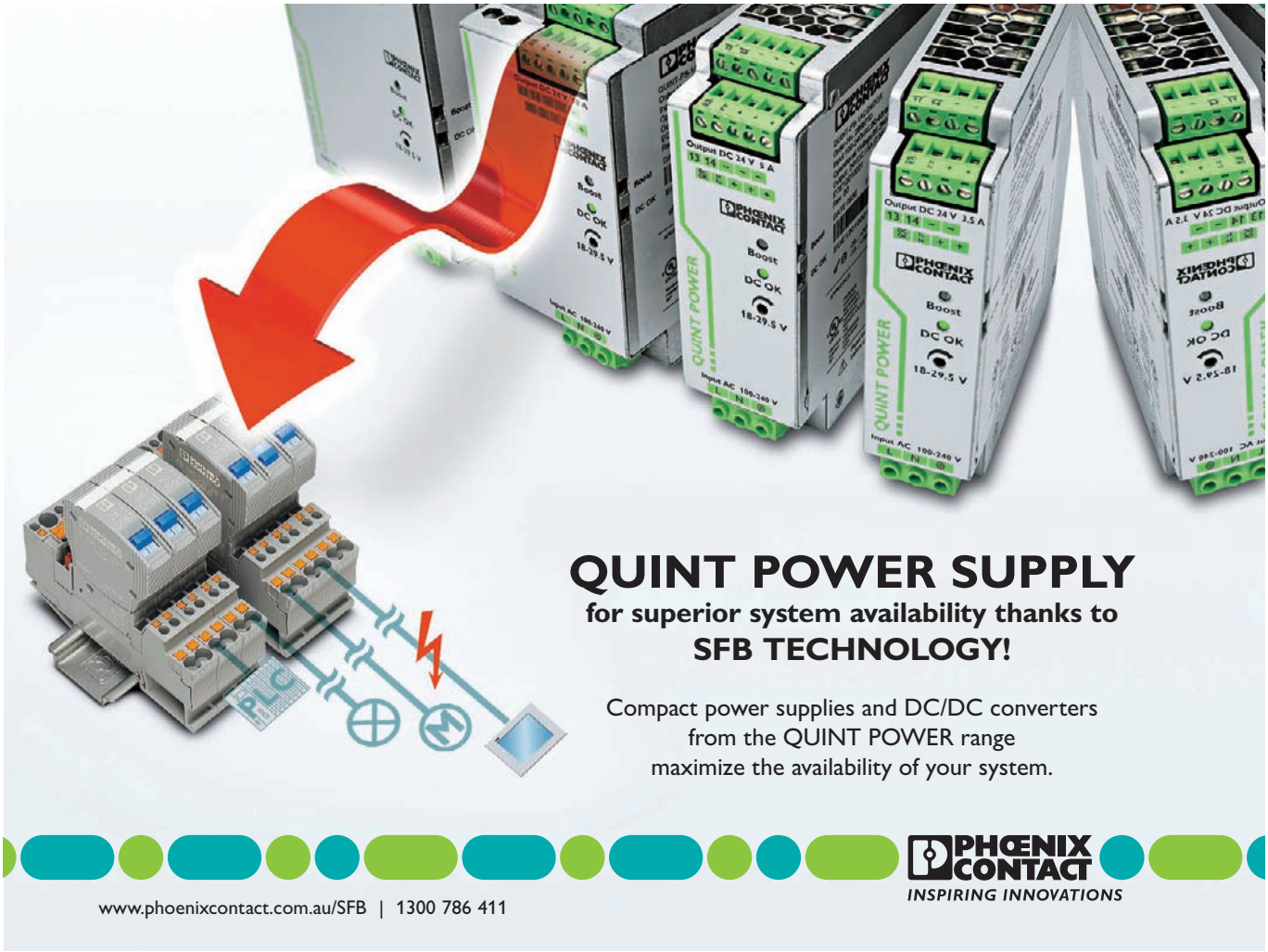
The Clevertronics temporary emergency lighting range has been designed to meet compliance with AS NZSW 3012 - Electrical installations on construction sites and demonstration sites.

The range includes temporary T8 weatherproof battens, with a range of plug options available including 3-pin plug flat earth pin, 3-pin plug round earth pin and 4-pin plug round active pin. The battens are easy to install and come with a 1.7 m flex and plug, as well as chain suspension hooks for installation. There are surface or suspension mounting options. Two 36 W T8 tri-phosphor lamps are included.

The temporary Cleverfit exit sign also comes with a 2-pin plug configuration, 1.7 m flex and suspension hooks. It includes all pictograph decal options in one box and caters for both single- and double-sided applications. It features energy-efficient long-life LEDs.

Clevertronics Pty Ltd

www.clevertronics.com.au



Wireless home automation

Schneider Electric has partnered with Environexus to distribute NERO — a scalable and wireless home automation solution suitable for retrofitting, allowing consumers to create the ultimate smart home, one switch at a time.

NERO leverages the growing demand for IoT technology in the home space to provide home owners with increased comfort, convenience and peace of mind. It is a suitable platform for home owners looking for a cost-effective and scalable solution.

The platform includes a range of connected devices, from dimmers, relays and dry contact, to plug packs, security and sensors. The devices are controlled by a single user interface accessed via smartphone or tablet. The NERO app is also functional over 3/4G, allowing users to control their home whether they're in the office or on the go.

The solution is customisable and offers guaranteed interoperability of all NERO devices. Geofencing functionality means users can configure a perimeter setting to trigger scenes and devices on approach, or when leaving home, and receive a notification that the trigger has successfully occurred. The technology also identifies which family member has left or arrived.

Schneider Electric

www.schneider-electric.com.au

Workplace health and safety app

The CareMonkey app simplifies WH&S management and compliance by capturing employee and contractor information and providing authorised team members with mobile access to individual medical and emergency data.

CareMonkey captures medical information, consent forms, incident reports, agreements and contracts, qualifications and licensing information, as well as text and signatures. It eliminates paperwork altogether, along with the need to send, chase and copy paper forms.

The app also stores relevant 'Emergency Action Plans', which can be used in the event of an emergency. Anyone on-site or at the scene of an emergency can quickly ascertain what to do, who to call and what to tell paramedics or attending medical staff if required. The information is also available offline, making it suitable for construction and mining applications in remote areas, where mobile reception can be difficult due to disruptive works.

Head office can deliver training, policies and surveys electronically, ensuring policies are accepted by employees and contractors alike. Emergency messaging group broadcasts via email or SMS and automated reminders ensure every tradie, employee or subcontractor keeps his or her details up to date.

CareMonkey is supported by solid security, including password, code and fingerprint protection. Sensitive information is kept private and every change made is automatically archived for improved governance and auditing.

CareMonkey Pty Ltd

www.caremonkey.com

High-power LED DC load simulator

The Prodigit Electronics 33430G Series high-power LED DC load simulator from Triplepoint Calibrations features built-in dimming control signal output for PWM testing of LED drivers. It also features an LED mode for LED power drive testing and can simulate LED forward bias voltage (Vd) and resistance (Rd).

The device has a control and display panel, LED/CC/CR/CV/CP/Dynamic Mode and 150 Store/Recall memory presets to provide more efficient load set-up. It can be controlled via internet, RS232, Ethernet, USB and GPIB interface.

The device features programmable load on/off voltage, GO/NG meter check, voltage meter display selectable to '+' or '–'. It is designed for a range of applications including LED drivers, voltage/current sources, SMPS transient response, current limit testing, ATE systems, battery emulation and battery chargers.

Triplepoint Calibrations Pty Ltd

www.triplepoint.com.au

App-enabled smoke alarm battery

Smart home technology company Roost has announced that its flagship product, the Roost Smart Battery, is now available in Australia.

The device combines a lithium battery and Wi-Fi in a familiar 9 V package. Coupled with a free smartphone app, the battery delivers notifications in the event of a smoke alarm sounding, even when the user is not at home.

With an average battery life of five years, it also eliminates flat battery beeping, as it sends a notification when it nears end of life.

The app can be configured to send notifications to multiple mobile devices, such as neighbours or friends if the user is away. It can also be used to disengage the battery in the case of nuisance alarms, such as when cooking.

The device includes a Wi-Fi chip, a microprocessor and a sensor that wakes up when an alarm sounds. When this occurs, the battery communicates via Wi-Fi to the Roost Cloud and a notification is sent to the user's smartphone. It can be used with any existing smoke alarm that relies on a 9 V battery.

Roost

www.getroost.com.au

Residential storage battery system

Panasonic's residential storage battery system reduces reliance on the grid during peak periods. For consumers, it means access to clean solar energy during the evening peak and the opportunity to reduce the energy bill. For energy distributors and retailers it reduces the grid infrastructure expense, better managing the time of use during peak periods and offering longer term contracts and savings to the consumer.

The system has 5.3 kWh usable capacity and 2 kW output, using lithium-ion battery technology to maximise the benefit of residential photovoltaic (PV) energy. It has a slim, stand-alone design and is capable of retrofit installation to existing residential solar PV systems. For outdoor installation, it is robust, dustproof and waterproof and IP54 rated.

Demand response software allows programmed charge/discharge, remote control charge/discharge and controls and monitors usage through the LJ-NA02 Network Adapter. It aids utilities' fleet management to meet peak shaving opportunity and improve stability across the distributed energy network. One utility server can control up to 20,000 storage systems and monitor their time-of-use tariffs and control of demand load.

Panasonic Australia Pty Limited

www.panasonic.com.au

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EMONA

MAKING THE SWITCH TO LED

© iStockphoto.com/jkitan

When it comes to factory, warehouse and transport depot lighting, traditional lighting systems have typically employed metal-halide light sources. What facility managers and business owners may not know is that these lights are emitting a lot more heat — and burning a lot more energy and money — than is necessary.

Once upon a time, metal-halide (MH) fittings were prized for their brightness, energy efficiency and long life. This is not so much the case now, when compared to light-emitting diodes (LEDs).

MHs work similarly to fluorescents in some respects and incandescents in others. They pass an electrical arc through a gas-filled tube like a fluorescent, but the arc itself creates bright, visible light as is the case in incandescent fittings. This is an inefficient process — about 75% of the energy MHs consume is wasted as heat.

> A 50,000-HOUR RATING FOR AN LED IS NOT EQUIVALENT TO A 50,000-HOUR LAMP LIFE RATING.

LEDs vs metal halides

Efficiency and energy savings

Since LEDs are inherently directional, they emit almost all of their light output in the desired direction, rather than dispersing it in all directions like MHs. Modern LED high bays can produce 160+ lm/W, compared with around 90 lm/W in the case of a 400 W MH.

Programs such as the NSW Energy Savings Scheme approve products for the creation of energy saving certificates (ESCs) including a number of LED high-bay lights from MatrixLED, which offer significant savings in factory, warehouse and transport depot applications.

As an example, including the ballast with a 400 W MH fixture, the energy saved per light by switching to a 95 W LED high-bay light is around 345 W. If 100 lights operated 24 hours a day, seven days a week for a year, the total annual energy saving equates to 302,215 kWh. At an average electricity price of $0.17/kWh, this is a cost saving of $51,377 per year.

A savings calculator can help businesses work out their potential savings given the number of lights, operating hours and the weighted average electricity price they pay.

Life span

While MHs can generate about 35,000 lumens when initially installed (around 90 lm/W), lumen depreciation occurs quickly. An MH's light output typically decreases by half within a couple of years.

By contrast, a high-quality LED will last 50,000 hours or longer. An LED does not burn out like a standard lamp, so individual diodes do not need to be replaced on an array. Instead, the diodes gradually produce lower output levels over a very long period of time. If one LED fails, it does not produce a complete fixture outage.

Although LEDs never really burn out, product life span is measured by lumen depreciation. The life of an LED is generally calculated as the point at which the LED reaches 30% lumen depreciation.

It's important to remember that a 50,000-hour rating for an LED is not equivalent to a 50,000-hour lamp life rating (if such a thing existed). A high-quality LED will function for well over 100,000 hours in its capacity as a light-emitting diode. A high-end LED rated at 100,000+ hours would be used as a light source for approximately 50,000 hours. After that time, it would still be operational, but at a decreased lumen output, and would probably warrant replacement.

Additional comparisons

Relatively high energy use and shorter life aren't the only drawbacks of MHs; here are a few others:

- MHs require up to 15 minutes to reach full brightness when first turned on and up to 20 minutes before they can be turned on again when they are turned off;
- MHs emit significant heat, which not only reduces their efficiency but makes air conditioning work harder;
- Older MHs can explode with no warning, requiring the use of protective, enclosed fixtures; and
- MHs contain mercury gas and the mercury from discarded bulbs can be harmful to the environment.

By comparison, LED high- bay lights have:

- instant start-up — no warm-up phase;
- reduced running temperatures and heat load on air conditioning;
- no hazardous mercury and environmental disposal issues;
- enhanced compatibility features (they can be easily integrated with advanced dimming and control options);
- exceptional colour rendering;
- zero flicker and fatigue;
- zero ultraviolet light emission; and
- constant output, which does not degrade at low temperatures.

#SwitchToLED

There is no better time, with various government energy savings schemes and incentives, to switch to high-bay LED lighting. For example, in NSW, a business may be entitled to receive ESCs, the number of ESCs being directly related to the amount of energy saved by that business. The ESCs associated with the savings already outlined will reduce the net outlay and achieve payback periods measured in single-digit months.

MatrixLED
www.matrixled.com.au

Multifunction smart meters

Control Logic has released CETA's latest direct connected class 1 energy meters, offering high-accuracy measurements in a space-saving DIN rail package. They are suitable for all types of power usage metering including bidirectional renewable energy applications, such as solar and wind.

The single-phase 5/63 A PMC-220 and three-phase 5/80 A PMC-330 DIN rail energy meters are self-powered multifunction meters utilising RS485 open Modbus protocol designed for quick and easy installation. Current transformers are optional for a small footprint. The mains cable can be feed up to 25 mm^2 in size to one single terminal to provide all measurement data including instantaneous power and kilowatt-hour usage.

Additional data such as tariff counters, power quality, this month versus last month and per-phase energy counters are built in. Measure three individual single-phase circuits in one smart three-phase version to reduce hardware cost and switchboard real estate.

Control Logic Pty Ltd
www.control-logic.com.au

Rechargeable torches and headlamps

LED LENSER has released the i-Series of commercial torches and headlamps, designed specifically for industrial professionals.

The torch range includes the i6R, i7R, i9R and i9R-Iron, which feature a homogeneous and defocused light cone due to Advanced Focus System (AFS) technology. AFS combines lens and reflector to unite the advantages that come with both systems. The range features Speed Focus, which allows for one-handed quick modification of the light cone, while the Fast Lock enables secure locking of the focusing position. A metal housing and IPX4 spray-water protection coating makes them suited to a range of environmental conditions.

The headlamps feature high-end power LEDs that work in harmony with LED LENSER Smart Light Technology and inlude AFS to enable maximum levels of control. Safety-Ytrion-Cell technology batteries provide 5000 charging cycles and low self-discharge, delivering up to 35 h of charge after only 2 h on the charging base.

LED LENSER
www.ledlenser.com.au

LED power supply

Soanar is now distributing Mean Well's HLG-600H series 600 W LED power supply, adding it to the current HLG range. The range includes 10 models, between 40 and 600 W.

The HLG-600H is a 600 W AC/DC LED driver featuring the dual mode constant voltage and constant current output. It operates from 90~305 VAC with voltage ranging between 12 and 54 V.

Featuring high efficiency (up to 96%) and a fanless design, the series is able to operate for -40~+90°C case temperature under free air convection. The design of the metal housing with IP67/IP65 ingress protection allows this model to fit both indoor and outdoor applications. It is also equipped with various function options, such as dimming, providing the optimal design flexibility for an LED lighting system, making it suitable for a range applications including: LED high-bay lighting, parking space lighting, LED fishing lamp, LED greenhouse lighting and Type HL for use in Class 1 Division 2 hazardous (Classified) locations.

Approvals include UL/PSE/ENEC/CB/CE and Australian Approved. It comes with a 7-year warranty and is supplied with 1.8 m flexible cord and plug.

Soanar Limited
www.soanar.com

Rugged tablet

Xplore Technologies has launched the XSLATE R12 , a 12.5″ next-generation detachable rugged tablet PC.

The device incorporates an RJ45 and true serial port dongle and a Bluetooth-enabled keyboard that magnetically stows on the back of the tablet even when docked, offering two-in-one flexibility.

The optically bonded 800 NitView Anywhere outdoor viewable display is protected by Corning Gorilla Glass, offering damage-resistant day-and-night viewing.

Other features include antenna pass-through capability, a SlateMate barcode reader and an HF RFID reader.

A range of accessories is available including desktop docking station, secure mobile dock and 'work anywhere kit' featuring a carrying case and tablet kickstand.

Xplore

www.xploretech.com

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Integrated stepper motors

The JVL Industri Elektronik NEMA23 series of integrated stepper motors from Motion Technologies features the latest technology to achieve 409,600 step/rev, delivering smoothness and silent running.

Customers can choose between top or rear-end mounted M12 connectors. The MIS23 motors come in three different sizes and two different motor types: three with standard high torque stepper motors and two versions with ultrahigh torque stepper motors with 40% higher motor torque.

The motors can be operated as standalone units or controlled from a PLC or PC. The 8 I/Os can be individually configured as digital input, digital output or analog input. As standard, it is possible to communicate with holistic systems via for example Modbus RTU or CANopen. The MAC motor standard protocol that is also supported makes it possible to connect up to 254 other JVL integrated motors. The MIS23 series allows connectivity to all Industrial Ethernet interfaces such as Profinet, EtherCAT, Powerlink, EtherNet/IP, Modbus TCP and SERCOS III.

Motion Technologies Pty Ltd

www.motiontech.com.au

Telematics system

Toyota Fleet Management (TFM) has launched a new telematics system it says will promote safer driving practices, optimise the use of fleet assets and make life easier for busy fleet managers.

The ForceField telematics system provides real-time tracking of vehicle and driver performance. The resulting data is used to provide a range of insights, including ways of minimising vehicle accidents and reducing fleet running costs.

The system is available in four packages to meet the needs of a variety of businesses, or a fully customised package can be created to meet an organisation's specific requirements.

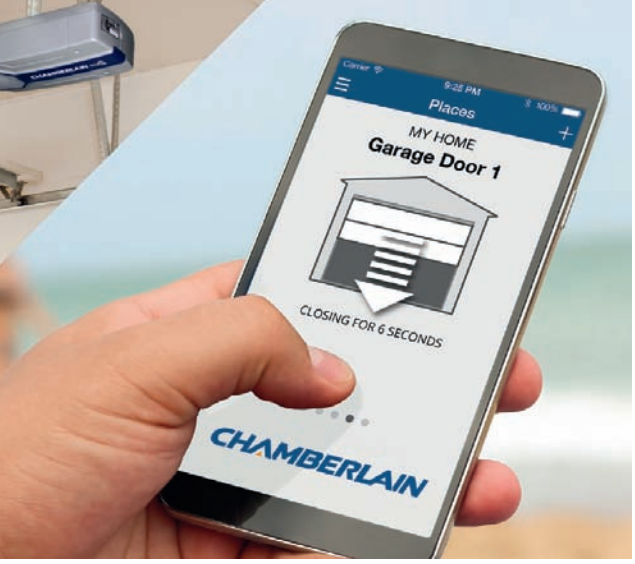
ForceField works through locator units attached to each fleet vehicle. Data is transmitted over a wireless network and delivered in real time to the customer's desktop or mobile devices.

Unsafe driving practices can generate significant costs in employee injuries, lost productivity, damage to company assets, fines and even litigation. ForceField offers overall improvement to driver safety and efficiency while reducing the costs resulting from unsafe driving.

Other benefits include the ability to identify surplus vehicles that can be reallocated or even disposed of, and maximising efficiency by using the data to optimise routes, monitor speed and minimise idle time. It also includes integrated electronic logbooks, the ability to set geofencing boundaries, emergency response alerts, seatbelt on/off and fatigue alerts, driver identification via swipe tags and historical trip analysis.

Toyota Fleet Management

www.toyotafleetmanagement.com.au



Smart home garage door opener

Chamberlain has introduced a garage door automation solution — PowerLift MyQ. The DIY garage door opener offers users the ability to monitor and control their door using a smart device. Built using the company's encrypted MyQ technology platform, the app connects home owners to their home router, taking advantage of an increase in smart home connectivity.

MyQ gives users the ability to allow entry for guests, tradesmen and delivery drivers even when they aren't home. The app notification also alerts home owners any time the garage door is opened or closed.

It can be attached to an existing single- or double-sectional garage door up to 16 m^2 and connected to a router. It includes obstruction-detection safety beams and reversal technology which will automatically stop and reverse the door if obstructed, keeping children, pets and the family car out of harm's way.

Chamberlain

www.chamberlain.com

Cellular signal amplifier

The Nextivity Cel-Fi GO is a 3G and 4G cellular signal amplifier designed to address poor mobile coverage for those on the move.

Fully compliant for Australia and approved by Telstra for the 3G 850 and 4G 700/1800 frequency bands, Cel-Fi GO is environmentally rated to IP54 and can be used in marine, automotive and fixed installations. The device addresses the challenges of poor vehicular mobile coverage by using a number of patented algorithms to amplify cellular signals up to 70 dB (100x more powerful than traditional methods).

It automatically adapts to the moving environment, jumping from tower to tower by not 'releasing' the signal until the incoming tower signal is of sufficient strength. The indoor/outdoor-rated design improves cellular coverage in industrial applications where significant RF obstacles impede a mobile phone signal.

The device provides system gain at up to 100 dB in stationary mode, while ensuring network safety. It can be coupled with antennas and the Cel-Fi WAVE smartphone app to resolve the toughest coverage challenges.

Powertec Telecommunications Pty Ltd

www.powertec.com.au

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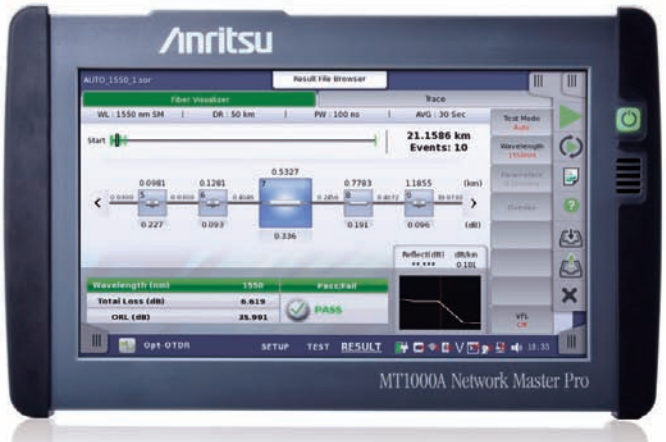

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SHINING A NEW LIGHT

David Gardner, General Manager

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We have hardly scraped the surface of the potential in lighting. There are more than 60 billion lights installed in the world and, with ever-evolving technologies, each of these has the potential to enrich life beyond simple illumination.

As data proliferates and enables the integration of technology in day-to-day activities, we are presented with an opportunity to tap into the full potential of lighting to benefit communities and business.

With every light point offering to build a connected, intelligent system that delivers high-quality, reliable illumination and that serves as a pathway for information and services, there is potential to deliver extraordinary value beyond illumination to the users and operators of spaces.

Many of the world's 60 billion LED light points have the potential to host sensors that collect data. The result of such technology is smarter lighting that encourages productivity and efficiency to not only improve its own application, but to improve the experience across a number of sectors and facets of life.

At the recent Smart Cities Expo World Congress held in Barcelona, Philips Lighting unveiled a people-centric blueprint for lighting and the Internet of Things (IoT) services in the smart city of the future. We believe we are beginning to see the lighting industry understand how residents and businesses are informing, and can inform, the future of cities.

Looking to 2017, we are progressing towards a period of global advancement in lighting solutions, enabling the development of the smart, connected and interactive world.

Urban applications

Like many countries, Australia is embracing the shift towards smart cities. Lighting is a crucial element to enhance the connectedness of cities, and will have an important role in how Australia develops its major metropolitan hubs.

Typically, the approach to street lighting has been one size fits all. For example, we know street lighting is often too brightly lit for cars, yet we need bright light for pedestrians crossing the street so they can be seen. The potential in connected technologies means that soon we will see sensors that can alter the lighting to improve the experience for both cars and pedestrians and provide cost and energy efficiencies.

In applying new lighting technologies to spaces we connect them in new ways, seamlessly integrating them into a building or city's IT network. Cities such as Los Angeles, Barcelona and Buenos Aires are leading the way in connected street lighting, paving the way to smart cities. Los Angeles, for example, has upgraded to LED lighting and smart street poles, delivering local Wi-Fi and providing electric vehicle charging capabilities.

With the evolution of technologies across sectors, there is also potential for these connected lighting systems, like the Philips Lighting CityTouch, to integrate with other systems in a building or city. Allowing for new synergies and efficiencies will make use of lighting as an integral part of the new urban digital ecology.

Globally, lighting is an industry where the potential of connected technologies to enhance urban development is being rapidly realised, and 2017 will see pressure on urban development to maintain momentum with this trend.

> LIGHTING CAN BE DESIGNED TO OBSERVE AND RESPOND TO CIRCADIAN RHYTHMS.

Commercial applications

In terms of retail and workplace lighting systems, there are a number of key trends currently facing the industry.

For retail, connected lighting will enrich the customer experience and deliver greater customer insights. Technologies allow lights to emit a code that can be picked up by a smartphone, enabling retailers and operators to track movements and wayfinding through a store or a larger space such as an airport. Connected lighting technologies mean that retailers can grasp a true understanding of the in-store path to purchase.

Within the workplace, these lighting systems add a layer of intelligence to the environment which responds and adapts to people's preferences and needs, enabling personalised and agile workspaces. Outfitted with integrated sensors, each light becomes a point of intelligence that can deliver location-based services, offering the ability to share information on operational status, room occupancy, activity patterns, changes in temperature or humidity and daylight levels.

With sophisticated lighting management software, operators of spaces can monitor and manage the lighting system in real time, while also being able to turn the collected data into actionable insights that can deliver against business objectives.

Personal applications

We have already seen the potential in lighting technologies to create experiences, as evidenced by Vivid Sydney. Looking to 2017 we expect to see more of this, with the audience for events of this nature consistently growing. We may even see a move towards more permanent lighting installations as governments recognise the potential to generate revenue.

On an even more personal level, lighting can be designed to observe and respond to circadian rhythms; it can soothe us, wake us up and make us more focused as required. It can gather data so it becomes more predictive and intuitive, simplifying and streamlining the user experience. We'd expect to see this technology develop even further in 2017 based on personal lighting systems like the Philips Hue.

It's an exciting time for the lighting industry as we work to add value to lighting solutions for businesses and individuals alike. At Philips Lighting, we look forward to continuing to lead the industry in developing and implementing these technologies.

Philips Lighting Pty Ltd
www.philips.com

CASE STUDY

Smart street lighting for Swaziland

The Kingdom of Swaziland has a new smart street lighting solution and sensor network, courtesy of a partnership between gridComm and investment firm Somerset Group.

A developing country with a small economy, Swaziland is flanked by the Republic of South Africa and the Republic of Mozambique. A majority of Swaziland is undeveloped and its economy is highly focused on agriculture, forestry and mining. With these industries only accounting for approximately 13% of the gross domestic product, there is an urgent need to bolster productivity and increase the standard of living.

gridComm's smart street lighting sensory network technology delivers intelligent, eco-friendly lighting to Swaziland, saving energy and money while also limiting carbon emissions. Concurrently, based on the existing street lighting infrastructure, the technology establishes a ready-to-use Internet of Things (IoT) sensory network which can be used to monitor crops, weather and more via data analytics. This will assist Swaziland's farming communities by helping to optimise productivity and increase agricultural output.

The sensory network system is built with hybrid communication technologies comprising a next-generation multichannel OFDMA (orthogonal frequency division multiple access) power line communication (PLC) transceiver (gridComm's GC2200) and a wireless physical layer. gridComm uses its PLC and digital power supply technologies to convert traditional street lighting into energy-aware and remotely managed and monitored web-based networks.

"By deploying gridComm's solution, the practice of sending engineering experts physically out into the field to fix connectivity issues becomes a thing of the past, as they can now be remotely monitored," said Mike Holt, CEO of gridComm.

As the preferred technology for street light control, PLC is more reliable than wireless technologies — particularly low-power radiofrequency technologies — which are more prone to interference in outdoor environments. Because many IoT sensors run on batteries, hybrid power line and wireless communication technology ensures connectivity between these sensors when they are in the vicinity of smart street lights. With gridComm's solution, IoT sensors can be introduced to the network as they are needed. gridComm modules are designed to automatically attach to the nearest gateway without on-site tuning or configuration for true plug-and-play connectivity.

"For a developing country like Swaziland, adopting the right technology solutions is crucial to shaping a sustainable environment," said Henri Thompson, group managing director of Somerset Group, South Africa.

"We envision that gridComm's smart technology will deliver the data analytics needed to boost crop yields and positively affect Swaziland's economic development. We intend to bring gridComm technology and all of its benefits to other countries on the African continent as well," Thompson said.

gridComm
www.gridcomm-plc.com

Eddy current sensors

Bestech eddyNCDT 3001 and 3005 eddy current sensors measure displacement, distance, position, oscillations and vibrations at high speeds of up to 100 kHz. They provide high precision non-contact measurements while staying wear-free in harsh environments.

The product is designed for applications where conventional, inductive displacement sensors often perform at their limits. Due to their compact design, these sensors are increasingly used in applications that have to date only been reserved for inductive proximity sensors. They are well suited to the detection of high-speed processes, operating with a frequency response up to five times higher than inductive sensors. They are able to reliably detect fast movements at up to 5 kHz. Elaborate linearisation procedures during production enable a linearity of 28 μm.

The product consists of sensor, cable and external miniature controller. It can be custom engineered for high-temperature applications up to 180°C. Due to its pressure-resistant, thermally stable and compact design, the sensor is suitable for machine integration. Controller, cable and sensor are pressure-resistant up to 10 bar. It is suitable for high-volume applications and for integration into plant, equipment and machinery.

Bestech Australia Pty Ltd
www.bestech.com.au

HOW DOES GPR TECHNOLOGY ACTUALLY WORK?

Ground-penetrating radar (GPR), also known as ground-probing radar, ground radar or georadar, uses radar pulses to provide images of subsurface locations. It is a reliable, non-destructive means to locate subsurface targets such as cables and rock, and helps to make what could be an extremely difficult job a relatively simple one.

GPR works by using a radio signal with a frequency that is high, usually in the range of 10 MHz to 2 GHz, which is pulsed underground using an antenna. This signal is intended to encounter a variation below the surface, such as a geological structure or a buried object, like a cable. These underground variations can be sought specifically as targets or a general area can be scanned speculatively.

When the signal strikes a target, it is reflected back to the surface. A receiving antenna picks up the returning signal and then records the variations. These are then digitally stored on a surface computer and the time taken for the pulse to get to the target and return to the antenna is measured by a computer. The system interprets the signals that have been reflected back, and this interpretation is then displayed for the individuals conducting the survey on the screen of the unit. This provides an image of the subsurface to the individuals using the system.

GPR technology can be used to provide accurate pictures of specific subsurface objects as well as to map out whole subsurface areas.

GPR waves can travel through a lot of distinct materials. Various kinds of soils, concrete, fill dirt and fluctuating levels of saturation in water all differ in their properties and these affect the radar waves produced. This in turn influences interpretation of the data produced, which will differ depending on the materials encountered by the waves. When the LCD monitor displays the data after scans are conducted, it needs someone with the proper experience and training to interpret them and give a clear explanation of the findings.

This technology is also applied to concrete scanning. To locate objects such as cables, rebar mats and conduits when they are embedded in concrete, a higher frequency system of around 1.6 GHz is used. This penetrates the concrete more effectively and gives a more accurate picture when using GPR technology for concrete scanning. The data can be collected in either simple line scans to determine the thickness of concrete or in a grid format which will produce a map of any targets located in the concrete. Using this method, virtual slices are produced in the picture to determine the depth of the objects and create a 3D map of the image, which further enhances the detail provided. This provides a non-destructive, accurate means to locate targets within concrete structures prior to drilling, cutting or coring.

Subtera
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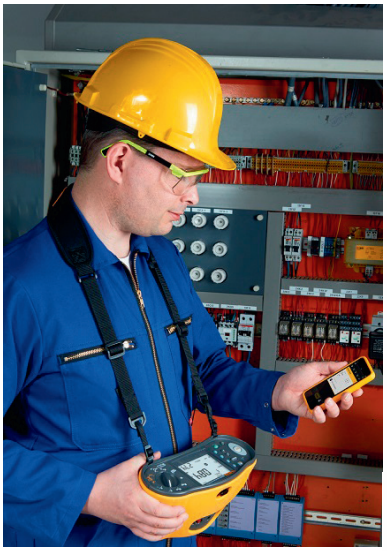


Multifunction installation testers

The Fluke 1660 Series multifunction installation testers put more power in users' hands by quickly and efficiently testing to major local fixed wiring installation regulations.

The top-of-the-range 1664FC model makes it easy to share test results over a smartphone using Fluke Connect. In addition, the 1664FC features the Insulation PreTest function that detects if an appliance is connected to the system under test, and will stop the test while also providing a visual warning. Insulation PreTest helps avoid accidental and costly damage to peripheral equipment, protecting appliances that may be inadvertently connected to the system under test.

The series is designed to verify insulation resistance, loop impedance, resistance of the earth connect, resistance to earth, RCD performance in TT and TN systems, phase sequence, loop/line impedance and RCD tests in IT systems.

RS Components Pty Ltd

au.rs-online.com

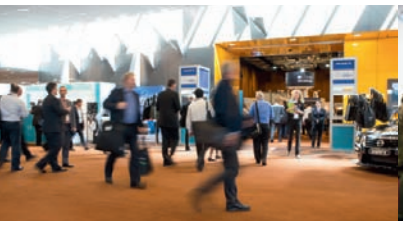
COMMS 2017 CONNECT

Events for critical communications users and industry

Important dates for your diary ...

Sydney
7-8 June 2017
Sydney Showground

Melbourne
21-23 November 2017
Melbourne Convention and Exhibition Centre



Comms Connect WELLINGTON

11-12 April — Te Papa Museum

In association with the *Radio Frequency Users Association of New Zealand* (RFUANZ), Comms Connect Wellington, a two-day conference and exhibition, returns to Te Papa Museum on 11-12 April, 2017.

A series of case studies, technical presentations and workshops are supported by an extensive exhibition of local and international suppliers and manufacturers. Day one sees networking drinks on the exhibition floor followed by the very popular annual RFUANZ Gala dinner and awards night.

By registering to attend this year's conference and exhibition in Wellington, you'll hear what the experts have to say, advance your understanding of critical communications and the land mobile unique industry event — do not miss this once-a-year opportunity!

Registration Open — visit www.comms-connect.co.nz to register or for more information.

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11April – Te Papa Museum, Wellington
Book your tickets with your conference package or visit www.rfuanz.org.nz

For further information regarding speaking or sponsorship at Comms Connect events in 2017 please
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MONITORING EMF POLLUTION

While there is a lack of information on the precise relationship between electromagnetic fields and health effects, area monitors promise to further scientific studies in this comparatively new field

Electromagnetic fields (EMF) emanate from the earth's magnetic field, from lightning and from the sun itself. In contrast with this naturally occurring radiation, man-made sources of artificial EMF provoke increasing public discussion, because this EMF pollution is thought to be damaging to health. Peace of mind can be achieved with measurement results, with transparent proof of round-the-clock EMF monitoring. The best example of this idea is the effective monitoring of particulate matter and nitrous oxides provided in many built-up areas.

Among the general public, the vague yet serious idea that EMF pollution is damaging to health has taken root. Right now, the question of the possible long-term effects of low-strength fields is under intensive investigation, and the whole subject has not yet been fully explained by any means. The continuing debate over the potential damage to health caused particularly by the increasing proportion of such fields due to cellular communications has left many people feeling unsure.

From the purely scientific point of view, the electromagnetic fields present in the domestic and everyday environment are well within the stringent international limit values for protection from damaging environmental effects.

EMF smog is unsettling

There are two main factors causing irritation among the public. Firstly, the news is full of reports that mobile communications networks are getting denser. Along with satellite, TV and radio transmitters, ever more powerful services, WLANs and local wireless networks are transmitting more and more data using radio frequencies.

Secondly, there seems to be a lack of information about the precise relationship between EMF and the biophysical or health effects.

Measurement brings certainty

Narda Safety Test Solutions (STS) has developed high-quality 'area monitors' (AMs) as a tailor-made measurement solution for this problem. They provide results that are as precise as they are reliable. EMF specialists have put their unique expertise and more than 80 years of experience in this challenging field into the development of these systems. This is particularly important because the various EMF situations that arise each call for their own particular detailed knowledge of the distinctive technological characteristics. Only the practical application of this deep-rooted and specialist know-how can eliminate specific sources of error and thus the possibility of distorted measurement results.

The principle: particulate matter monitoring

The idea behind the AM can be compared in many respects to the principle of particulate matter and nitrous oxides monitoring found in many high-traffic city centres. Measuring stations set up in urban areas by environmental agencies (the UBA in Germany) measure the air quality several times each day. The latest results can then be viewed by the general public soon after the measurements on the agency website under the heading of current air quality in the form of colour-coded maps, graphs and tables.

The general public were already sensitised to the dangers to health caused by particulate matter by the end of the 1990s as a result of the increasing traffic levels and the latest medical knowledge. Over the years since then, they have come to appreciate the peace of mind and acceptance that ready access to such measurement results can bring. If the limit values are exceeded, the system immediately reacts with an alarm that can result in an appeal to reduce automobile use or even a local traffic ban.

> PROVIDING REGULAR RECORDS OF EMF MONITORING CAN ALSO SPEED UP APPROVAL FOR NEW INSTALLATIONS.

Security and transparency at sensitive locations

These robust AMs monitor the field situation continuously, 24/7. This is particularly important for locations such as kindergartens, residential areas or busy public spaces, perhaps close to cellular communications transmitter masts. Quite often it is these clearly visible high-rise EMF sources that become the focus of public fears about invisible EMF pollution.

In addition to the local data recording, a cellular modem enables wireless transmission of the field strength values to an online platform, where they are permanently available in real time for viewing by the general public.

All field data is recorded in accordance with the internationally recognised standards of the special UN organization, the ITU (International Telecommunication Union). And if a violation of the limit values is actually detected, an alarm is triggered automatically.

Who uses these measuring stations?

The operators of base stations, cellular network providers, as well as political and administrative representatives are at the forefront of those using AMs. They are generally motivated by the desire to provide scientific evidence to reduce the doubt, scepticism and anxiety surrounding possible health dangers caused by electromagnetic fields. Providing regular records of EMF monitoring can also speed up approval for new installations. Routine reports from AM systems can provide peace of mind and lift this otherwise emotional debate to a more constructive level based on solid factual evidence.

A further important application for AMs is for scientific studies, field trials and surveys performed by universities, colleges and other institutes in this comparatively new field.

Performance and equipment

Narda offers two AM models: AMB - 8059 (Broadband Application) and AMS - 8061 (Selective Application). Taken together, they cover the entire range of applications, starting with check measurements close to high-voltage lines and transformers, and right through to monitoring modern communications technology such as base stations, broadcast transmitters and satellite stations.

Both AMs can record and save EMF results round the clock, powered independently and without any need for local intervention, as they are equipped with a solar panel as power supply. The built-in rechargeable battery gives reserves of up to 80 days when light levels are low.

Among other things, the EMF Observatory software allows users to call up all the field strength values from any location at any time using a PC. It is also possible to form an individual, wide area, web-based continuous monitoring system from several AMs.

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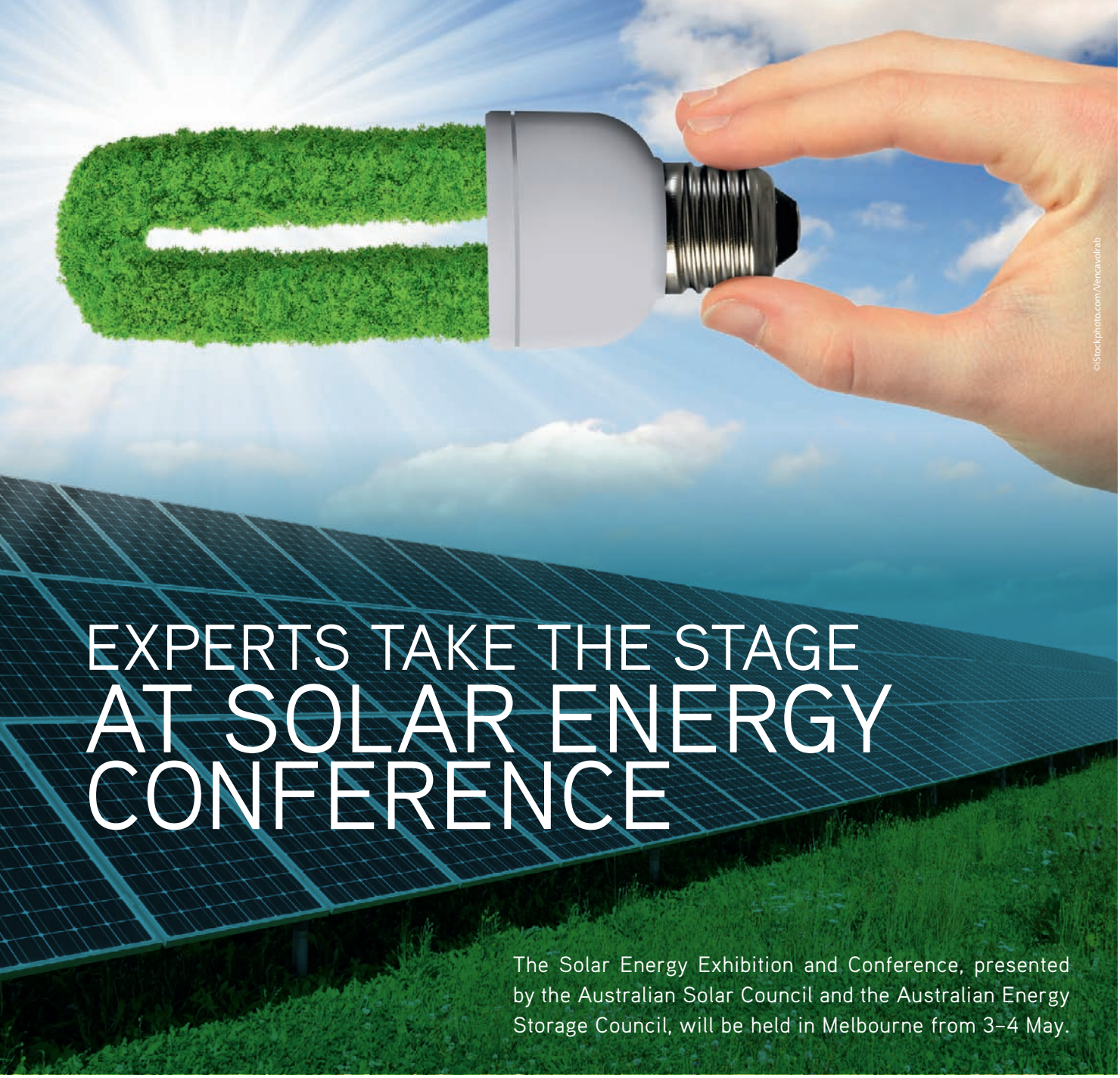

EXPERTS TAKE THE STAGE AT SOLAR ENERGY CONFERENCE

The Solar Energy Exhibition and Conference, presented by the Australian Solar Council and the Australian Energy Storage Council, will be held in Melbourne from 3–4 May.

The rapidly emerging storage sector is universally described as a game changer, as well as a smart, dynamic and disruptive force. It has attracted innovators, entrepreneurs and thought leaders keen to take part in the clean energy revolution, many of whom will be seen and heard on the podium at the conference.

"The Solar and Energy Storage Show presents a great opportunity for delegates to expand their network, meet key industry decision-makers and find new clients," said John Grimes, chief executive of the Australian Solar Council.

"Because we are industry insiders, we bring together the very best conference presenters. We know what is topical, engaging and useful for our delegates. We are committed to the best solar installer professional development training available anywhere in the world."

There will be three free conference streams, including applied energy storage, policy and market, and professional development. These are designed to present the latest in technology, policy, projects, regulations, industry analysis, forecasts and project financing.

Applied energy storage hot topics include technology breakthroughs, smart energy business models, energy storage, real-world data, battery testing performance results, microgrids and fringe-of-grids, Internet of Things and big data, making commercial solar and energy storage work, and 'bringing it all together' through energy management.

Policy and market hot topics include state and federal government policy, unlocking project finance, large-scale solar and storage, energy market reform and global developments.

A range of more than 100 expert speakers will educate and inform attendees with regards to every aspect of the exciting changes underway.

Among the invited guest speakers are Josh Frydenberg, Mark Butler, Lily D'Ambrosio, John Hewson, Simon Corbell, Mike Cleary, Ivor Frischknecht, Christine Milne and Mark Bailey.

Complementing the conference will be the industry exhibition that features the latest, and arguably the smartest, solar and energy storage products and services from Australia and overseas.

The event is suitable for battery and panel manufacturers, inverter innovators, commercial and residential PV installers, large-scale developers, technicians, trainers, trading certificate agencies, policymakers, bureaucrats, builders, architects, consultants, academics and more.

The Solar Energy Exhibition and Conference will be held from 3–4 May 2017 at the Melbourne Convention and Exhibition Centre.

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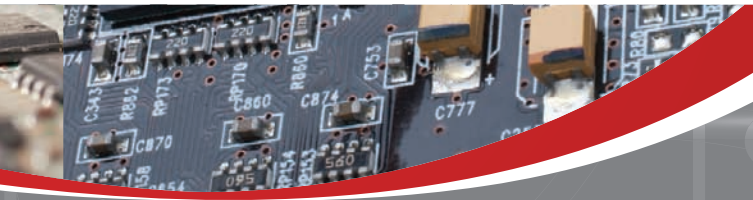

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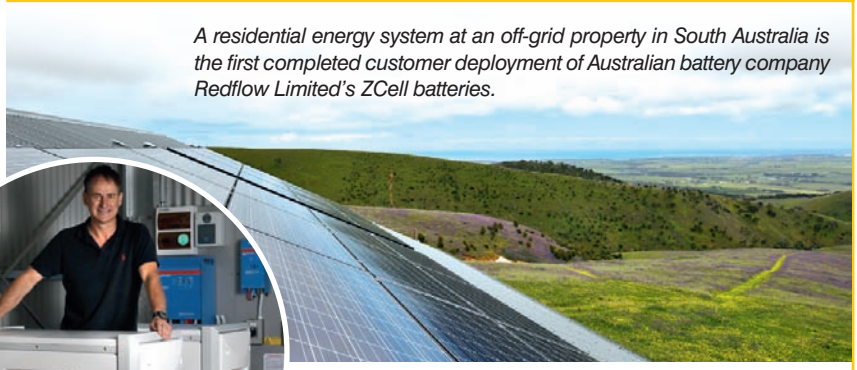
CASE STUDY

Getting off-grid



A residential energy system at an off-grid property in South Australia is the first completed customer deployment of Australian battery company Redflow Limited's ZCell batteries.

Previously, mains power was available in only one corner of the hilly 100 ha Willunga property owned by the family of Alan Noble, engineering director for Google Australia and New Zealand.

Noble said extending mains power further across the hilly terrain would be substantially more expensive and less flexible than the off-grid solution with two ZCell batteries, which can store 20 kilowatt hours (kWh) of energy, powered by solar panels on the roof of a large implement shed.

The batteries, which were integrated with 12 Australian-made Tindo Solar panels and two Victron battery inverters by ZCell installer Off-Grid Energy Australia, continued working uninterrupted during the recent storm-caused power failure that blacked out the rest of South Australia.

Noble said he had installed the ZCells to provide him with flexibility, safety and affordability.

"We wanted the flexibility to build anywhere on the site without having overhead powerlines," he said.

"Secondly, we have power when we need it. If there is a bushfire here, we can power our pumps properly, whereas electricity distributor SA Power Networks has a policy of actually shedding power during high bushfire-risk days, so precisely when you need the power, they shut it down. Without the ZCells, we'd be running around trying to fire up generators during hot days, which is not practical.

"Also, we want to make this property as automated as possible. I want it so we can move water automatically, based on the power to turn on pumps, to turn on sprinklers and turn on any fire defences. We can only do that if we have our own on-site power.

"Last, but not least, I really like the idea of being self-sufficient. The way I see it, grid power is getting more and more expensive, so this is an investment that in the long term is going to be worth it," he said.

Noble said he had chosen Redflow's ZCell zinc-bromine flow batteries, rather than lithium-based alternatives, for two reasons. "Firstly, they can cope with a high-heat environment, which is not true of a lot of batteries.

"It does get hot here in the summer, as the shed is not air-conditioned. Also, getting back to the earlier point about having power when you need it most, on really hot, high-risk bushfire days, I want to make sure my batteries are working on those extreme-heat days.

"The other benefit is that you can have them just sitting there. Conventional batteries don't like being fully discharged. Longer term, that's less of an issue, but over the next couple of years while we're not living here full-time, it's nice to know that I'm not going to destroy the batteries if they're fully discharged. They're also relatively compact batteries too, so they don't take a lot of space.

"Also, ease of use is a nice factor with ZCell. It's all very easily managed through the BMS (Battery Management System), both on-site and through the internet. I'm looking forward to setting up my rules and have everything automated so it's just working quite happily.

"Finally, I kind of like the idea of doing my part to support Redflow as an Australian company, which was also the reason I chose photovoltaics from Tindo Solar, which is based in Adelaide," Noble said.

Redflow Limited
www.redflow.com

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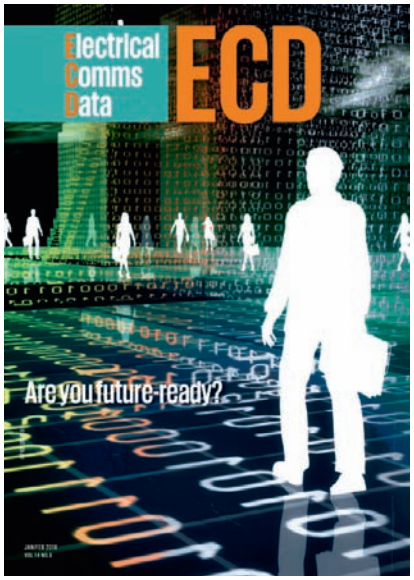

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