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How much surveillance is too much?

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MAY/JUN 2017
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FROM THE EDITOR

Australia's power landscape is changing at a rapid pace. Solar, battery storage, wind and gas are disrupting the network and changing the way we operate and manage the grid. Our grids need to become more 'intelligent' to supply electricity in an efficient, secure and timely manner.

Redback Technologies Director Luke Abercrombie believes Australia is in a unique position to develop the tools and technology needed to create the next-generation grid — to lead the solar energy revolution and to do it right. "To do this, we need real-time intelligence from storage management solutions that can integrate seamlessly into traditional grid systems. While energy used to be a simple input and output approach, this is no longer feasible due to the scale, spread and demands of the grid." To read his insights on how the IoT is affecting the renewables industry, go to page 20.

Dynamic grids may be the answer to our future energy requirements, but they also raise questions about energy security. The Australian Energy Market Commission recently pointed out that the rapid uptake of wind and solar and the retirement of old synchronous power stations weakens the power system. In March, the AEMC released a directions paper recommending mechanisms to facilitate the ability of the power system to accommodate new technologies, and called for public submissions on a new plan to strengthen power system security. The government is working on a potential plan to strengthen security but is it a classic case of too little, too late?

Finally, I'd like to extend a big thank you to the outgoing Editor Dannielle Furness for doing a wonderful job editing ECD in my absence.

Best regards,

Mansi Gandhi – Editor
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PUTTING THE GENIE BACK IN THE BOTTLE

HOW MUCH SURVEILLANCE IS TOO MUCH?

Dannielle Furness

The increasing use of CCTV, sensors, drones, monitoring and mass data collection across urban landscapes means human movement is being tracked more than ever before. For the data and comms industry, increased connectivity equals more opportunity. But when it comes to the individual, where is the line between optimised security and an unstoppable loss of privacy?

On the surface, living in the age of advancing technology is fantastic — new developments provide short cuts for mundane tasks like shopping, they remove the pesky middle man in areas such as recruiting and they've completely changed the way we consume television, movies and music. We rely on GPS technology to get everywhere and we are happy to let apps utilise complex algorithms to make restaurant suggestions based on current location and past preferences.

In short, when there's a perceived positive outcome, or when we initiate the process ourselves, the average person seems happy to surrender a degree of privacy to the tech giants that increasingly rule our world. When such tracking technology is thrust upon us, however, it may not be so well received.

Every move you make... I'll be watching you

The extensive use of CCTV in our cities has proven advantageous in recent years, with the police utilising captured images for everything from tracking the last known movements of missing persons and calling for public assistance to supplying indisputable evidence of a crime. Every time you use an ATM, ride in a taxi, pass by or enter a retail store, use a major thoroughfare, cross at a busy CBD intersection, enter licensed premises or visit a landmark, your image is being captured, with the inference that any wrongdoing will be uncovered and action taken.

As the oft-quoted adage goes, if you're not doing anything wrong, you have nothing to hide, right? This may be so in the case of retrospective policing, but it increasingly looks like this type of technology will be used to enable law enforcement of a more proactive and predictive kind... but more on that later.

Street surveillance aside, thanks to the ubiquitous smartphone we are allowing our movements to be tracked at a micro level every day. Rather than being an 'opt-in' service, users generally need to turn off tracking and reporting functionality within map and GPS applications on their devices. While it's no secret — many of these apps push out alerts to actively encourage users to upload information about places they have recently visited (or passed by) for the benefit of others — it still seems like an unreasonably zealous use of the technology. Again, doing nothing wrong, then nothing to hide... and yet, why implement a policy of opt out rather than opt in? It seems to infer that objection, rather than endorsement, is the less common attitude.

We've had more than two decades to get used to the internet and all it enables, including the fact that that IP tracking makes it easy to discern what we've looked at, how long we've looked at it, purchases we've made, songs we've listened to and movies we've downloaded (by legitimate or illegal means), all of which we've accepted as part of the contract for a more connected life. Back when our searching was confined to a desktop computer, things were different, but now our movements can be pinpointed with alarming accuracy. Our digital footprint is becoming as detailed as our DNA.

Tracking capability is fantastic when you've lost your phone or need to find friends in a large crowd, but when the same functionality is available to someone with less noble motives — stalkers, for example — all of a sudden, the 'benefits' become the exact opposite.

Every journey begins with a single step

The incremental nature of ongoing privacy encroachment means we are stepping ever closer to full monitoring without too much forethought. In December last year, ride-sharing service Uber announced that its tracking functionality now extended to five minutes beyond the drop-off, regardless of whether users had the app open or closed. It said the move would improve pick-ups, drop-offs, customer service and enhance safety, though it's not immediately clear how tracking movement post-trip would help achieve these goals. While users took to social media in droves vowing to never use the service again, for many the convenience undoubtedly outweighed the objection and these users now willingly provide access to private information in the name of a cheaper, cash- and card-less alternative to taxis.

By accepting such small changes without argument, we are ostensibly headed for a scenario that won't be easily undone. How can we ever argue against it when we've shown nothing but tacit compliance along the way?

MILITARY FORCES, INTELLIGENCE AGENCIES AND LAW ENFORCEMENT ARE INCREASINGLY TAKING TO THE SKIES TO KEEP AN EYE ON THINGS AND IT SEEMS THAT LEGISLATION THAT GUIDES THE USE OF THIS TECHNOLOGY HASN'T QUITE CAUGHT UP, WHICH HAS BEEN A CAUSE FOR CONCERN FOR AN INCREASING NUMBER OF PRIVACY GROUPS.

Eyes up

We've well and truly entered the age of the drone and it's not just the weekend warriors taking aerial shots over beaches and real estate agents seeking to capture a birds-eye view of properties.

The Civil Aviation Safety Authority (CASA) developed a series of guidelines for the use of remotely piloted aircraft (RPA). In short, if you are flying for fun — ie, not receiving any commercial gain — you'll need to adhere to a few rules:

- Your RPA must remain within your sight-line and you have to be able to see it with your own eyes, meaning not through binoculars or telescopes.
- You can't fly at night, through cloud or through fog.
- You can't fly closer than 30 metres to vehicles, boats, buildings or people.
- You can't fly over populous areas including beaches, parks or sporting ovals.
- You can't fly higher than 120 metres above the ground within controlled airspace (most Australian cities).
- If you are operating within a 5.5 km radius of an aerodrome or helicopter landing site, you must not operate on the approach or departure path, within the movement area or create a hazard to aircraft that may be using those areas.

If you do plan to earn money from your endeavours, there is a completely different set of rules to adhere to and you may need to apply for either a remote pilot licence (RePL) or RPA operator's certificate (ReOC). There are also additional restrictions based on the weight of the vehicle.

While the rules are straightforward, you'll see direct contravention of these laws every day in any Australian city, particularly on weekends. From a privacy perspective, the issue is that the average drone is now capable of capturing images — be it either stills or video footage — of anything in its path. To the average person, privacy is a bit of a grey area anyway; a tourist is free to take a photo of Bondi Beach, but zooming in and focusing on individuals is pretty much verboten. If you are a regular beachgoer or spend time at sites or attractions that draw high tourist numbers, then you probably feature in hundreds, if not thousands, of candid shots across the globe — albeit as an indistinguishable speck in the crowd, rather than as a single, identifiable individual.

In an article published in 2016 (see it here: www.4020.net/words/photorights.php), photographer and solicitor Andrew Nemeth examines many of the legal issues surrounding street photography in Australia, along with comparisons to some of the legislative boundaries in other countries.

Nemeth cites various legal cases, along with specific state and federal laws relating to voyeurism, consent, privacy, defamation, copyright and trademarks. There is also an examination of cases in which local councils have attempted to ban photography outright (often as a result of the unauthorised photography of children) but the article serves to illustrate just how complex the situation is... and all of this before we even factor in the use of unmanned aerial vehicles or drones to capture these images.

Tracking down a drone pilot may prove be a little trickier than approaching a human photographer and presumably no-one is actively policing UAV and RPA use in public spaces on a daily basis. Unsafe or suspected illegal activity can be reported via the CASA website, which is all well and good, but what about when the guys that should be policing it are the ones using the technology?

The long(er) arm of the law

Military forces, intelligence agencies and law enforcement are increasingly taking to the skies to keep an eye on things and it seems that legislation that guides the use of this technology hasn't quite caught up, which has been a cause for concern for an increasing number of privacy groups.

Back in 2013, Michael Salter, Lecturer in Criminology at Western Sydney University, penned an article for media outlet *The Conversation* titled 'Are police drones just toys for the boys?', in which he questioned the value of drone use in the area of law enforcement. At the time, police in South Australia and Queensland had signalled their intent to deploy drones for policing purposes. Salter suggested that this type of technology was more suited to military operations than any form of law patrol, offering the evidence that two years of police drone use in the UK had resulted in only a single arrest.

Again on *The Conversation*, Gbenga Oduntan, Senior Lecturer in International Commercial Law at the University of Kent, sees a bigger issue — that 'The age of drones has arrived quicker than the laws that govern them'.

Oduntan says that a plethora of national and international laws will need to be revised including "those governing cyber-security, stalking, privacy and human rights legislation, contract and commercial law, even the laws of war". This will no doubt take years to straighten out, years in which we (as a society) will continue to accept even more creepage when it comes to privacy.

When many become one

The rise of smart cities will facilitate a move towards more proactive and predictive policing — things like traffic management for example. It's not beyond the imagination to see a time where compulsory GPS tracking in vehicles is implemented. While this would prove useful in relaying traffic information for the purposes of rerouting and accident prevention, the same technology could be easily used to record speed and location information and to report back in the event of a traffic infringement. Give with one hand... take with the other. While there is obvious benefit, there is potential for additional loss of privacy through such continuous tracking and monitoring.

Pre-emptive policing requires analysis of the behaviours of many individuals in order to predict — monitor the masses and you'll eventually be able to determine likely outcomes given certain conditions. Much like Netflix reviews what you've already watched in order to make recommendations, law enforcement needs to know what environmental aspects are likely to generate specific results. While few could argue that prevention is not better than cure, are we really prepared to give up any last shred of anonymity for the greater good?

One thing is for certain, now we've let that genie out, we'll have a hard time getting it back in the bottle.

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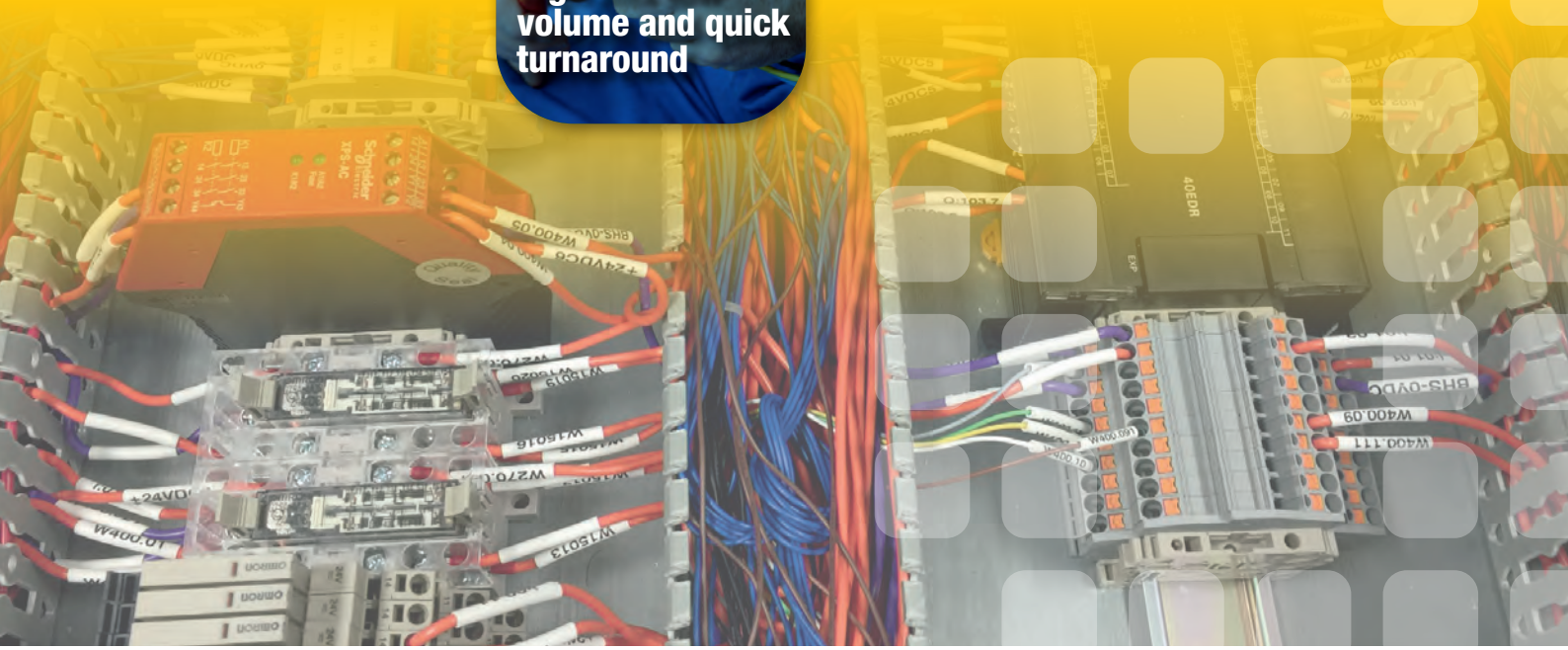

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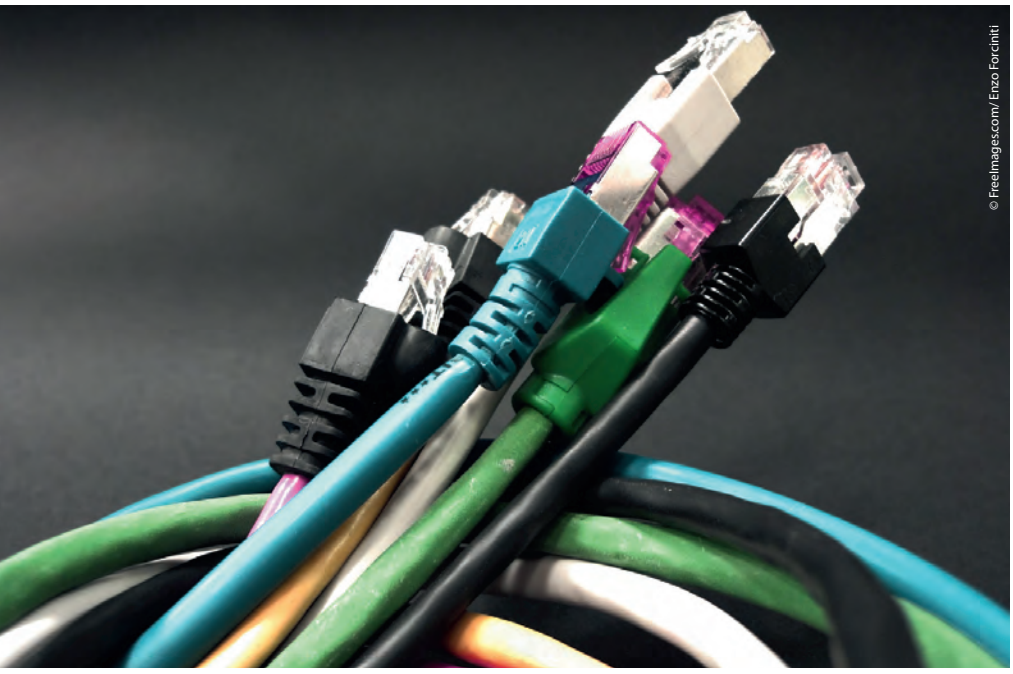
ACCC CABLE CARTEL CLAIMS DISMISSED

The Federal Court has dismissed proceedings brought by the Australian Competition and Consumer Commission (ACCC) against electrical cable manufacturers, wholesalers and their executives for alleged cartel conduct.

The ACCC initiated proceedings in December 2014 and alleged that in 2011 at a meeting of the Electrical Wholesalers Association of Australia, the respondents made and gave effect to an arrangement which had the purpose of fixing prices, preventing, restricting or limiting the supply and acquisition of electrical cable, and allocating customers. In particular, the ACCC alleged this arrangement included the following provisions:

- The manufacturers would increase their cutting services fee to $85 per length cut for electrical cable and the wholesalers would not object to those fees.
- The manufacturers would introduce a minimum order value (MOV) fee of $250 for orders of electrical cable less than $2500, and the wholesalers would not object to those fees.
- The wholesalers would not reduce the volume and/or value of electrical cable that they acquired from the manufacturers.

The ACCC also alleged two respondents engaged in bid rigging in response to a request for proposals from Caltex for the supply of electrical cable for an upgrade of the Kurnell Refinery in Botany Bay, NSW.



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Justice Beach dismissed all allegations against:

- Australia's two largest electrical cable manufacturers, Olex and Prysmian;
- electrical cable wholesalers, Rexel and Lawrence & Hanson;
- an industry association, the Electrical Wholesalers Association of Australia (EWAA);
- a senior executive from each of Olex, Prysmian, Rexel, and Lawrence & Hanson;
- two senior industry executives who attended meetings representing the wholesale buying group, Gemcell.

Justice Beach also awarded costs in favour of the respondents.

ACCC Chairman Rod Sims said, "The ACCC is carefully considering this judgment. Pursuing cartel conduct, which is so detrimental to the competitive process, will always be an enforcement priority for the ACCC."

© Image by Wilhelm Henning

TREOTHAM AUTOMATION PARTNERS WITH LAPP GROUP

Treotham Automation has been appointed as an authorised Australian distributor of Lapp Group cable and connection technology products.

The company says customers across the manufacturing and industrial sectors will benefit from access to Lapp's innovative solutions combined with its own electrotechnical engineering experience, delivering tailored solutions to meet today's challenges.

"Having been in the automation industry for over 30 years both in Sweden and Australia, I have always seen the Lapp Group as the frontrunner in new product development and technology for flexible cables and cabling accessories," said Mikael Paltoft, managing director of Treotham Automation.

"We are very excited for this opportunity to work with a world-leading company like Lapp and have no doubt that we will continue to grow their brand presence with customers across Australia," Paltoft said.

NHP FOUNDER NIGEL PECK DIES AT 89

Nigel Hugh Peck, the founder of NHP, has died at age 89.

The National Electrical and Communications Association (NECA) acknowledged Peck's contribution to the electrical contracting industry over almost half a century. "Nigel founded NHP in 1968 and went on to spend 45 years at the helm. NHP is one of the most respected brands in the industry." Our thoughts are with his family — and all of those who worked with him at NHP, and across the industry, said NECA CEO Suresh Manickam.

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NEW SYSTEM IDENTIFIES ELECTRICAL APPLIANCE 'FINGERPRINT'

CSIRO will partner with start-up Ecocentric under a licensing and research agreement to develop the 'Numen' energy system, which recognises the electrical 'fingerprint' of individual appliances. The aim is to increase energy efficiency in buildings.

Numen brings together a building's total energy signal, identifies the appliances present and then separates out appliance-specific consumption data on how much energy the appliance is using. Developed collaboratively using CSIRO algorithms, Numen improves the processes involved in using and conserving energy in homes, commercial buildings and industrial facilities.

Where conventional smart meter systems record low-resolution total energy use (generally for the purpose of billing), CSIRO-developed 'cognitive metering' technology identifies individual appliances using a unique signature of high-frequency electrical data. Advanced machine learning algorithms are then employed to measure appliance power consumption without them needing to be metered individually.

Numen uses cloud-based technology to monitor energy consumption in real time, allowing unprecedented insights into the operation of critical machinery. The system will allow automatic identification of metered electrical devices, facilitate better understanding and prediction of energy use patterns, and predict faults for pre-emptive maintenance.

CSIRO Energy Director Karl Rodrigues said the system had significant potential to improve energy intelligence.

"The energy domain is experiencing an increased focus in the megatrend 'digital immersion', affecting both domestic and commercial energy consumers.

Ecocentric CEO Tim Bray is excited by Numen's commercial prospects, as well as its potential to lower energy use in the built environment.

Under the agreement, Ecocentric will obtain a licence from CSIRO to the cognitive metering technology and work with CSIRO for a period of six years to further refine the system.

PRYSMIAN SUPPLIES HIGH-DENSITY SOLUTION FOR HONG KONG

Prysmian Group has delivered what it says is the densest and highest fibre count underwater optical cable ever made to provide broadband connection between Siu Sai Wan on Hong Kong Island and the Tseung Kwan O (TKO) Industrial Estate data centre hub located on the mainland.

A FlexTube cable comprising 1728 optical fibres was successfully deployed by Australian telecommunications provider Superloop for its TKO Express project. Prysmian says the previous record of 720 fibres was set in 2014.

"We are extremely proud to be part of such an amazing project, to contribute to history by designing and making something that perfectly fits the need of our customer. Connecting Hong-Kong is connecting the world," said Philippe Vanhille, Senior Vice President Telecom at Prysmian Group.

Frederick Persson, CEO at Prysmian Australia, said, "It required a strict coordination of resources and processes. We wanted to make sure our customer tight deadlines were achieved. We understood the significant, positive impact this cable had to their business in Hong Kong and we have delivered."

The base 1728f FlexTube cable was manufactured in the company's factory in Calais, then airfreighted to Australia to apply additional layers of moisture barriers and aluminium tape at Prysmian's Dee Why factory premises. To ensure that the cable was up to the rigours of being buried up to 5 m into the Hong Kong seabed, double armouring layers of wrapped steel wires were applied. A final sheath was applied at the Group's Liverpool plant, located west of Sydney. The project commenced over two years ago with the first design of the cable. The manufacturing process took almost six months, shipping the cable to Hong Kong early last December.

"Prysmian has been able to manufacture the densest and most compact underwater cable ever made thanks to the cooperation between local and overseas Prysmian affiliates, combined with our specific technical requirements," said Matt Whitlock, COO at Superloop.

"Seeing the cable being manufactured in France, processed in two different plants in Australia and then transported on a plane to Hong Kong was simply fantastic. Prysmian has proven its ability to master the engineering challenges of submarine cable construction and installation and then to deliver a 15 t drum on time," Whitlock said.

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VIRTUALISATION TURNS UP HEAT ON DATA CENTRE CONTRACTORS

Andrew Kirker, General Manager - Datacentres

Squeezing energy efficiencies out of modern data centres can create unintended hot spot issues.

Virtualisation was seen as the great energy saver in the data centre, yet for electrical contractors it has thrown up an unexpected problem — electrical and cooling hot spots. Hot spots occur when servers are installed and grouped in high-density configurations, and when an unexpected computation load is placed on specific needs.

While temperature management and physical server configuration is a core focus for data centre managers, minimising hot spots has profound implications for electrical contractors. Increased likelihood of branch circuit overload, unforeseen stresses on energy redundancy systems and increased power for cooling systems all need to be considered before rolling out a data centre refresh.

Because of these concerns electrical contractors need to work very closely with data centre managers when undertaking a new install or significant refresh. Electrical contractors need to be aware of the problems and the energy mitigation strategies that are critical in dealing with hot spots in a virtualised server environment.

The rise of high density

While virtualisation may reduce overall power consumption in the room, virtualised servers tend to be installed and grouped in ways that create localised high-density areas that can lead to 'hot spots'. This cooling challenge may come as a surprise to some given the dramatic decrease in power consumption possible today. However, as a physical host is loaded up with more and more virtual machines its CPU utilisation and power draw increases. Virtualised machines (VMs) also require more processor and memory resources, which again increase power consumption.

The solution: If an existing cooling infrastructure is not sufficient for a high-density environment, there are a few approaches that can be applied. One of the most common is to simply 'spread out' the high-density equipment throughout the data centre floor rather than grouping it altogether. This approach does have its drawbacks though, including increased floor space consumption and higher cabling costs.

A more efficient approach may be to isolate higher density equipment in a separate location from lower density equipment. This would involve consolidating all high-density systems down to a single rack or row(s) of racks. Dedicated cooling air distribution, row cooling and/or air containment could then be brought to these isolated high-density pods to ensure they receive the predictable cooling needed at any given time. This approach enables maximum density per rack and also offers a solution for organisations that require high-density equipment to remain co-located.

The impact on power usage effectiveness (PUE)

A widely touted benefit of virtualisation has been reduced energy use and costs as a result of physical server consolidation. And,

indeed, these savings are often not trivial. Fully virtualising an environment could produce savings upwards of 50% in energy consumption. In this scenario, compute capacity often remains the same or is even increased while energy use drops sharply. So why is it then that the most commonly used metric for data centre efficiency, PUE, often worsens after server consolidation takes place? Some suggest that the metric itself is deficient, but we need to remember that PUE is designed to measure the efficiency of a data centre's physical infrastructure (ie, power and cooling), and not the IT compute power efficiency.

The issue is that if power and cooling infrastructure is left exactly as it was before virtualisation was implemented, then there will be unused power and cooling capacity, known as 'fixed losses'. And as the IT load shrinks (eg, from consolidation) these fixed losses become a higher proportion of the total data centre energy use, worsening PUE.

The solution: The simple answer is that power and cooling infrastructure must be right-sized to the new overall load. This will not only improve efficiency but directly impact the electric bill by reducing the power consumed by unused power and cooling capacity.

This approach is admittedly difficult to implement for an existing data centre, which instead may benefit from actions such as orientating racks into separate hot and cold aisles or removing unneeded UPS power modules for scalable UPSs.

> FULLY VIRTUALISING AN ENVIRONMENT COULD PRODUCE SAVINGS UPWARDS OF 50%.

Dynamic IT loads

Virtualised IT loads, particularly in a highly virtualised, cloud data centre, can vary in both time and location. To ensure availability in such a system, it's critical that rack-level power and cooling health be considered before changes are made. Failure to do so could undermine the software fault tolerance that virtualisation brings to cloud computing.

In some ways, the increasingly automated creation and movement of VMs helps make a virtualised data centre more fault-tolerant. If a software fault occurs within a given VM or a physical host server crashes, other machines can quickly recover the workload with a minimal amount of latency for the user. Ironically, however, this rapid and sudden movement of VMs can put these IT workloads at risk by exposing them to power and cooling problems that may exist.

The solution: Data centre infrastructure management (DCIM) software can ensure safer automated movement of VMs, but the risk of manual human intervention must be removed. This can be achieved by automating both the monitoring of DCIM information (available rack space, power, and cooling capacity and health) and the implementation of suggested actions.

Also, it should not be forgotten that IT policies related to VM management need to be constructed so that power and cooling systems are considered. Policies should set thresholds and limits for what is acceptable for a given application or VM in terms of power and cooling capacity, health and redundancy.

Lower redundancy requirements

A highly virtualised data centre designed and operated with a high level of IT fault tolerance may reduce the necessity for redundancy in the physical infrastructure where multiple sites or zones are utilised. This effect could have a significantly positive impact on data centre planning and capital costs.

The solution: To take advantage of these benefits, those planning to build a new data centre using '2N or 2N+1' redundant power and cooling systems could perhaps consider building with reduced redundancy levels and leveraging zone or site based redundancy instead. In this scenario, active-active or fail-over can occur at the software layer. This would significantly reduce capital costs and simplify the design of the infrastructure. Before making these types of decisions, IT management systems and policies should be reviewed to ensure they are capable of providing the level of service and fault tolerance that permits having less redundancy in the physical infrastructure.

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TAX CUTS TO BENEFIT SMALL AND MEDIUM ELECTRICAL CONTRACTORS

The government has secured a cut to the company tax for small and medium Australian businesses.

The move will benefit around 3.2 million small and medium Australian businesses, employing over 6.5 million workers.

Companies with a turnover of less than $10 million will receive a 2.5% reduction in their tax rate, from 30% to 27.5%, this financial year. The cut will be extended to business with a turnover of less than $25 million in 2017–18 and up to $50 million in 2018–19.

The National Electrical and Communications Association welcomed the cuts.

"NECA welcomes these company tax cuts as a win for the electrical contracting sector — an industry where up to 90% of businesses fall into the small and medium-sized business category," said NECA CEO Suresh Manickam.

"Company tax reduction is a critical step to assisting the growth and competitiveness of our industry, allowing our businesses to create additional employment opportunities. NECA has been on the record, calling upon the government to set a guidance and future strategy for the Henry Tax Review recommendation to reduce the company tax rate to just 25%.

We commend those who were willing to work together in order to improve the lot of Australia's electrical contractors — particularly Senator Cormann, the Minister for Finance, who led the negotiations, said Manickam.

COMPETITION THE KEY TO ENERGY FUTURE

The clean energy industry has welcomed a new inquiry into electricity prices announced by the Turnbull government, which should ensure retail markets are competitive and that consumers looking to manage their own power bills through solar and battery storage are being treated fairly.

Clean Energy Council Chief Executive Kane Thornton said many households and businesses had installed their own solar power systems to combat high prices, but some are sceptical that competition is working fairly for them.

"The energy sector is changing rapidly and consumers should feel fully empowered to take control of their bills through technologies like solar, batteries and better energy efficiency. But currently the market rules in some regions mean that they don't get the full value from technologies like energy storage, for example. This needs to change," Thornton said.

"Clearly a competitive retail market is important, and retailers of solar and battery systems must be able to compete on a level playing field with traditional electricity retailers.

"Electricity prices are causing concern across the country, and it makes sense to give the Australian Competition and Consumer Commission the power to fully investigate this issue.

"The eastern states have experienced the highest percentage spikes in power bills over the last decade, with prices more than doubling in Queensland, Victoria and New South Wales. If the retail market isn't working properly, we should know why so that steps can be taken to address it.

"One of the big parts of this story is that Australia has not had clear and consistent energy and climate policy for the last decade, which means that investors have not felt confident to make timely and sensible investments in Australia's future energy system.

"Consequently, we are now starting to run short of power during peak periods, and this is driving prices up," he said.

Thornton said the energy industry and the business community have united in a call for a national energy plan which would combine carbon and energy policy over the long term.

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www.techrentals.com.au

Enclosed power supplies

Soanar now offers the Mean Well LRS series of single-output enclosed power supplies. The range includes the LRS-35, LRS-50, LRS-75, LRS-100 and LRS-150 models — from 35 to 150 W — and directly replaces the superseded RS series.

The power supplies feature a low-profile (1U) design and deliver better performance in a smaller package when compared with the RS series. They feature a low no-load power consumption of between <0.2 and 0.75 W, an operating altitude of up to 5000 m and operating temperature of up to 70°C. Free-air convection cooling delivers 91% efficiency.

The series features a range of protection functions and incorporates 5G antivibration protection. The devices are designed to meet with a number of standards including IEC/EN/UL60950-1, IEC/EN61558-1, IEC/EN61558-2-16, IEC/EN60335-1 and GB4943.

The series is suitable for a wide range of applications, including household appliances, industrial automation machinery and control systems, mechanical and electrical equipment and other instruments.

Soanar Limited

www.soanar.com

Handheld 100G tester

Anritsu introduces a 100G Multirate Module for its Network Master Pro MT1000A all-in-one tester that supports interface rates from 10 Mbps to 100 Gbps and technologies including Ethernet, Optical Transport Networks (OTN), SDH/SONET, Fibre Channel and CPRI/OBSAI. Integrating the new 100G module, along with existing OTDR and CPRI RF modules, into the MT1000A mainframe provides field engineers and technicians with a handheld solution that covers all current testing needs associated with data centre, core, metro, access, mobile backhaul and mobile fronthaul networks.

With the 100G Multirate Module installed, the Network Master Pro MT1000A supports more interface standards than any other handheld transport tester on the market. The all-in-one tester meets requirements for CFP4/QSFP28, (100GbE/OTU4), QSFP+ (40GbE/OTU3), SFP28 (25GbE), SFP+/SFP (GbE-10GbE, OTU1/2, STM1-64, 1GFC-16GFC, CPRI1-8, OBSAI1x-8x) and RJ45 (10 Mbps to 1 Gbps). Its flexible design provides single- and dual-port configurations with field upgradability across testing technologies to provide a simple upgrade path, when necessary, for a future-proof investment.

Among the technologies supported with the 100G Multirate Module is 25G Ethernet. It also provides the largest depth of OTN mappings to client signals, including three levels of ODU Multi-Stage mappings. The comprehensive test capability allows engineers and technicians to keep pace with emerging networking requirements.

In addition to the 100G Multirate Module, other enhancements have been made including a new auto-focus Video Inspection Probe (VIP), Cat 6/6a cable test support, Fibre Channel buffer credit analysis and an in-band network discovery capability that identifies other Anritsu Network Master products on the network and automates testing between them.

Anritsu Pty Ltd

www.anritsu.com

My world of installation

Electrical installation at home made easy

Our comprehensive product portfolio offers a complete range of solutions and services for all installation requirements in residential buildings. Our focus on easy installation speeds up your projects while meeting people's needs for safety and comfort in their home. Find more information about our complete offer on: **www.abb.com/world-of-installation**

Multi-circuit energy metering

The SATEC BFM II multi-circuit energy metering has been designed with a modular format for 18, 24, 30, 36, 42, 54 single-phase circuits and/or a combination of 6, 8, 10, 12, 14, 18 three-phase circuits. Current input modules can be added in the field for future circuit expansions. In addition the product comes complete with a TFT touch screen display.

Further module enhancements include pulse input capabilities with 9 or 18 pulse input modules, allowing multiple modules for up to 54 pulse inputs for water, gas, energy monitoring. Input pulses are designed for dry contact or DC wetted 24, 125 or 250 VDC.

Relay output control provides relay module for 9 output relays rated at 5 A, 250 VAC, with a maximum of 18 output relays.

Analog input/output modules will be added in the near future to provide further capabilities for monitoring and expanded functions.

Multiple communication platforms are supported: RS45, Ethernet and USB in addition to Modbus RTU, Modbus TCP, DNP3.0 and DNP/TCP communication protocols.

SATEC (Australia) Pty Ltd
www.satec-global.com.au

Secure gateway

Control Logic has introduced the next layer in GE's Industrial Internet systems solution. GE's Field Agent technology is the critical link required in an IIoT (Industrial Internet of Things) chain for cloud-enabled analytics. Field Agents provide a rugged, preconfigured solution for secure data collection and conveyance from the machine.

Connect to nearly any industrial asset and leverage GE's Industrial Internet Platform to collect data, analyse trends and uncover insights that improve operations and asset performance. Build out remote monitoring and diagnostics capabilities safely and securely, utilising encrypted channels that preserve data time stamp, quality and fidelity.

Leverage the power of the Industrial Internet by accessing real-time asset performance data and advanced predictive analytics. Armed with this valuable information, operators can optimise equipment uptime and OEMs can proactively maintain and service their equipment fleet, improving operations, growing service revenues and winning new business.

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

Earth ground clamp

Testing the grounding components of equipment by disconnecting parallel grounds and finding suitable locations for auxiliary ground stakes can be dangerous and time-consuming. With the Fluke 1630-2 FC Stakeless Earth Ground Clamp, electricians and maintenance technicians can measure earth ground loop resistances for multigrounded systems using only the dual-clamp jaw, so measurements can be taken quickly and safely without having to expose conductors.

The clamp automatically records data at preset intervals and saves up to 32,760 measurements in memory at the set logging intervals. Its heavy-duty clamp jaw is designed to stay in alignment and calibration even in the harshest industrial environments.

The 1630-2 FC is part of Fluke Connect — a system of more than 40 wireless test tools that communicate via the Fluke Connect app, or Fluke Connect Assets software, a cloud-based solution that gathers measurements to provide a comprehensive view of critical equipment status — letting technicians view, record and share measurements from the clamp in real time via their smartphones or tablets and automatically upload them to Fluke Cloud storage along with tags and the GPS location of assets.

Fluke Australia Pty Ltd
www.fluke.com.au

We're not good at everything...

But, we're really good at providing technology for data centres

Luckily, we're not cooking you dinner. Instead, we are busy maximising the performance and scalability of your data centre applications. Whether it occupies one room, one or more floors, or an entire building, AFL can supply any or all of the components for an end-to-end Tier 1 to Tier 4 operation.

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- Fibre cabling solutions
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- Fusion splicers
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www.AFLglobal.com
AU 1300 232 476
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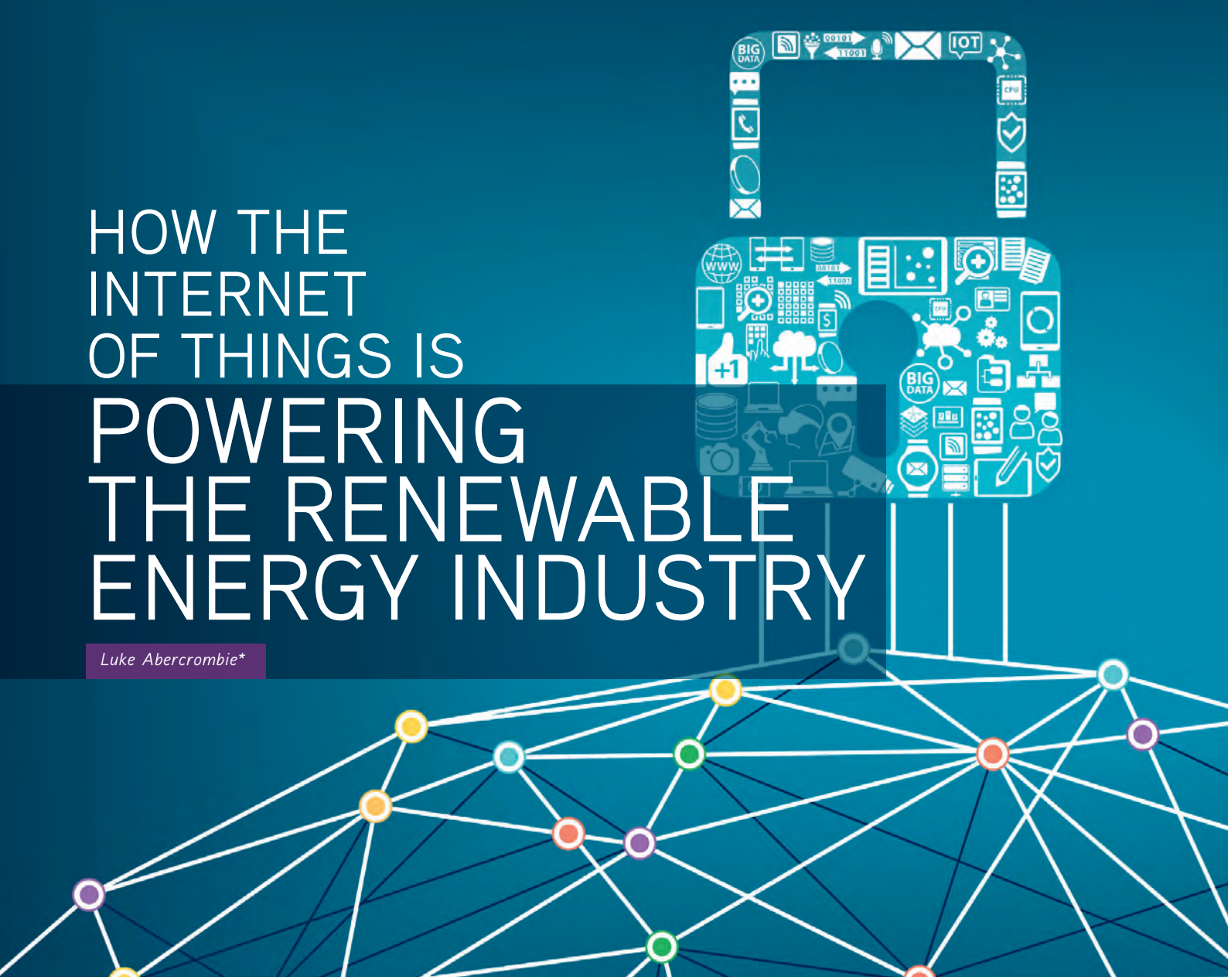
HOW THE INTERNET OF THINGS IS POWERING THE RENEWABLE ENERGY INDUSTRY

*Luke Abercrombie**



Recent electricity outages in South Australia, combined with a renewed focus on environmental damage caused by fossil fuels, has meant the country's energy reliability and generation sources are high on the news agenda.

Home owners want a reliable energy source to ensure they don't get a nasty surprise when the grid goes down, and power is a fundamental component of running any business.

With no power, how can the retail and hospitality industries process transactions? How can hospitals and schools operate in the dark? How can supermarkets keep perishables cool? Australians have begun to think about what makes the electricity grid stable, why it fails and how new and emerging technologies present a solution.

With its hot climate and abundance of sunlight and wind, plus enough space, modern infrastructure and a stable political system, Australia is the ideal location to drive renewable energy innovations. The Australian PV institute reports that, at the end of 2016, Australia had over 1.58 million PV installations, with a combined capacity of over 5.44 GW. We've also seen a move by utility companies to invest in clean energy to remain relevant in the future as they see the opportunity this presents.

Renewable energy management and storage solutions have begun to cement their place as solutions to our energy woes, and this is largely driven by adoption of new technologies. Innovations like big data, analytics, machine learning, the Internet of Things and the cloud are all at the forefront of developments in engineering, IT and manufacturing — the energy industry is no exception, and the opportunity to leverage these functionalities is huge. Our homes are becoming smarter as the adoption of connected solutions and smart devices is on the rise. Home solutions that utilise the Internet of Things consist of devices and services that are connected to each other and to the internet and can automatically respond to preset instructions and be managed remotely with a smart device. Gartner states that by 2020, there will be over 25 billion connected things worldwide. In addition, its research on 10,000 respondents in the US, UK and Australia suggests that adoption rates for home monitoring are at 11% and for home automation or energy management at 9%.

Connected home products range from smart locks and lights to voice-activated music players and sprinklers that water at optimal times. As our homes become smart technology-enabled, so should our energy systems. The Internet of Things is a game changer for the solar revolution. Major players and new entrants to the energy industry are utilising its capabilities to create solutions that are smarter, more efficient and easier to control. This means residential and commercial users save energy (meaning more money in the hip pocket) as their systems are optimised.

Hardware solutions like battery storage will only go so far and, when new technology developments arise, end users will have to overhaul and upgrade their systems. Software (incorporating the

Internet of Things and cloud connectivity) that's developed for energy management results in a product that can be upgraded remotely with a firmware update. Energy is distributed where and when it is needed, optimising self-consumption.

An Internet of Things-enabled energy management system means home owners can be assured they aren't wasting self-generated energy, therefore giving them a bigger kickback from the grid. On a particularly sunny day, when there is an abundance of solar energy being generated, the system recognises this and can turn on the hot water system, washing machine or dishwasher to use as much energy as possible before selling back to the grid.

Not only does this functionality contribute to a faster return on investment, home owners don't have to compromise their comfort — if anything, comfort is increased. For example, air conditioning can be controlled remotely with a smartphone or tablet, meaning a house can be cooled when the owner arrives home or a pool pump can clean the pool while occupants are out and about.

In any purchase decision, customers are understandably looking to get the best features, specs and aesthetic with minimal effort and at the lowest price point. This is true across product types and is similarly applicable to solar storage and management systems. Cloud-connected devices can be upgraded as new versions of advanced technology become available. Rather than installing, reinstalling or

manually plugging in devices to download, the market is moving to a place where upgradable systems are becoming the standard. New software can now be automatically pushed to products remotely. If there is an issue with the system it can be detected instantly, whereas in the past a customer would only become aware of the problem when the bill arrives or the power goes off.

With a rapidly growing and competitive industry, there is no doubt that systems that aren't IoT-enabled or connected to the cloud will become irrelevant within a few years, if not months. Energy providers, whether that be utilities, distributors, metering providers or renewable storage and management technology developers, need to be prepared, both ideologically and technically, to take on this change; otherwise, they risk falling into obsolescence.

The stability of the grid

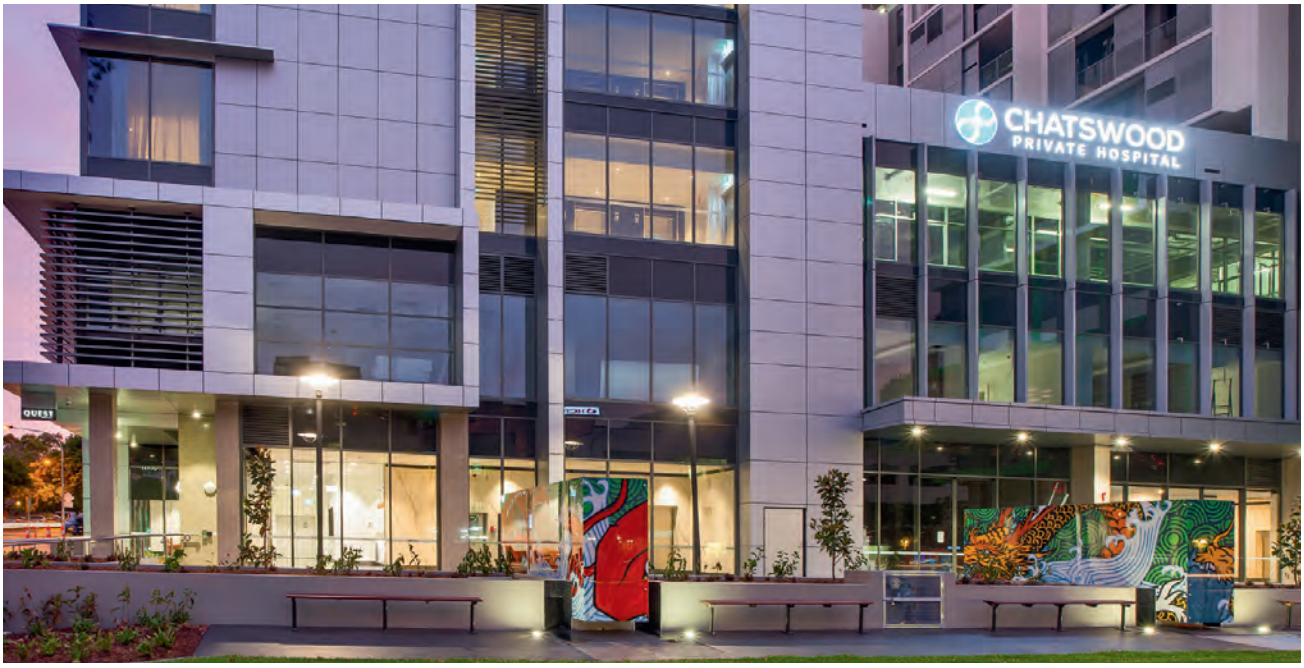
2017 is looking to be the tipping point for solar solutions becoming readily accessible to consumers at a reasonable price point. However, discussions around whether widespread renewable energy adoption is disrupting the grid or enabling its stability continue to be prevalent. We have seen instances globally, such as Germany in 2012–2013, where the grid has become destabilised by an influx in renewable energy and a lack of infrastructure to manage it effectively. Intermittent power caused residential energy prices to skyrocket and neighbouring countries began building switches to turn off their connection with Germany's grid.

Australia is in a unique position to develop the tools and technology needed to create the next-generation grid — to lead the solar energy revolution and to do it right. To do this, we need real-time intelligence from storage management solutions that can integrate seamlessly into traditional grid systems. While energy used to be a simple input and output approach, this is no longer feasible due to the scale, spread and demands of the grid. 'Smart solar' is the synergy of reliable hardware and intelligent software, and is the answer to a reliable, clean and efficient energy grid.

Redback Technologies Australia
www.redbacktech.com

**Luke Abercrombie is the Director of Software at Redback Technologies. With over 20 years of expertise in driving business development, achieving digital transformation and operational efficiencies through technology, Luke has strong international experience across a vast array of environments, including start-ups, Fortune 500 companies and not-for-profits in both centralised and geographically dispersed multisite environments.*

Getting connected



Chatswood Private Hospital (CPH), part of Presmed Australia and the largest eye, ear, nose, throat and face specialist day surgery in Australia, has partnered with Wavelink for better communication and an improved patient experience in its new facility. The deal includes a Fortinet wireless network and Spectralink wireless phones.

As the only private hospital of its kind in Sydney, CPH experiences high levels of demand. In January 2016, the hospital moved from its original two-theatre location to a new, custom-built, state-of-the-art facility that was much larger and spread across two levels. This created communication challenges for the team, so Presmed decided to equip key staff with wireless handheld phones that used the Wi-Fi network.

Roger Cronin, chief executive officer, Presmed Australia, said, "Reliability was the most important factor for the hospital and we were happy to be guided by our consultant engineer regarding what technology to use. He recommended Wavelink to deliver an end-to-end solution comprising a wireless network and wireless handsets that met our complete needs. Wavelink's Health Practice worked with us to design a solution consisting of a Fortinet wireless network combined with Spectralink wireless phones, all of which were delivered by Wavelink partner Quorum Systems."

CPH implemented Spectralink PIVOT phones, as they are ideal for a clinical environment. The phones run on a Fortinet wireless network on a dedicated 5 GHz band. There are no other systems running on the same band, which preserves bandwidth and ensures voice-quality connections every time. The PIVOT handsets use an ergonomic, intuitive touch screen based on the Android platform. This makes them easy to use, while the robust design is strong enough to withstand the hospital environment. The hospital has also integrated its fire alarm panel onto the phones.

The facility also implemented a Fortinet wireless network, which lets the hospital set up guest access to free Wi-Fi on separate bands to the wireless phones. This prevents interference with the phones while giving patients the connectivity they expect. "Patients assume they'll have access to Wi-Fi while they're waiting for their surgery or in recovery, so it's a service we need to provide. However, we couldn't have patients' use of the network affecting the phones' performance, so they were set up on two separate bands," Cronin said.

Presmed's key goal for the project was to ensure strong communication across the team, regardless of their location in the hospital. The Spectralink PIVOT phones have delivered: team members get the information they need immediately. They don't have to leave their patient to get information, which leads to better patient care overall.

"The Spectralink phones have delivered increased efficiency and productivity. There would be a lot of time wasted if we didn't have them or couldn't rely on them. The Spectralink phones have also streamlined aspects of patient service. Waiting times have reduced, since team members stay in constant contact with each other so they know exactly when to move a patient to the next stage of their journey. Consequently, patients can wait longer in the lounge with their family members before being moved into pre-operative areas," Cronin said.

Further, the Fortinet solution has delivered the reliability and functionality that the hospital required and provided a platform for future growth.

"Using a wireless platform that's reliable means we can add new technologies to improve the way the hospital works. As a smaller organisation, having a futureproof system was important and the Fortinet wireless network has delivered that.

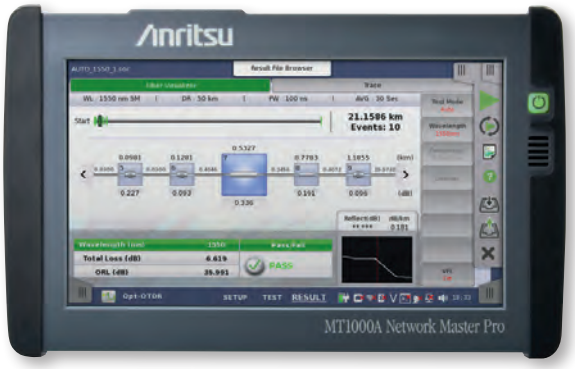
"Our relationship with Wavelink has been an important part of this project. Wavelink has kept the hospital team educated and informed about capabilities that exist that we may not even have known could benefit us. The key goals were to provide a platform to enable seamless, reliable communication between staff members and to provide guest internet access for patients. On all counts, the solution delivered by Wavelink has fulfilled these requirements," Cronin said.

Wavelink
www.wavelink.com.au

Tri-wavelength OTDR

Anritsu introduces a tri-wavelength OTDR module for its Network Master Pro MT1000A portable optical tester that provides field engineers and technicians with a comprehensive test tool to verify fibre lines in core, metro and mobile networks. The module supports macro-bend testing using the popular 1310/1550/1625 nm wavelengths. It also supports 46 dB dynamic range which allows the MT1000A to test long transit links and high loss networks.

This new OTDR module also features Anritsu's Fibre Visualizer, a fault location function that simplifies the entire testing process. Fibre Visualizer automatically selects the testing parameters to ensure the proper set-up and provides a simple, graphical summary of the fibre under test within seconds. Fibre Visualizer also has individualised PASS/FAIL analysis to simplify fibre-optic testing.



Ideally suited for installation and maintenance of fibre networks, all Network Master Pro MT1000A OTDR modules will benefit from new, specialised functions to make field testing more efficient. A construction OTDR mode provides an automated method of testing numerous fibres at multiple wavelengths during cable installation. A single set-up screen initiates a testing wizard, ensuring all fibres are tested and results stored using consistent file naming. Additionally, a Bi-Directional measurement function has been added for accurate and simple event loss analysis.

The compact, battery-powered and easy-to-use Network Master Pro MT1000A provides a variety of testing capabilities in a rugged, field portable package. A lightweight instrument, the MT1000A simplifies the daunting task of collecting and interpreting data with an easy-to-use GUI and clear summaries allowing users of any skill level to operate the instrument to its full potential. A multifunction tester, the MT1000A is field upgradeable and can be configured with an array of OTDR modules and transport testing functions, including RFC2544/6349, Y.1564, OTN, CPRI/OBSAI, to address current core, metro and mobile backhaul network needs, as well as the flexibility to expand to support future technologies.

Anritsu Pty Ltd

www.anritsu.com

Surge protection device

Phoenix Contact has released the Valvetrab-Safe Energy Control (SEC) Type 2 surge protection device.

The compact device is 12 mm wide per module, reducing the need for installation space and allowing housing in a miniature distribution system. It protects against lightning strikes and surges to deliver maximum reliability for installations in need of continuous power.

The device features SEC technology and high discharge capacity. The pluggable nature of the SEC Type 2 arrester allows for quick installation and maintenance. The base element and plug can be rotated by 180° for easy alignment, which also enables a connection with shorter cable lengths and legible, upright-facing markings.

The SEC Type 2 is both vibration and shock proof and is monitored by an easy-to-read status indicator and a remote signalling contact. It has been independently tested to the latest IEC 61643-11 standards and has GL shipping approval.

The device is part of a portfolio of protection devices that ensure high availability of power. The range also includes protection devices for data networks, radiocommunications and pipelines.

The SEC arrester series is rated for voltages up to 690 V and independently certified for discharge currents up to 50 kA limp or 100 kA Imax.

The SEC Type 1 device delivers durability and performance thanks to the combination of Safe Energy Control features and new Spark Gap technology which prevents any line follow current. This reduces stress on the entire installation while helping to ensure the long-term durability of the MOV-based Type 2 protection. Sensitive downstream components are protected due to the device's low-voltage protection level.

The SEC portfolio is suitable for use in infrastructure, transport, wind energy, telecommunications and the building sector.

Phoenix Contact Pty Ltd

www.phoenixcontact.com.au

FUEL EFFICIENCY THE ROAD TO SUSTAINABILITY

Todd Ewing, Director Product Marketing

For any organisation operating a fleet of vehicles, driving inefficiency out of their business at every given opportunity, in order to 'go green', is a challenge. This is especially true for field-based businesses, whose largest areas of waste are severely impacting our environment — fuel consumption and paper-based reporting processes. A fleet of vehicles typically runs on petrol or diesel, releasing harmful chemicals into the air. These emissions result in environmental degradation due to pollution. With fuel prices at one of the highest points they've been in 18 months, and Earth Hour just around the corner, field-based businesses are under more pressure than ever before to control fuel usage and streamline operations.

With a GPS vehicle tracking system, you're able to manage driver and vehicle behaviour, and optimise routes, to help ensure fuel is being used as efficiently as possible. Not only can green fleet management reduce your carbon footprint, it can also drive fuel savings to help improve your bottom line:

1. Route optimisation

Don't waste fuel dollars on needless kilometres. Taking the most efficient route to the job will save time, reduce carbon emissions and minimise unnecessary costs. Whether you're managing a large transport fleet or a small number of service vehicles, route optimisation is the simplest way to do just that. With fleet management technology, you're able to track the location of all drivers in near real time. This enables you to identify and dispatch the closest driver to the job, as well as replay each driver's route, to reduce unnecessary travel time and, in turn, fuel consumption.

Contact Electrical is a good example. Based in Tasmania, the electrical company was challenged with dispatching emergency jobs in a timely manner. It took calls to four or five different drivers to establish which driver was available and closest to the job site. After deploying fleet management technology across its vehicles, Contact Electrical has visibility into the location of each vehicle, which means jobs are assigned to the nearest vehicle in real time. On top of improving productivity, the technology has helped to reduce the number of kilometres travelled and cut fuel emissions.

2. Improve driver behaviour

Excessive idling wastes a significant amount of fuel, which isn't uncommon in the field service industry. A driver might sit in the vehicle with the engine and air conditioning running if they arrive early to a job, which means valuable fuel, and time, is wasted. Drivers practising poor habits, such as speeding and harsh braking, are also burning fuel unnecessarily.

How can you address this? With GPS vehicle tracking, business owners can pull reports based on near real-time data, which inform their understanding of driver behaviour. You're able to target the necessary drivers with training, to improve behaviour and help eliminate fuel wastage. Such was the case for Formway Group, a specialist provider of electricity metering hardware and services, based in Queensland. The organisation required a way to better monitor driver behaviour and reduce excessive stopping, speeding and idling. A GPS tracking system provides Formway Group with an accurate picture of how assets are being used, how drivers are performing and how operating costs are tracking. This increased visibility has improved the organisation's financial and environmental sustainability — Formway Group estimates it has experienced a 5–10% reduction in fuel costs, which means less pollution in the air.

3. Consider alternative fuel or hybrid vehicles

New cars and innovative technology will enable fleet businesses to have the desired mobility without damaging the environment. Look for vehicles that have a higher mileage rating, which reduces the use of petrol per mile that the car travels. Vehicles that run on alternative energy offer another solution — hybrid vehicles, for instance, are another form of cleaner transportation as they produce lower emissions than traditional petrol or diesel-powered vehicles.

Field-based businesses can do their part for sustainability by addressing fuel efficiency. This will help reduce your carbon footprint and improve the environmental sustainability of your business, not to mention, cut thousands of dollars off your bills. Now is the time to get your business involved in climate change.

Fleetmatics
www.fleetmatics.com.au

Cat 6 and Cat 6A cabling and connectors

Category 6 systems consisting of concatenated cables, cords and connectors enable modern LANs with robust support for network speeds of 1 Gbps. Category 6A systems enable 10X that speed — up to 10 Gbps.

Cat 6A offers cost-effective and simple provisioning to prepare today's buildings for current and future applications. With 10 gigabit applications starting to emerge, the time is right to consider provisioning the building with the right copper cabling infrastructure based on Cat 6A twisted pair connectivity.

Multistage compensation facilitated the realisation of Cat 6 cabling, and a whole family of related patents on compensation methods, jack design and lead frames arose from this initial innovation.

CommScope has continued to improve performance further to Cat 6A levels, while simultaneously achieving Cat 6 performance levels efficiently and cost-effectively. The combination of these advancements in the connector area, coupled with complementary developments in cables, has enabled CommScope to build its position in the structured cabling market.

Cat 6 and Cat 6A are the most commonly used cabling solutions in the market today for new enterprise installations. The upcoming revision of ISO/IEC 11801-2 for Offices will specify a minimum of Cat 6 (Class E) for the horizontal cabling, with Cat 6A (Class EA) recommended for support of applications in excess of 1 Gbps.

CommScope Solutions Australia Pty Ltd
www.commscope.com

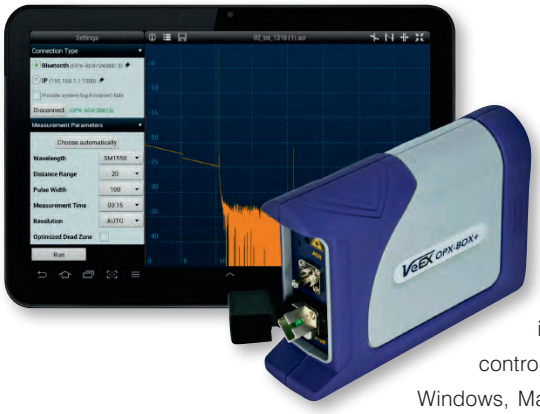
Splicing connectors

The WAGO 222 series compact splicing connectors offer quick connection of cables without the use of tools. The 2- or 3-way conductor terminal block with operating levers is suitable for use with solid stranded and flexible conductors of different cross-sections. The rest position of the integrated orange lever prevents accidental unclamping of a connected conductor.

Wiring is made simple — strip 9–10 mm/0.37″ from the desired conductor, open the clamping unit via the integrated lever and insert the conductor.

With a connecting range of 0.08 mm² to 2.5 mm² 's'/4 mm² fine-stranded (flex) conductors, the 222 series can be used to connect lighting fixtures, sun-blinds, awnings, door and gate controls, intercoms, pumps, loudspeakers, or even the hook-up of an electric stove. The connectors can also be fixed in position for use with mounting carriers.

Soanar Limited
www.soanar.com



Mini OTDR

The VeEX OPX-BOX+ is an ultracompact mini OTDR designed to operate remotely using Fiberizer software. The unit can be controlled via USB or Bluetooth from Windows, MacOS, Linux or Android devices. Platform highlights include Bluetooth wireless and USB control; up to 3 wavelengths for OTDR testing including Live port (1625 nm, 1650 nm); up to 41 dB Dynamic Range and testing 1/4m Dead Zones; optional light source (via OTDR port); optional visual fault locator (VFL); multimode and singlemode wavelength test options — 850, 1300, 1310, 1490, 1550, 1625 and 1650 nm; software available for Windows, MacOS, Linux and Android operating systems and devices; and can be operated from Fiberizer Cloud and Fiberizer Desktop systems.

Key features include simple operation — VFL and OLS can be activated locally using a single button; fixed and interchangeable optical adaptors (SC/FC/ST/LC); and ruggedised case and gap-free design protect the device from harsh and hazardous environments.

TelecomTest Solutions
www.telecomtest.com.au

Building control smartphone app

The Honeywell Vector Occupant App combines the convenience of today's mobile devices with connected building features to give users more control over their comfort levels and ability to securely move about the workplace.

The app provides digital identification and integrates with core building functions, including access and comfort control, to enhance building occupants' experience. Access control capability eliminates the need for physical cards or fobs. In addition, users can quickly and easily communicate temperature discomfort to prompt real-time adjustments instead of seeking out a facility manager.

Facility managers benefit from immediate insight into where and how comfortable occupants are so they can make adjustments more quickly and easily, and the app's digital identification and access control capabilities make it easier to manage occupant credentials, eliminating the need to keep track of and replace misplaced access cards.

Backed by a cloud-based architecture and enabled by HID Global's Seos credential technology, the app works independently of underlying building systems, enabling widespread use and adoption. Facility administrators can use the app to manage user identification and credentials. Users who download the app must receive an invitation from the administrator in order to gain access to its features.

The app works with Apple and Android products and is available in iTunes and Google Play stores.

Honeywell Building Solutions

www.honeywell.com

Switches and sockets

Clipsal by Schneider Electric has launched the Iconic range of switches and sockets. The range incorporates smart home technology into one switch, including multiway dimming, app-enabled devices, smart timers, dimmers, USB chargers and network connection points.

The has been designed with mountings so they can be fitted off to all current ranges of wiring device brackets and wall boxes. In Australia, Iconic will be released under the Clipsal by Schneider Electric brand, and in New Zealand under the PDL by Schneider Electric brand.

Clipsal by Schneider Electric

www.clipsal.com

Handheld insulation and continuity testers

The Megger MIT480 Mk 2 range of handheld insulation and continuity testers is designed primarily for testing telecommunications equipment and cables. The testers offer a host of features to make testing faster and more convenient, and to minimise the risk of accidental damage to equipment under test.

The range currently includes two models — the MIT481, which offers a choice of four fixed test voltages and result storage, and the MIT485, which adds a variable test voltage feature, support for downloading of test results via a Bluetooth wireless connection and facilities for recharging batteries without removing them from the instrument.

A major innovation is support for three-wire connection (tip, ring and earth or A, B and E). This saves time as no disconnection and reconnection of test leads is needed to carry out the full range of tests on a cable pair. In addition, a differential test feature allows the difference between two consecutive continuity measurements to be calculated and displayed automatically.

In addition to their primary insulation test function, which delivers accurate results up to 100 GΩ with a test voltage of 500 V, the MIT480 Mk 2 instruments also offer fast continuity testing with a user-selectable test current of 20 or 200 mA. Continuity testing covers 0.01 Ω to 1 MΩ without the need for manual range switching. The instruments provide DC and true rms AC voltage measurement up to 600 V. When measuring AC voltages, frequency up to 450 Hz is simultaneously displayed.

Megger Limited
www.megger.com

Resources consumption monitoring

Buddy Platform has announced a solution for monitoring the consumption of electricity, gas, water, steam and solar power generation, called Buddy Ohm.

The product helps measure the consumption of these resources in buildings, government facilities and public infrastructure, helping managers and occupants get a clearer view of the financial and environmental cost of these facilities.

The monitoring solution comprises IoT-class hardware, secure and scalable data infrastructure, an operations portal, occupant-facing dashboards and mobile accessibility. The platform uses open hardware and software protocols, meaning users have full access and control of their resource data. The Ohm base unit is installed in proximity to meters or submeters and utilises industry standard connectors to monitor electricity, solar, water, steam, gas and other natural and built environment elements. Ohm can wirelessly connect to other sensors, allowing for a network of sensors across city and building landscapes. Ohm connects directly to The Buddy Platform via the cellular network, eliminating troublesome Wi-Fi environments and reducing lapses in connectivity. This capability also means Ohm can be deployed in places where connectivity is a challenge.

The Buddy Platform connects a constellation of devices to translate raw data into valuable insight. This scalable and secure platform is the heart of Buddy Ohm, enabling the processing, streaming and storing of key resource data, with powerful real-time capabilities like a rules engine and alerts.

Through the operations portal, building managers and owners have a simple, easy-to-understand overview of how their facilities are consuming resources (or, in the case of solar, generation). The dashboards, meanwhile, offer real-time access to data in an easy-to-understand format.

Real-time push notifications are sent out when anomalies are detected or predetermined thresholds are met, meaning operators can act now rather than looking backwards at historical events.

Buddy Platform
www.buddy.com

3-in-1 handheld tablet

Panasonic has launched a fully rugged 3-in-1 handheld tablet, adding to its portfolio of enterprise-grade mobile devices. The Panasonic Toughpad FZ-N1 combines the productivity benefits of a mobile barcode reader, phone and tablet into one fully ruggedised device, built to protect against drops, heat and cold, vibration, dust and rain.

The Toughpad FZ-N1 has been specifically designed to overcome the operational and health challenges faced by Australian transport and logistics mobile workers including injury and strains due to poorly designed mobile barcode scanners.

The FZ-N1's ergonomic angled barcode reader has been created for ease of use and has the potential to increase efficiency and at the same time provide greater comfort for workers.

The device features full outdoor functionality with a daylight-readable display, is fully sealed against dust and is submersible in 100 cm of water for 30 min, meeting IP65 and IP67 certification requirements. It can withstand temperatures from below -10°C to above +50°C.

Other features include: OS Android 5.1.1 (Lollipop) Processor 2.3 GHz quad-core Qualcomm Snapdragon Memory & Storage 16 GB, 2 GB Display 4.7″ HD (1280x720). The standard battery offers 8 h continuous operation, 700 h standby and 24 h talk time. An optional long-life battery offers 16 h continuous operation, 1400 h stand by and 48 h talk time.

Panasonic Australia Pty Limited
www.panasonic.com.au

WHY ORGANISATIONS NEED SMART BUILDING INFRASTRUCTURE

Ilan Rubin, Managing Director

Smart buildings demand robust infrastructure that is available, reliable, cost-effective and otherwise suited to their mission-critical role. They rely on the Internet of Things and the organisation's existing network, so it's essential to put the right strategy in place to adequately support the demands of smart buildings.

While smart buildings can be viewed as just another app on the network, they are in fact more complex than that. Smart buildings will likely present a number of very demanding requirements, depending upon venue and specific functions. These demands can include coverage, capacity and cost control. Smart building network requirements to address coverage, capacity and cost control needs include:

1. Wired network

Smart building applications run transparently across existing Ethernet infrastructure, apart from the additional network traffic. It's important to avoid proprietary networks, wireless technologies other than Wi-Fi and unusual system architectures.

The potential pitfalls can include complex and difficult installations and deployments, limited functionality, limited support, rapid obsolescence and increased capital and operating expenses. Leveraging the existing network is key. The software-defined network (SDN) will also play an increasingly important role in organisational networks going forward, and smart building applications will be among the first to benefit from this evolution.

2. Wireless network

The standard access points already in place to provide IP services to end users can easily handle smart building operations without modifications. However, a few more APs may be required to assure coverage across the entire facility.

Wave 2-based APs will have more than sufficient capacity, so the work involved here will be limited to examining traffic flows over time, tuning system settings using analytics tools and minor changes to operational policies.

Most commercial-grade smart building devices will use Wi-Fi to leverage the network already in place. It's not cost-effective to use proprietary, limited and ad-hoc building automation solutions that have traditionally been deployed. And, given that the performance differential between wired and wireless at the edge of the network is now as minimal as it's ever been, the real challenge here will be related to coverage, not throughput or capacity.

3. IT and network management and operations

Deploying smart building services presents an excellent opportunity to reconsider current network operations solutions. This is not because smart buildings necessarily represent a massive increase in workload for operations staff, but because it's always a good idea to review the network when adding new, mission-critical applications.

Contemporary management systems can include: cloud-based deployments for access-anywhere convenience and productivity; centralised and uniform access control; policy-based strategies that minimise configuration efforts; APIs for extensibility, customisation and futureproofing; monitoring and enforcement of appropriate regulatory policies; and unified operating and control software implementations across all functional units.

4. Security

Physical and information security demands require careful consideration. Some organisations have minimised security requirements for smart building elements due to the belief that things such as light bulbs don't present any security challenges. However, all networks and the systems and solutions that depend on them must be hardened against attacks, single points of failure and even the unforeseen and unknown threat.

The key starting point here is an organisational security policy. The security capabilities of the network itself are also important, including access control, authentication, identity management and traffic encryption. For example, wireless motion detectors, security cameras and badge or other ID readers can be used to continuously and cost-effectively monitor any part of a structure.

The trend is clear: every building is going to be a smart building. The key to smart building success is in leveraging network infrastructure with the coverage and management to make this outcome a reality.

Wavelink
www.wavelink.com.au

ENERGY STORAGE — THE GREAT DISRUPTOR AND GAME CHANGER

Energy storage is disrupting the electricity market and changing the way we operate and manage the grid.

Storage lies at the heart of digitisation and is part of a larger trend of technologies disrupting South Australia's network for the better, according to ZEN Energy General Manager of Engineering Terry Teoh.

Ahead of his presentation on monetising storage at the grid edge in Adelaide's CBD at the Australian Energy Storage Conference, 14–15 June 2017 at the new International Convention Centre Sydney, Teoh said battery storage currently has strong market potential in South Australia and the National Electricity Market (NEM).

Teoh worked in the oil and gas industry before moving into renewable energy in 2000. His career change was "driven by a passion to respond to climate change through corporate endeavour".

"Back then, it was a heady time with Australia implementing MRET (the precursor to LRET) and embarking on its renewables transformation journey," he said. "I ran Pacific Hydro's development function developing large-scale wind and solar farms backed by pension fund investors.

"In 2015, I came on board ZEN Energy as GM of Engineering. It is a broad-based corporate role with an engineering focus."

The brainchild of founder Richard Turner, ZEN Energy was established in 2004 as a pioneering solar company. Later, it became an early adopter of battery storage.

"We strive to be industry thought leaders, harnessing partnerships to bring together energy market understanding and commercial innovation to enable the value from behind the meter and grid-scale battery storage to be financed and monetised," said Teoh.

Teoh and Zen Energy are undertaking a project demonstrating real-time optimisation and monetisation of battery storage in the NEM by connecting four high-profile Adelaide CBD buildings to 513 kWh of behind-the-meter storage.

The four sites — the Art Gallery, State Library, Adelaide High School and the Adelaide City Council works depot in Thebarton — were chosen for their contrasting load and occupancy patterns, and their potential to apply battery storage in conjunction with solar and demand response.

"Global experience shows that commercial behind-the-meter storage is challenging. Yet the market potential in South Australia, and more broadly in the NEM states, is significant."

The $1 million project, believes Teoh, will play a defining role in opening up the commercial storage market, starting in South Australia.

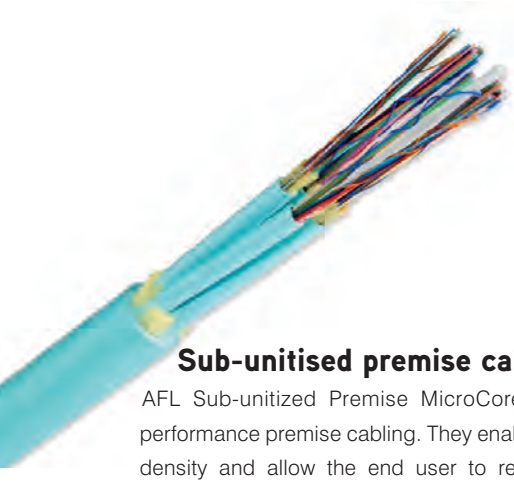
"It will provide real implementation experience and benefit quantification of batteries located in commercial sites, monetising multiple value streams," he said.

"It will turn a theoretical concept into a commercially executable reality for commercial and industrial customers looking for a lifeline to alleviate their energy price distress in South Australia."

Teoh's presentation at the Australian Energy Storage Conference, 'Monetising Storage at the Grid Edge in the Adelaide CBD: The South Australian storage demo project', will explore the deployment of commercial storage in Australia and in particular, how storage can be used to safeguard South Australia's electricity network.

The Australian Energy Storage Conference and Exhibition will run from 14–15 June at the International Convention Centre in Sydney.

The theme of the two-day conference is 'Investing in Australia's Energy Storage Future', and it will feature more than 50 Australian and international speakers presenting on the possibilities of storage.



Sub-unitised premise cables

AFL Sub-unitized Premise MicroCore cables provide high-performance premise cabling. They enable even greater pathway density and allow the end user to realise savings in space, routing infrastructures and fibre management.

Each sub-cable is independently qualified and is suitable for individual routing paths within the rack/panel architecture. This flexibility of design and deployment is not available in comparable high-density designs. Designed for direct termination, and supportive of both single- and multi-fibre architectures, this cable family is capable of serving as the backbone in any deployed system.

SpiderWeb Ribbon (SWR) is a bonded fibre design allowing for either a highly efficient ribbonising application or for individual fibre breakouts. This flexibility allows for the application of a single cable design to cover a diverse set of applications. High-density round designs allow for the most efficient use of space and materials, resulting in a cost-effective solution.

AFL Telecommunications Pty Ltd

www.AFLGlobal.com

Lightning protection

Control Logic has released the latest addition to its range of lightning protection products, the Hybrid Spark Gap HSG3 from Novaris.

Aimed at applications with high energy and resilient main switchboard (MSB) protection, the HSG design principle uses both Sealed Spark Gaps and Metal Oxide Varistor technology. This achieves consistent performance, with no follow-on current that can cause nuisance tripping of circuit breakers. The HSG design also allows for overvoltage tolerance of up to 480 V from line to neutral. This can be useful in areas with an unstable grid supply.

Typically, a product with this level of fault tolerance and surge current handling would have a let-through voltage of around 2000 V. The HSG3-100-480 has a let-through of only 1000 V .

The HSG3 is only 80 mm wide and conforms to DIN depth to allow for flush front panel mounting. Monitoring is achieved via an LED for each protection segment and a failsafe, voltage-free contact for monitoring via a building management system or similar.

Control Logic Pty Ltd

www.control-logic.com.au

RCBO residual current protection

ABB has expanded its residual current protection product portfolio with the release of the DSE201M RCBO, which is suitable for panel board applications incorporating busbar chassis arrangements. The product incorporates the latest design in residual current technology to offer superior safety and performance for circuits requiring earth leakage protection.

The DSE201M incorporates 10, 30, 100 and 300 mA models as well as an expanded range of current ratings covering standard sizes from 6 to 50 A.

The range also offers time-saving features and convenience. A reduction in the length of the product provides additional cabling space in panel boards. The DSE201M has a 10 kA short circuit capacity, making it suitable for commercial and industrial environments. As a standard feature the product offers a contact position indicator to provide true status of the main switching contacts, as well as an earth leakage trip indicator to show if the device has tripped due to an earth leakage fault — a must for rapid fault finding of circuits.

The RCBO also accepts the range of ABB S200 accessories such as auxiliary and signalling contacts, shunt trips, under/overvoltage releases and the unique space-saving bottom fitting auxiliary contact. In-built overvoltage protection reduces the risk of nuisance tripping in harsh environments. Supply connection to the product utilises the patented bi-cylinder lift terminal arrangement from the S200 MCB, making this range of RCBOs completely compatible.

ABB Australia Pty Ltd
www.abbaustralia.com.au

4-gas detector

The BW Gas Alert MicroClip 4-gas detector prevents harmful exposure to hazardous gases commonly encountered. H_2S, CO, O_2 and combustible concentrations are displayed in real time on the LCD screen. The user is also alerted by visual, audible (95 dB) or vibration alarms if set levels are exceeded within close proximity.

Alarms can be set into categories, including instant low and high alarm for all gases, time weighted average, short-term exposure limit for H_2S, CO or over limit. The MicroClip is lightweight and compact for comfort. Due to the critical nature of the unit, a calibration certificate accompanies each rent. Features include simple one-button operation; data logging of concentrations are provided; concussion-proof boot for use in rugged environments. The MicroClip is available to rent from TechRentals.

TechRentals
www.techrentals.com.au

Ethernet switch

Control Logic has introduced the IGS-1050A Ethernet switch by ORing. An unmanaged gigabit switch with 5 x 10/100/1000 Base-T(X) and 1 x 1000 Base-X SFP ports, it supports jumbo frame packets making it suitable for use with Ethernet-based camera systems.

With a rigid but slim IP30 type housing, it measures 26 mm wide, 95 mm deep and has a height of 144 mm. Users have the option to either DIN rail or wall mount to provide maximum installation flexibility. In addition decide to enable or disable warnings via its hardware DIP switch, with a relay output to indicate fault status, which allows easy monitoring by control systems. The ORing switch features redundant power supply inputs that can take a wide voltage range from 12 to 48 VDC, overload current and reverse polarity protection including an operating temperature range of -40 to 70°C, making it suitable for use in critical applications in the harshest of environments.

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

Retrofit RCBO

NHP has released the SAFE-T SRCB, a retrofit RCBO solution suitable for use in single-phase general light and power distribution boards. In addition to being suited to NHP SAFE-T panelboards, it is available in two versions available to suit Eaton and Heinemann panelboards, ensuring quick replacement of MCBs without modification to the busbar chassis system.

The size of the unit makes it possible to easily replace an MCB without taking up any extra space on busbar chassis, making it suitable for retrofits into existing boards, minimising downtime and maximising turnaround time.

SRCB units offer overload, short-circuit and earth leakage protection in a single pole unit.

Features of the SAFE-T SRCB from NHP include: 6 kA short-circuit protection, 10–20 A overload protection, 10 or 30 mA earth leakage protection, retrofit with NEMA-style MCBs, black pigtail for easy/fast neutral connection and a width of 25 mm.

NHP Electrical Engineering Products Pty Ltd
www.nhp.com.au

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EMC STANDARDS TO CHANGE

Years ago, manufacturers made AV equipment and others made information technology equipment. Crossovers between the two categories were rare.

Fast forward and the line between audiovisual devices and computers is extremely blurred, with AV integrating Wi-Fi, Bluetooth, Ethernet and other technologies.

CISPR 32 'Electromagnetic compatibility of multimedia equipment — Emission requirements' is a response to this blurring of product categories and is intended to replace and combine CISPR 22 (IT equipment) and CISPR 13 (AV equipment), due to significant overlaps across the two standards and equipment similarities — Australian-equivalent AS/NZS CISPR32:2013.

CISPR 32 is already included on the EMC mandated list and can be used for RCM compliance effective immediately. CISPR 32 is intended to replace AS/NZS CISPR 22 and AS/NZS CISPR 13, although a date of withdrawal has yet to be made.

ACMA has indicated this is not likely before mid-2017, but it should be noted that in Europe from March 2017, CISPR 22 (EN 55022) and CISPR 13 (EN 55013) can no longer be used. Only CISPR 32/EN 55032 will be accepted for CE compliance.

Equipment is to be classified as either Class A or Class B. Class B limits are the lower limits to meet and is intended to offer adequate protection for broadcast services within the residential environment, similar to CISPR 22.

Applicable tests include:

- Radiated emissions at either 10 or 3 m distances, 30 MHz to 1 GHz, with additional testing up to 6 GHz dependent on EUT highest clock frequency. 10 m distance limits are identical to those specified in CISPR 22.
- Conducted emissions at the AC mains power ports, 150 kHz to 30 MHz. Limits are identical to CISPR 22.
- Asymmetric mode conducted emissions, 150 kHz to 30 MHz. This covers wired network ports, optical fibre ports with metallic shield or tension members, antenna ports and broadcast receiver tuner ports (Class B equipment only). It is similar to the requirements specified in CISPR 22 for conducted disturbances at telecommunication ports. It is only applicable to those ports that will connect to cables longer than 3 m.
- Conducted differential voltage emissions, 30 MHz to either 1000 or 2150 MHz. This covers TV broadcast receiver tuner ports (terrestrial and satellite), RF modulator output ports and FM broadcast receiver tuner ports. It is similar to CISPR 13 and only required for Class B equipment. Austest Laboratories has multiple test facilities covering compliance testing to CISPR32.

Austest Laboratories
www.austest.com.au

Serial console servers

The Interworld Electronics DSM Series serial console servers provide secure remote access to RS232 console ports on servers, routers, switches, firewalls and other network elements. They allow system administrators to manage and troubleshoot network devices from anywhere. The DSMs feature dual gigabit Ethernet ports to provide fast access while robust security and authentication features ensure that critical network elements remain secure.

The DSM can also monitor network equipment, constantly watching for significant changes. Network managers are promptly notified via SNMP trap or email when high temperature readings, full port buffers, invalid access attempts and other events are detected.

The DSM Series provides 8, 24 or 40 RJ45 RS232 serial ports that can be individually accessed by number, name or group. Each DSM serial port can be separately configured using simple menu-driven commands to set the port password, data rates, flow control and other operating parameters.

The full matrix capability of the DSM allows users to easily connect any two ports on the switch, even when the ports are using different communications settings.

Secure Shell (SSHv2) encryption and address-specific IP security masks prevent unauthorised access to command and configuration functions. The TSM also provides four levels of security for user accounts, including administrator, SuperUser, user and ViewOnly.

The DSM allows remote authentication with full support for Radius, Kerberos, LDAP and TACACS capability. An invalid access lockout features provide additional security.

The DSM Series is powered from 100–240 VAC. -48 VDC models are also available.

Interworld Electronics and Computer Industries

www.ieci.com.au

Self-commissioning solar inverter

ABB Australia's UNO-DM-PLUS single-phase solar inverter is suitable for residential photovoltaic (PV) applications. Its embedded wireless connectivity and smart grid capabilities provide home owners with cost-effective advanced monitoring, control and maintenance. Installers benefit with a quicker and easier self-commissioning process, and their maintenance burden eased via web-enabled service software updates.

The unit is rated from 3–5 kW and its package allows for smart grid capabilities such as dynamic feed-in control, which manages the energy fed into the grid. It uses SunSpec-compatible open communication protocol to ensure compliance with future grid codes and maintains off-the-shelf interoperability with other devices in the system.

The streamlined physical design offers improved device reliability through reduced component count and makes it a lighter and smaller inverter than its predecessors.

ABB Australia Pty Ltd

www.abbaustralia.com.au

Lone worker man-down unit

The Twig Ex Intrinsically Safe lone worker man-down unit is now IECEx compliant for Australia/NZ.

The mobile lone worker communicator is loaded with features including: duress button, man down and GPS; contact up to 10 numbers with SMS and dialled two-way voice calls; multiple man-down alert triggers (tilt, no motion, free fall and impact); IP67 waterproof and shock-resistant; location map sent to smartphone; amber alert; 4 speed-dial buttons; option of short-range device card for Bluetooth link to wrist button, Twig check-in tag and Twig indoor location beacon (also available in intrinsically safe); long battery life (4 days at 1 x GPS report/10 min); and remote configuration from a web dashboard.

Twig Australia

www.twigaustralia.com.au

Three-phase UPS

Schneider Electric has introduced Galaxy VX, a compact three-phase uninterruptible power supply (UPS) with flexible operating modes for large facilities, data centres and business-critical applications.

The pay-as-you-grow solution will support enterprises in their move to hyperscale data centres and enable them to reap the greatest value in their IT deployments.The device fully integrates with Schneider Electric energy management solutions.

Flexible operating modes include: Double Conversion Mode — reduces switching losses and increases reliability while reducing failure rate; Eco Mode — delivers up to 99% efficiency; ECOnversion Mode — a hybrid between Eco and Double Conversion which improves efficiency; continuous operation up to 40°C ambient without de-rating.

It is compatible with traditional lead acid, flywheel, NiCd and Li-ion batteries.

Schneider Electric

www.schneider-electric.com.au

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Parameterisable power supply

Phoenix Contact has released its fourth-generation QUINT devices. The QUINT POWER IV parameterisable power supply offers all the robust power supply capability found in the QUINT III generation but includes a host of added features that allow the user to tailor the QUINT IV to suit their required output behaviour and preventive function monitoring.

The QUINT IV ensures the supply of continuous power to suit the exact needs of users because it is fully configurable. Its output characteristics, signalling and voltage can be easily adjusted to the user's exact requirements.

Components such as the output characteristic curve can be individually altered due to parameterisation via the integrated NFC interface using a smartphone or PC. This ensures system availability.

In addition, users can also tailor signalling thresholds to suit the requirements of applications to save time and minimise default errors. The current, voltage and power can be set differently depending on use and needs.

The integrated Selective Fuse Breaking (SFB) technology delivers six times the nominal current in up to 15 ms and thereby selectively trips standard circuit breakers safely and quickly. Plus loads in parallel are unaffected and continue working.

For easy start-up, a bargraph visually indicates output power, and with the QUINT IV, the system can be easily extended as the static boost continuously provides up to 125% of the nominal current. To start heavy loads, the dynamic boost provides up to 200% of the nominal current for up to 5 s.

The QUINT IV's comprehensive and sophisticated diagnostics constantly monitor system-specific, critical operating states and report errors before faults occur. Plus, thanks to their integrated gas-filled surge arrester, the single- and three-phase 24 V power supplies ensure a high degree of immunity as well as a mains failure buffer time of more than 20 ms.

In addition to providing no-load losses the devices can be switched to an energy-saving sleep mode via the integrated remote input, saving both energy and money. Robust and offering reliability under extreme conditions, the QUINT IV has a low start-up at -40°C and operates effectively in environments up to +70°C.

Easy to configure and compact, the QUINT IV is available in single- and three-phase models and is suitable for usage in the process industry, machine building, and energy and water industries.

Phoenix Contact Pty Ltd
www.phoenixcontact.com.au

Servo cables

The CF29 servo cable series from igus features an outer jacket made of halogen-free TPE. This product range extension offers more possibilities for energy supply to drives, for users with tough requirements such as ambient temperatures or small installation space.

Features include a core structure optimised for motion, a gusset-filling extruded TPE inner jacket that provides stability and a highly flexible TPE outer jacket. The series is suitable for servo cables with bend factors down to 6.8 x d. The series is suitable for a temperature range of -35°C, so it can even be used for moving applications in deep-freeze warehouses.

All cables have been successfully tested in a climatic test chamber with real-world mechanical loads and temperatures, delivering a service life of 36 months.

Treotham Automation Pty Ltd
www.treotham.com.au

Power quality standards testing

EMC Technologies now provides NATA accredited testing to Power Quality standards EN/IEC 61000-3-2 and EN/IEC 61000-3-3 including the AS/NZS equivalents.

The facility also now provides the internationally accepted ISO 17025 NATA accreditation for the calibration of Harmonics and Flicker (H&F) compliance test systems used to measure H&F in per IEC/EN/AS/NZS 61000-3-2 and 61000-3-3.

Accredited calibration of H&F test systems was only previously possible in overseas calibration labs, which was made difficult as shipping test systems can be prohibitively expensive.

Major inconsistencies in the interpretation of the calibration procedures also posed problems, as many calibration labs ignored the Power Source of the H&F test system and excluded it from the calibration. Two new standards (IEC Technical Reports) have been published to regulate calibration methods:

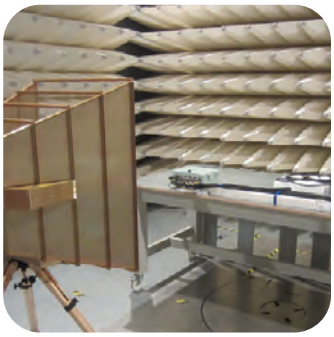
- IEC TR 61000-4-37:2016 Calibration and verification protocol for harmonic emission compliance test systems.
- IEC TR 61000-4-38:2015 Test, verification and calibration protocol for voltage fluctuation and flicker test systems.

Calibration and testing can also be carried out on-site at customers' premises.

Compliance with Harmonics and Flicker standards is mandatory for CE Marking and for certification of energy-savings products under various energy regulator schemes in Australia and overseas.

EMC Technologies
www.emctech.com.au

AUSTEST Laboratories



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MASTER ELECTRICIANS AUSTRALIA

Planning the solution to a crisis that's already upon us

Malcolm Richards

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Whether it's reserving a portion for domestic use, or finding ways to increase production, using gas to provide more reliable base load power is a conversation we need to have.

Australia is one of the richest natural gas economies in the world. We are producing extraordinary quantities for export and are on track to becoming the world's top exporter of liquefied natural gas (LNG) by 2021, which has allowed the coal seam gas industry in Queensland to boom.

Gas has traditionally been considered reliable, cleaner than coal and affordable, and it used to be the idea that, over time, it could provide the reliable base load power needed to fire up the nation — particularly in the transition between coal and renewables.

Markets overseas have been searching for cleaner, more stable energy sources and Australia has been stepping in to service these needs, but in the ongoing debate between coal and renewables, the role of gas as a source of reliable base load here seems to have waned.

When there's so much cheap gas out there, why are we staring down the barrel of an energy crisis, with expensive, and limited, domestic gas available?

Firstly, gas generation has been steadily falling, with some states banning or limiting gas development altogether (while coal generation has been increasing).

So without the development of new gas fields, experts are tipping that the domestic situation is on track to move from 'tight' to 'deficit' at around the 2020 mark — all while our exports continue.

But secondly, every nation in the world that produces a major quantity of gas has some form of gas reservation policy or law designed to make sure that domestic consumers are not disadvantaged by the country's gas export system. Except us. The only state with any reservation policy in place is Western Australia. So Australia's cheap gas is effectively already spoken for, and locked up for the export market out of Gladstone in long-term contracts.

Under Western Australian law, 15% of all the gas produced in the state has to stay in the state — a law designed to ensure the continuation of the domestic supply, and at an affordable price. This still allows for LNG investment, a steady level of export and for the local energy supply to remain secure.

But everywhere else, there's no reservation whatsoever.

On the back of February's load shedding in South Australia, which caused rolling blackouts for residents and huge headaches for our politicians, it's clear we're struggling to deliver reliable base load power while balancing climate change commitments at the same time.

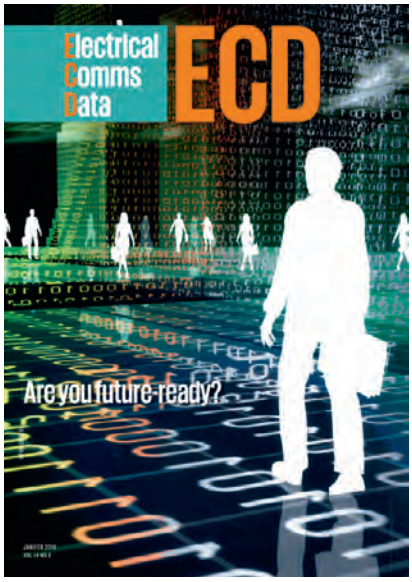
Chief Scientist Alan Finkel's preliminary findings into the Future Security of the National Electricity Market, ordered after last year's South Australia blackout and handed down late last year, said, "Additional gas supply is urgently needed but the domestic supply is constrained by international LNG demand; state and territory moratoria; low rates of exploration and pipeline capacity shortages. This is adding to price pressures."

It's called for a portion of the gas produced on the eastern side to be reserved for domestic use, but the federal government and the gas industry have both indicated their opposition to the idea and are instead calling for an end to the state limits on coal seam gas exploration.

In the interests of finding a long-term solution, in the midst of a crisis that's already here, maybe it's time we threw agendas, emotions and politics aside, and did both?

FREE

to industry and business professionals



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CASE STUDY

A welcome change

ABB has installed its innovative intercom technology at the Rivage Royale, one of the most recognisable residential buildings in Surfers Paradise. Boasting 176 luxury riverside apartments across 30 floors, the building offers breathtaking views out to the Pacific Ocean.

Residents had complained about the existing antiquated video intercom system. Since the installation of ABB's Welcome Intercom System, they now enjoy crystal-clear colour pictures with telephone-quality audio when speaking to their guests.

The system offers many more features than a standard intercom. IP capability allows residents to answer calls and open doors using a smartphone or tablet, and it can be fully integrated into ABB's home automation offering. By downloading the ABB-Welcome App, homeowners can now remotely control their door station via the internet and (with the full automation system) adjust lighting levels and air conditioning. Using the intercom and app, all calls to the residence can be transferred directly to a mobile device, making it possible to communicate even when not at home.

The system also includes an induction loop for the hearing impaired. As it only uses 2-wire technology for audio and video, it is easily installed and maintained.

Being a retrofit project meant that downtime needed to be kept to a minimum to avoid causing discomfort for residents. Commissioning and handover was achieved in just three weeks. It was supplied and installed by NASA Electronic Security Systems.

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Subscriptions:
For unregistered readers - price on application

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Audited Media Association of Australia cab

September 2016 Total CAB Audited Circulation 5,679

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

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