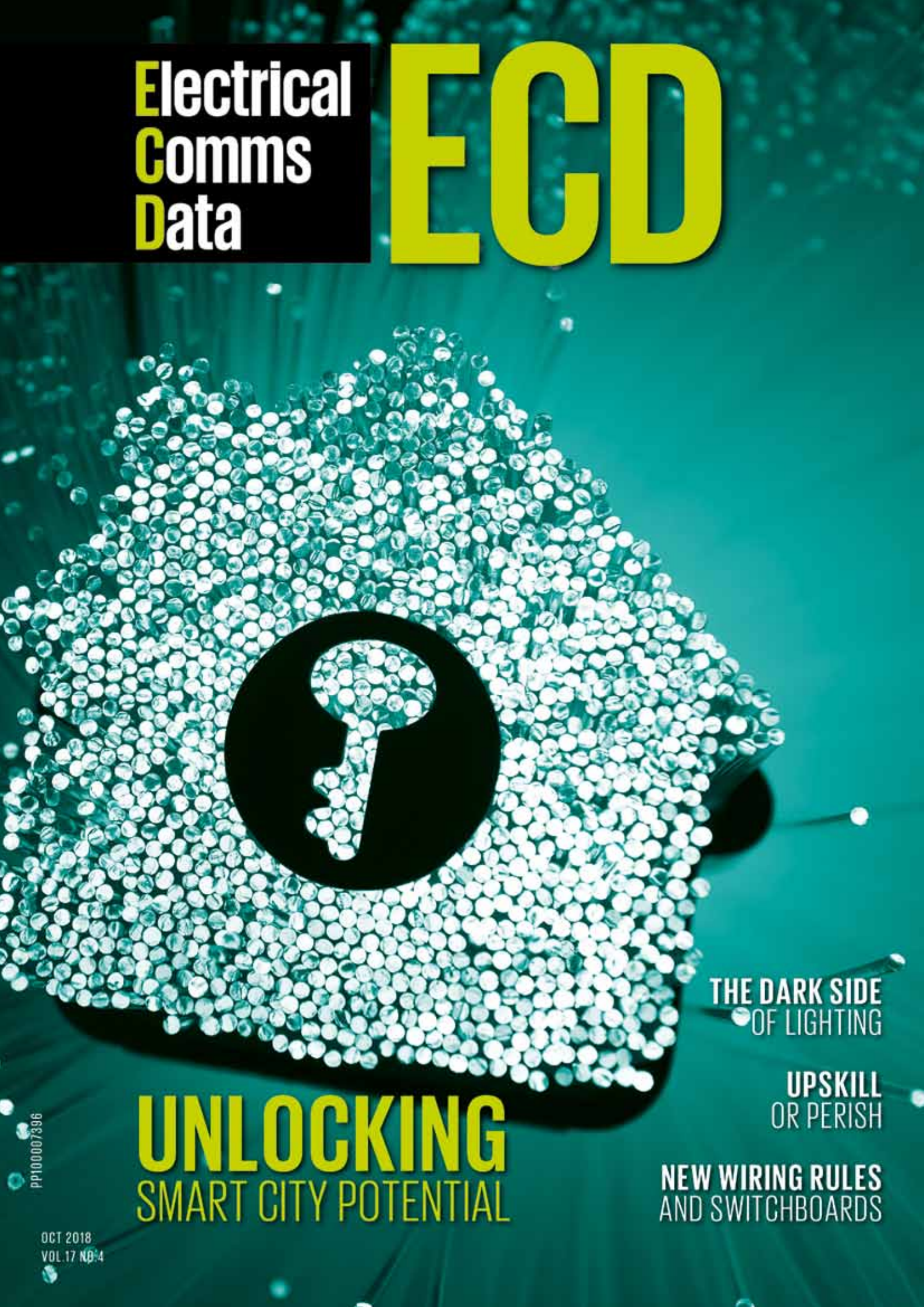
Electrical
Comms
Data
ECD



UNLOCKING
SMART CITY POTENTIAL

THE DARK SIDE OF LIGHTING

UPSKILL OR PERISH

NEW WIRING RULES AND SWITCHBOARDS

PP100007396

OCT 2018
VOL.17 NO.4

FLUKE INFRARED TOOLS

Rugged. Accurate. Built to Perform.

You need quick, accurate infrared imaging in a rugged body.
Easily identify small details that could indicate a big problem.

Get the full picture of your equipment status and the images needed to make next step repair recommendations immediately with Fluke's FREE Fluke Connect™ app.

Contact Fluke Australia

www.fluke.com.au ☎ **1300 135 853** ✉ **auinfo@fluke.com** **Follow Fluke Australia**

CONTENTS

cover image: ©Stock.adobe.com/au/xiaoliangge

FROM THE EDITOR

The Australian electrical and communications industry is going through challenging yet exciting times.

Industry contractors have experienced subdued demand conditions from key building markets over the past five years, while slow growth in household discretionary income has limited consumer spending on household electrical installations, according to research firm IBISWorld's latest report on the Australian electrical services industry.

The industry revenue is expected to drop at 1.4% a year over the five years through 2018–19, to $19.9 billion. This includes an anticipated 4.4% drop during the current year as demand from the new residential building market falls sharply. But there is a silver lining. While the decline in demand from the residential building and infrastructure markets during 2019–20 is expected to stall industry revenue at its current cyclical low, the projected return to synchronised growth in demand from most construction markets should underpin solid industry expansion from 2020–21 onwards, according to the report.

The firm expects the industry revenue to increase at 2.7% a year over the five years through 2023–24, to $22.8 billion.

Future demand will be driven by adoption of new technologies, increasing prevalence of long-term facilities management and energy-auditing contracts, according to the report. Key growth areas include the installation of networking systems for electronic data transfer in existing premises; C-Bus systems in homes and businesses; LED energy-efficient lighting; telephony, broadband and pay TV services; and surveillance instrumentation installation and maintenance, the report states.

Lastly, this is my final issue at the helm of ***ECD***. It's been an absolute pleasure to work with you all and to bring you all the latest information from the electrical, communications and data industry. Thanks for all your support.

Mansi Gandhi – Editor
ecd@wfmedia.com.au

THE DARK SIDE OF LIGHTING

Richard Mulcahy, CEO, Lighting Council Australia

The process for the development of the National Construction Code is woefully inadequate and veiled in an unnecessary level of secrecy, explains Lighting Council Australia CEO Richard Mulcahy.

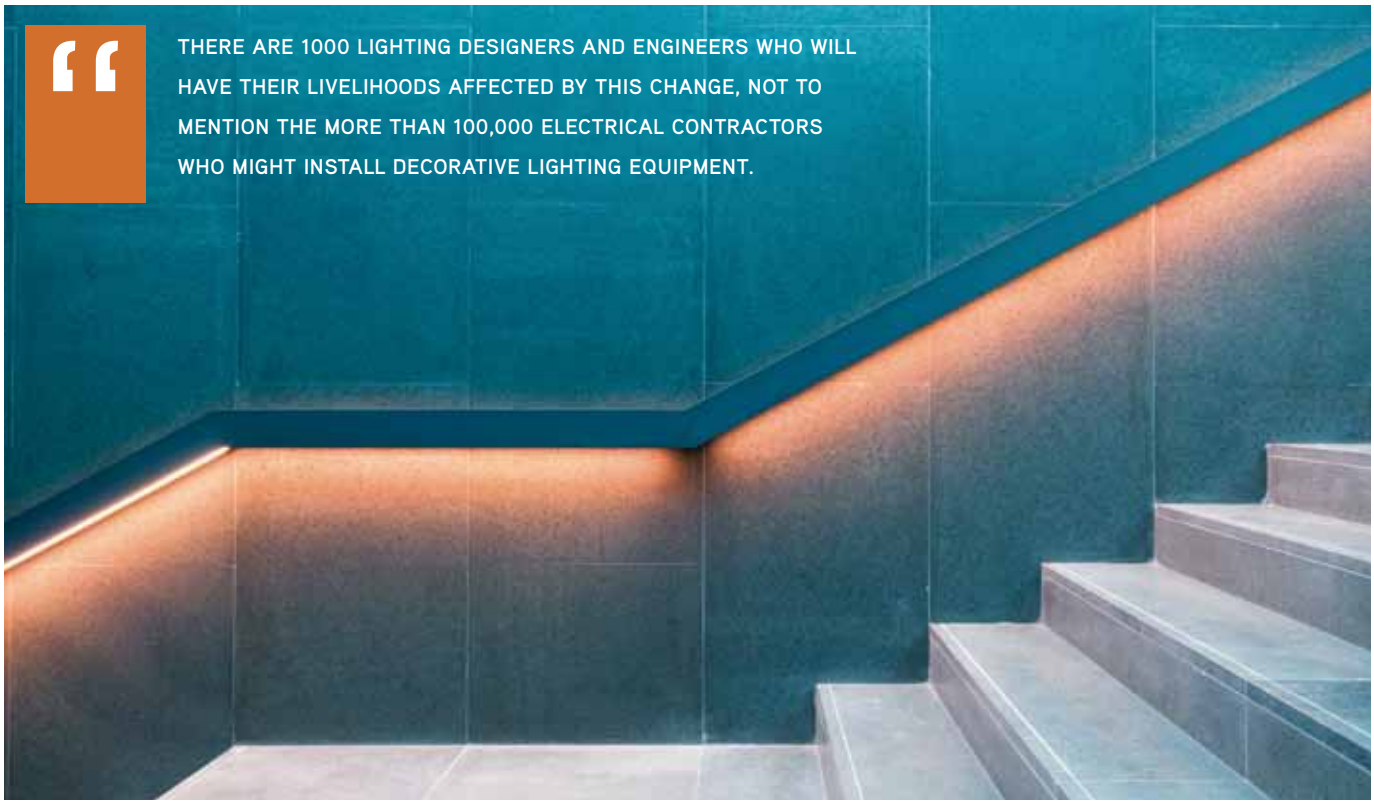
The National Construction Code, which is updated every three years, is due for enactment in 2019. These regulations will provide the rule book for new builds and redevelopments across Australia, affecting many billions of dollars' worth of industry.

At the eleventh hour of the multi-year consultation process, bureaucrats in the Australian Building Codes Board Office put to the Australian lighting industry a highly damaging proposal relating to decorative lighting. In recent months, Lighting Council Australia has dedicated significant resources in resisting the imposition of yet another set of short-sighted and ill-considered regulatory measures that reduce consumer choice and undermine the long-term future for manufacturing in Australia.

The expression 'decorative' is unhelpful because it conveys the sense that the category is frivolous or unnecessary. The better understanding of decorative is as non-general lighting or architectural lighting. The concept refers to the design and deployment of lighting to enhance aesthetic aspects of the built environment. The lighting equipment captured within the definition of decorative lighting (such as indirect lighting, wall washers and in-floor uplights) is lighting that increases the visual interest, comfort, wellbeing and perceived value of buildings.

The Australian Building Codes Board Office replied to the concerns of industry suggesting that it was too late for anything to be done, and that the proposal had found its way into the draft National Construction Code to be considered by the influential advisory body, the Building Codes Committee. The lighting industry is not represented on the Building Codes Committee and it is understood that the group endorsed a proposal in relation to decorative lighting at an important meeting in early August.

Building Ministers play a fundamental role in ensuring that the legislation is enacted and passes into law. As a consequence of Australia's federated approach, the Commonwealth Government cannot unilaterally regulate building and construction rules; rather, mirroring legislation is passed through each state and territory parliament separately. As a compromise to dealing with this coordination problem and in an attempt to harmonise rules to reduce costs for market participants, a COAG-style approach is used and states and territory governments work with the Commonwealth to develop standardised approaches.



The Building Ministers' Forum is one such body and was created to oversee the work of the Australian Building Codes Board and set its strategic direction. The practical reality of most COAG arrangements is that the Commonwealth has deeper pockets than state and territory governments and indeed the Commonwealth has taken a leadership role in recent decades in promoting nationwide economic reforms for which the buy-in and acquiescence of the states and territories is required.

Because state and territory Building Ministers are required to shepherd the legislation through their own parliaments, one would be forgiven for assuming that these Ministers are in the driver's seat in relation to developing policy, especially with regard to the impact of any policy on their individual jurisdictions. In practice, however, the process for the development of the National Construction Code elevates unelected bureaucrats to a similar level of authority as Cabinet Ministers.

When questioned by Building Ministers about the impact of provisions of the code on the lighting industry later in August, government officials provided confident assertions that the concerns of industry had been considered and reflected in a revised final version.

Neither Ministers nor the lighting industry, however, were in a position to see the revised proposal. While some level of confidentiality in the development of commercially sensitive policy is justified, the reliance on secrecy provisions by the Australian Building Codes Board and Office verges on the absurd. In order for a Building Minister to obtain a copy of a proposal, industry understands that the Minister is obliged to put a motion to the Building Ministers' Forum, requiring the agreement of a majority of Ministers. Those same Ministers have employees that report to them through their own public service agencies that routinely handle National Construction Code drafts and indeed represent them on the board and the committee. In other words: public servants can easily obtain documents that their Ministerial bosses cannot. This represents a very poor governance arrangement and undermines the principles of political accountability of elected officials to their constituents.

The lighting industry provides 5000 manufacturing jobs in Australia and many thousands more in related downstream roles. There are 1000 lighting designers and engineers who will have their livelihoods affected by this change, not to mention the more than 100,000 electrical contractors who might install decorative lighting equipment. Despite the offer from the industry to make undertakings in relation to confidentiality on equivalent terms of other industry representatives who can access the documents, the industry has been denied the opportunity to see the relevant provisions.

The Australian Building Codes Board has already taken significant risks in relation to public safety in recent years by approving the use of glow-in-the-dark (or photoluminescent) emergency and exit systems. These systems provide critical guidance to building occupants in the case of emergencies. Disregarding 40 years of academic literature and international consensus on the safe level of lighting required to safely evacuate buildings, particularly in cases of fire or reduced visibility, the Australian Building Codes Board endorsed the use of photoluminescent equipment under the 'Deemed to satisfy' provisions of the National Construction Code. Under the regulations, photoluminescent signs need only provide 0.03 Cd/m^2, which is 250 times less than the required light output of a conventional emergency and exit lighting system.

The work of industry bodies like Lighting Council Australia is to represent the interests of members, working to enhance the public good by ensuring that consumers have access to safe, reliable and affordable industrial outputs. The Council is a long-standing participant in the development of standards and an authority on technical matters affecting the lighting industry and related sectors, especially in relation to safety. The Council will continue to work with regulators at the state and territory and federal levels on a range of policy areas.

PRYSMIAN

The perfect balancing act.

Our Balance Master will keep Victoria sitting pretty.

Prymian's Balance Master cables are especially designed to be compatible with Rapid Earth Fault Current Limiters (REFCL – GFN Type) and are approved for use in Victoria. The Aim of REFCL is to enhance bushfire safety. To succeed you need cables able to withstand unbalanced voltages and comply with reduced capacitance requirements of REFCL systems. With this perfect balancing act of elements the flow can go on, safe and sound.

We're happy to tell you more:
Ph: 1300 300 304 Fx: 1300 300 307
Email: sales.au@prysmiangroup.com
www.prysmiancable.com.au
Prysmian Australia & New Zealand Prysmian Group

A brand of the
Prysmian Group

ALMOST 6000 SOLAR PANELS TO POWER FLINDERS UNIVERSITY

Flinders University is installing 5817 solar panels to power its Bedford Park campus.

"We've built a massive solar array of 4136 panels over an existing car park to create a solar carport, plus installed a further 1681 panels across six rooftops, that collectively will generate 20% of the university's electricity needs," said Flinders' Vice-Chancellor Professor Colin Stirling. The 1.8 MW system will generate an estimated 2700 MWh a year and set the scene for the introduction of autonomous campus shuttles run on renewable energy.

"The solar carport will include a charging dock for recharging planned autonomous shuttles that will ferry people across campus from the future Flinders Rail station. We've made provision for charging points for plug-in electric vehicles, to encourage their use on campus by providing access to free solar energy," he said.

The $4.895m project is expected to generate clean, green energy from October and pay for itself within seven years.

Flinders University Vice-President (Corporate Services) Mark Gregory said Flinders' main campus has a large number of people and uses a significant amount of resources. "In demonstrating some of these more progressive ideas our campus can become a place where we live and breathe and create a living laboratory for new technologies, sustainable activities and new behaviours," said Gregory.

Professor Stirling said the project adds to existing solar arrays on the university's new Student Hub, and Law and Commerce Buildings, illustrating Flinders' increasing commitment to environmental sustainability.

This investment in on-site renewable energy generation at the Bedford Park campus will contribute to decarbonising the energy grid in South Australia and elevate Flinders as a leader in the use of solar to support the sustainable operation of its campus and facilities, according to Stirling.

"While we are improving our operational costs, we're also providing an opportunity for our researchers to test 'real world' deployment of renewable energy technologies on our localised electricity grid at Bedford Park, as we create a more robust system with flexible forms of supply."

ELECTRICITY AND GAS METER SELF-READS A STEP CLOSER

The Australian Energy Market Commission (AEMC) has made a draft determination which, if implemented, will give consumers the right to request an inaccurately estimated energy bill be adjusted in accordance with the customer's own reading of their electricity or gas meter.

"This draft determination endorses the core elements of the Turnbull government's rule change proposal made in March, requesting the AEMC improve the National Energy Retail Rules to take action on bills based on inaccurately estimated usage," said Environment and Energy Minister Josh Frydenberg.

"The proposed amendments to the rules will reduce the risk of customers being exposed to the financial shock of significant under- or overcharging due to an inaccurately estimated bill."

Beyond requiring retailers to adjust an estimated bill with a self-read at the customer's request, the proposed changes will also introduce an obligation on retailers to inform customers of their right to request an adjusted bill.

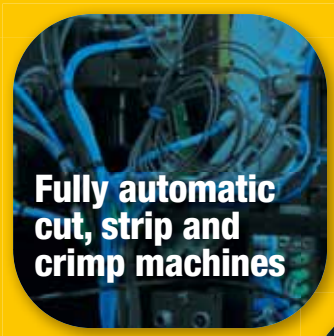
The AEMC has also recommended the introduction of civil penalty provisions if a retailer does not comply with these new obligations. "While some retailers already offer their customers the ability to submit a self-reading of their meter, these changes will ensure everyone has the ability to rectify an inaccurately estimated bill," Frydenberg said.

These new rules will complement actions already taken by the Turnbull government as part of the plan to deliver more affordable energy for Australian households, including: a rule change requiring energy retailers to notify their customers when their discounts are about to finish or change; a rule change proposal requiring retailers to provide their customers with advance notice of price changes; and a rule change proposal to reduce the time it takes to install new meters.

Cable Assembly & Box Build Assembly

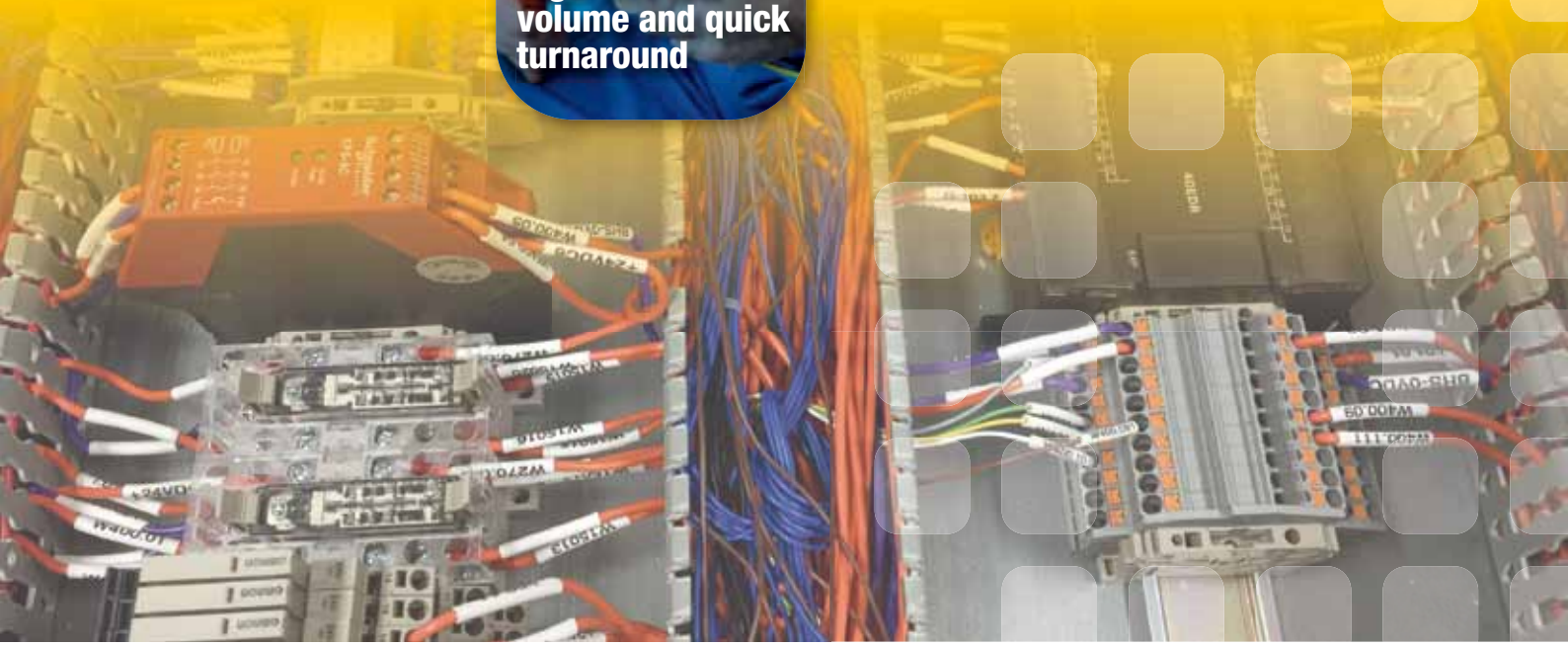
Metal Work
Label and Wire Marker
CNC Engraving and Machining
Functional Test and Logistic Service


Electrical box assembly


Fully automatic cut, strip and crimp machines


High mix low volume and quick turnaround

@Ampec we specialise in manufacturing of custom design cable assemblies as well as turnkey electronic and electric product assemblies.



+61 2 8741 5000
e sales@ampec.com.au
w www.ampec.com.au

ampec TECHNOLOGIES

EATON APPOINTS GM, SUPPLY CHAIN MANAGEMENT ANZ

Power management company Eaton has appointed Allan Ching as General Manager, Supply Chain Management Australia and New Zealand.

Ching joins Eaton from infrastructure provider Vertiv Co where he was Head of Supply Chain ANZ. He has over two decades' experience working in the industrial and technology industries, including a number of senior supply chain, operations and strategic planning roles at Emerson in Australia, United States, China and Philippines.

Gordon Makryllos, Managing Director Australia and New Zealand of Eaton, said, "Supply chain is a critical dimension for our customers and partners who rely on us to meet their time frames and deliver quality product to hundreds of locations across Australia and New Zealand."

Allan Ching, General Manager Supply Chain Management Australia and New Zealand, said he will be working closely with Eaton's power quality, power distribution and growing services teams to increase supply chain flexibility.

Ching's focus will be to build on Eaton's strong foundation, driving sustainable solutions locally that deliver positive outcomes for customers and strengthen our capability to meet future market requirements.

SIGNIFY ILLUMINATES VIETNAM'S IMPERIAL CITY

Vietnam's 'Imperial City' of Huế has been illuminated with Philips Color Kinetics technology by Signify.

The thick stone walls of Huế's fortress offered protection to citizens of the 'Imperial City' for nearly a century and a half. Once only accessible to royalty, the Imperial City has been revitalised to not only preserve and honour the historical value of the monument but also to create a special attraction at night, attracting many tourists and locals alike.

The project was commissioned by Vietravel Company and sponsored by the Chairman of Thua Thien-Huế provincial People's Committee. Technology used include 270 Philips Color Kinetics Vaya linear RGB LP and 155 Philips Color Kinetics Vaya Flood RGB LP controlled by LSM gen 5 1000. The installation was completed in March 2018.

The new lighting is able to create light shows that include simulating the firing of 'cannons' set in the walls of the tower. The LED lighting system is anticipated to be up to 75% more energy efficient than conventional lighting systems.

Image courtesy of Signify.

©iStockphoto.com/Anne Bæk Pederson

MEA ENDORSES SAFETY-FIRST APPROACH TO SOLAR PANELS

Master Electricians Australia (MEA) has endorsed the Victorian Government's plan to provide solar power to 650,000 homes.

MEA also praised the government's emphasis on quality components and safe installation techniques. However, MEA Chief Executive Officer Malcolm Richards also urged the government to expand the program to include funding for battery storage and safety switches, to maximise the energy efficiency and safety benefits of the scheme.

The electrical industry body also welcomed the government's announcement that it will dedicate a portion of the funding to ensure adequate training for installers, and its commitment to using approved products.

"We've seen some disastrous results from governments meddling in the energy efficiency market in the last decade in Australia, including fires and fatalities due to the use of poor equipment and poorly trained installers," said Richards.

"So it's refreshing and very welcome to see the emphasis on safety and quality. Master Electricians Australia particularly endorses this aspect of the proposed program."

Richards urged the government to consider extending the rebate to domestic battery units, which could smooth the supply and demand peaks in the networks, relieving the need to build more generation capacity in the grid in the future.

He also urged the government and home owners to consider the need for safety switches, as part of such a widespread electrical program. Many homes in Victoria do not have safety switches on every circuit, and some have no safety switches at all, said Richards.

"There are 15 people killed and 300 hospitalised in Australia every year because of domestic electrical accidents that could be prevented with safety switches.

"While the government is funding electrical work at 650,000 homes, it could move to ensure the safety of those home owners by requiring a minor investment in safety switches while the sparkie is on-site."

LCS 3

3 DIMENSIONS OF EXCELLENCE

PERFORMANCE ● SCALABILITY ● EFFICIENCY

PERFORMANCE

- 25Gbps and 40 Gbps Ethernet applications – COPPER SYSTEM
- 40Gbps and 100 Gbps Ethernet applications – FIBRE OPTIC SYSTEM
- MTP/MPO high density and up to Cat. 8 solutions – FIBRE OPTIC & COPPER SYSTEMS

SCALABILITY & MAINTENANCE

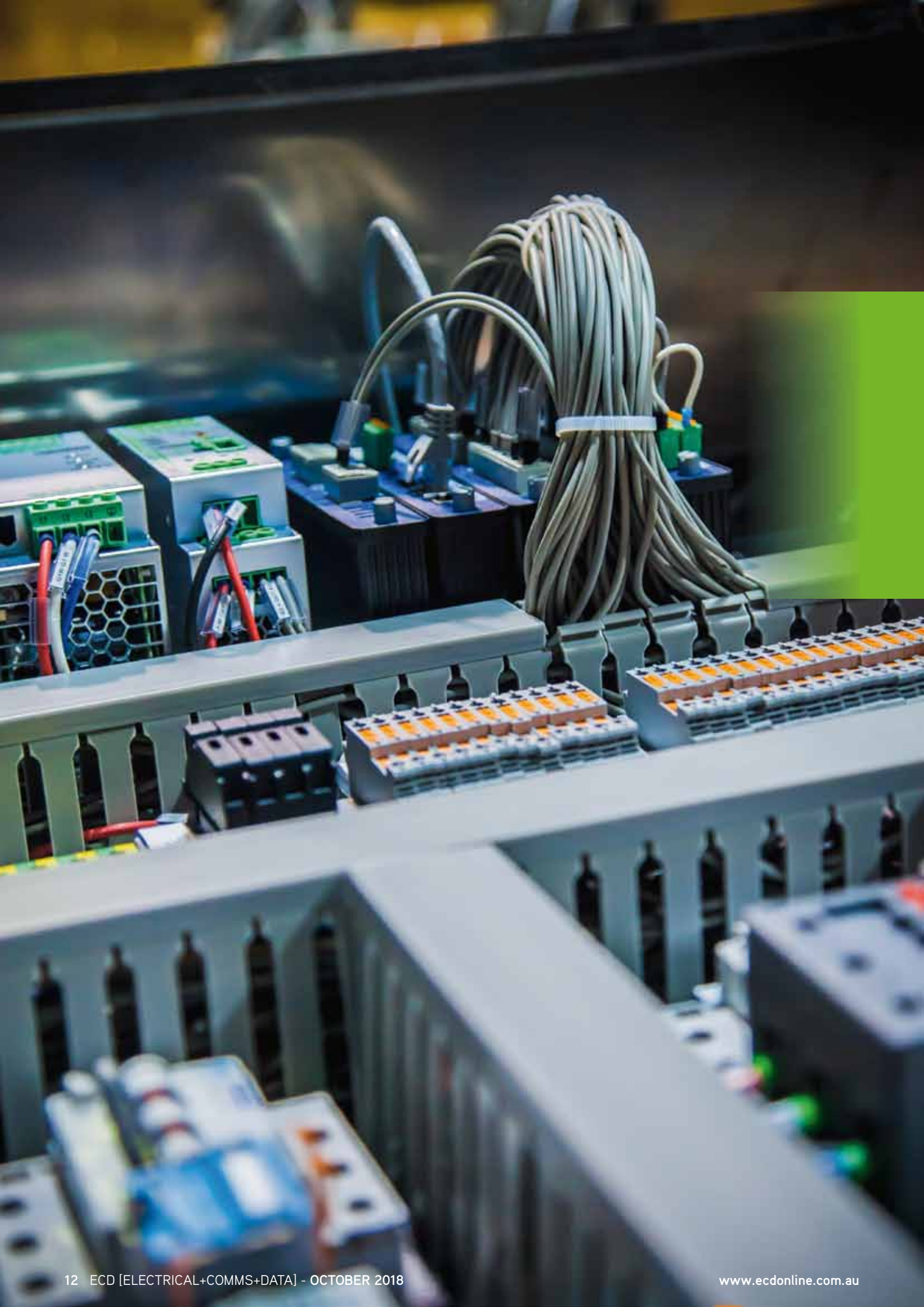
- Modular patch panels and fibre optic drawers
- Panels with sliding cassettes
- Fast push-button extraction

EFFICIENCY

- 48 ports per unit for high density – COPPER SYSTEM
- 96 LC per unit for high density – FIBRE OPTIC SYSTEM
- 144 LC per unit for ultra-high density - FIBRE OPTIC SYSTEM

www.legrand.com.au
1300 369 777

legrand®



Q&A: NEW WIRING RULES AND SWITCHBOARDS

The six-month transition period for the new Wiring Rules Standard (AS/NZS 3000:2018) ends in January 2019. In this article, Shanaka Unantenne, Managing Director, Dara Switchboards, provides answers to questions on key changes related to switchboards.

Q: Can you drill a weep hole in an IP rated electrical enclosure to manage condensation issues?
A: This is not an acceptable method to manage condensation as it destroys the IP rating of the enclosure. Condensation issues are now to be managed by using suitably IP rated breathing/pressure equalisation valves to assist with changes in humidity and drainage of moisture.
Q: Can you install an IP2X electrical equipment/enclosure outside a building?
A: Yes, but only if the enclosure is installed under the eave, specifically within the 30-degree area covered by the eave (image 1). Electrical equipment/enclosures installed in the shaded area must be at least IP33 rated with the exception of meter panels that are rated to IP23.
Q: If you are adding final sub circuits to an existing switchboard do you need to consider upgrading all the sub circuits with RCD protection?
A: No. However, you will have to ensure the compliance to the new edition of the standard if you are carrying out alterations. Refer to clause 2.6.3.2.5 to ensure the additional protection by RCDs is considered.
Q: Can I run the actives from the main switchboard to a distribution board and run the neutral from another distribution board?
A: No. All conductors of a sub main or a final sub circuit must be connected on one switchboard.
Q: If the installation is supplied with multiple supplies do I need to have main switches for each supply at the main switchboard?
A: You are not required to have main switches for each supply at the main switchboard as long as the main switches for alternative or supplementary supplies are located at any switchboard within the installation, provided these main switches are installed in accordance with AS/NZS 3010 or AS/NZS 4777.1.
Q: Do you need to have the supply conductors of a switchboard rated above 800 amps separated using insulation or barriers?
A: No. An IP2X enclosure with bare busbars is acceptable. Refer to clause 2.5.5.1 (3).
Q: What sub circuits need to be installed with RCDs for domestic and residential installations?
A: Irrespective of the type (lighting, socket outlets, fixed equipment, etc) and load current ratings (10 A, 32 A, 1 phase, 3 phase etc), ALL final sub circuits must be RCD protected.
Q: Do you need to install RCDs for all sub circuits in non-domestic/non-residential installations?
A: No. You are only required to install RCDs for final sub circuits of lighting, socket outlets, direct connected handheld electrical equipment and direct connected electrical equipment that represents an increased risk of electric shock up to and including 32 A. This is up from 20 A, and therefore will have an impact on your switchboard circuit designs, which may not have previously been designed with RCDs. Risk assessment will need to be performed on all fixed equipment to determine if those circuits require RCD protection. In the absence of such an assessment, all fixed equipment must be protected by RCDs. Refer to clause 2.6.3.2.3.3.
Q: What are the changes in the new standard that would impact the switch room, electrical cupboard and switchboard sizing to comply with accessibility and emergency exit requirements?
A: The changes include the following requirements:

1. The distance from all faces of a closed switchboard must be, as a minimum, 1 metre from all faces of the switchboard. In a domestic installation this can be reduced to 0.6 metres. Therefore, even if the switchboard is constructed using lift off type doors, the switch room walls must be, as a minimum, 1 metre from all faces of the switchboard to comply with this requirement.
2. Unimpeded space of at least 0.6 metres around the switchboards with switchboard doors in any position and switchgear fully racked out position.
3. Where switchboards are located opposite each other, the clear-

ance of 0.6 metres must be measured with all doors in the open position.

4. If the nominal capacity of the switchboard is more than 800 A (ie, a high current switchboard) and/or the length of the switchboard is more than 3 metres, the switch room must have 2 exits spaced well apart. You may have only 1 exit if there is at least 3 metres of clear space from the switchboard (door open and equipment racked out).
5. Doors of enclosures dedicated to switchboards that open into a passage or narrow access way must be capable of being secured in the open position to prevent workers being inadvertently pushed towards the switchboard.
6. Openings or doorways must be at least 0.9 metres wide by 2.2 metres high.

Q: Do I need to de-rate the cables that go inside the ceilings, walls and under floors?

A: Yes. You need to consider that the cables are completely surrounded by insulation (if the length is more than 400 mm) and de-rate the cables as per AS/NZS 3008.1.

Wiring systems in domestic installations must be installed on the assumption that thermal insulation in ceilings, walls and under floors, if not currently installed, will be installed in the future. This may lead to using the next cable size up for lighting and power circuits.

Q: Where do we need to use arc fault detection (AFDDs) devices?

A: These devices are used to detect arc faults in sub circuit wiring and not in switchboards. It is recommended to use AFDDs in premises with sleeping accommodation, premises that store materials which pose a fire risk and locations where combustible construction material is stored. Use of AFDDs is not mandatory; however, the use of such devices is considered good practice.

Q: Can you install a solar inverter within 3 metres of a pool?

A: No. Equipment related to a generating system, including engine driven generator sets, standalone power systems, grid connected inverter systems and battery systems must be installed further than 3 metres from baths, showers and other fixed containers.

Q: What is the new switchboard standard?

A: The AS/NZS 61439 series published in 2016 is the new switchboard standard. The old standard, AS/NZS 3439 series, is still valid until 2021. AS/NZS 3000:2018 now provides appendix K which references the new switchboard standard.

Q: As per the new switchboard standards do you need to verify the short circuit withstand strength of every switchboard?

A: No. Verification of the short circuit strength is only required for switchboard assemblies that exceed the short circuit current of 10 kA rms or 17 kA peak.

Q: What are the routine verifications a switchboard manufacturer should undertake as per the new switchboard standard?

A: Verification will comprise the following categories. Refer to clauses 11.2 to 11.8 of AS/NZS 61439.1:2016 for more details:

1. Degree of protection of enclosures.
2. Clearances and creepage distances.
3. Protection against electric shock and integrity of protective circuits.
4. Incorporation of built-in components.
5. Internal electrical circuits and connections.
6. Terminals for external conductors.
7. Mechanical operation.
8. Performance (see clauses 11.9 and 11.10 of AS/NZS 61439.1:2016).
9. Dielectric properties, wiring, operational performance and function.

Please refer to the new Wiring Rules edition to learn about other changes. You could also get advice from organisations such as Master Electricians, NECA and NESMA if you are a member. It may be worth becoming a member of such organisations to get up-to-date information and assistance to navigate through the transition period and achieve compliance to the new edition of wiring rules. Your trusted electrical inspector could also guide you through the changes and compliance. The new standard can be purchased through SAI Global https://infostore.saiglobal.com/en-au/Standards/ASNZS-3000-2018-1974289/.

DaRa Switchboards
ElectricalSwitchboards.com.au

Series 2005 is the leading brand of 19" rack mount enclosure for data and communications installations, with a huge range of sizes. MFB have the right cabinet for your needs.

MFB®

DESIGNERS & MANUFACTURERS
OF 19" RACK SYSTEMS

When you choose Australian made, you're choosing more than quality and reliability, you're choosing peace of mind.

MFB's range of innovative racking solutions is proudly made onshore, to ensure quality and consistency above all others. Backed by constant development, unsurpassed customer support and expedited delivery. MFB proves a solid project partner whatever your requirements. Australian made, makes Australia. With a solid history of over 45 years of supplying innovative, off-the-shelf and custom built racking systems, you can rely on MFB to ensure when you buy Australian, you're investing and supporting Australian industry.

AUSTRALIAN MADE
MAKES AUSTRALIA

bsi. ISO 9001 Quality Management

19" Rack Cabinets
Licence No. 84394

www.mfb.com.au

VIC - **P** (03) 9801 1044 **E** sales@mfb.com.au
NSW - **P** (02) 9749 1922 **E** sydney@mfb.com.au

Find us on

REDEFINING URBAN ENERGY

Mansi Gandhi

The Australian smart cities market is growing by the nanosecond. In this race among cities to become smarter, network infrastructure and an outcome-based approach will be critical for success.

Rising urban population, need to better manage limited natural resources and increasing focus on environmental sustainability is driving demand for smart city solutions, according to consulting firm Grand View Research, Inc. The firm predicts the global smart cities market size to reach US$2.57 trillion by 2025.

The Australian Government's $50 million Smart Cities and Suburbs Program, launched in March 2017, is supporting the delivery of projects that improve the livability, productivity and sustainability of cities and towns across Australia. Under Round One of the Program, 50 projects received US$28.5 million in government funding. Round Two was announced in May and will support US$22 million of funding available through a competitive grant process. Funding flowed to all states and territories with nearly 40% of projects located in regional areas.

According to Mark Atkinson, Director of Sales, Australia-Pacific at Itron*, a global provider of smart meter, data collection and utility software systems, in the next 12–24 months, the market will be driven by two trends — the nexus between smart grid and smart city and the need to enable energy market efficiency. "The first will see the leveraging of existing investment to provide services; the latter will see solutions that enable improved network asset management and advanced services like demand management; behind the meter solutions," said Atkinson.

Network infrastructure is key to a smart city deployment, according to Atkinson. "That said — it's the outcome, not the technology that should be the focus. We see a lot of attention on specific network technologies in this space. Itron's view is that the network forms a canopy for connectivity. It is unlikely that one technology will do everything you need. Hence our focus on standards-based solutions.

"For some time a lot of the debate has been around LPWAN/Cellular technology wars. We are seeing that these projects are maturing with the market starting to look for genuine outcomes in the form of benefit for the city/citizen. Itron has positioned itself as an outcomes provider as we see this trend accelerating," said Atkinson. Itron is focused on Open Architecture solutions. "As such, we are focused on IPv6-enabled networks and leveraging the upcoming WiSUN standard."

Enabling the end-user community to add devices and applications (distributed intelligence) is critical to the future of smart city/smart grid/IoT solutions. Atkinson said that at the moment, there is a lot of interest in the sector but there is little consensus in the approach. "The user community are coming to grips with the real issues; and we are starting to see the emergence of more consistent approaches. This will take time. For this reason Itron has invested in a process to help the customer community understand how to successfully kick off a project; and see it through to achieving real business outcomes."

But what do smart cities do to succeed? "There is no secret sauce — this is about discipline in understanding the business issues; pain points and the need for improvement. So cities need to have a process to step through identifying the issues. The solution; how to pilot the system and then scale. Having a process and access to the experience to take this journey successfully is key," said Atkinson.

"Itron is transitioning from a 'vertical utility' (water, gas. electricity) focus to 'customer solution' focus," said Atkinson. "We also see the continued expansion of Smart City/IoT activity and the expanded overlap of Smart Grid/Smart City. Our teams will focus on a go to market approach looking to provide business outcomes (consulting on how to operate the business and achieve better business results from investment through to managed service solutions on behalf of our customers)."

The company has a number of smart city-related projects in Australia. The company's recent project at ACTEW AGL Distribution is a finalist for the IoT Alliance Australia Awards this September. The ACTEW project combines both mesh and cellular data solutions to achieve the business outcome, said Atkinson.

**Itron presented on the drivers for change in the energy market at the IoT Impact conference held at the University of Technology Sydney in September. Thie company looked at global trends and how these impact the Australian market. Itron is working with innovators to deliver peer-to-peer trading; demand response; open data access and behind the meter solutions.*

Clipsal FireTek®

Smoke Alarms

Complete range for every home

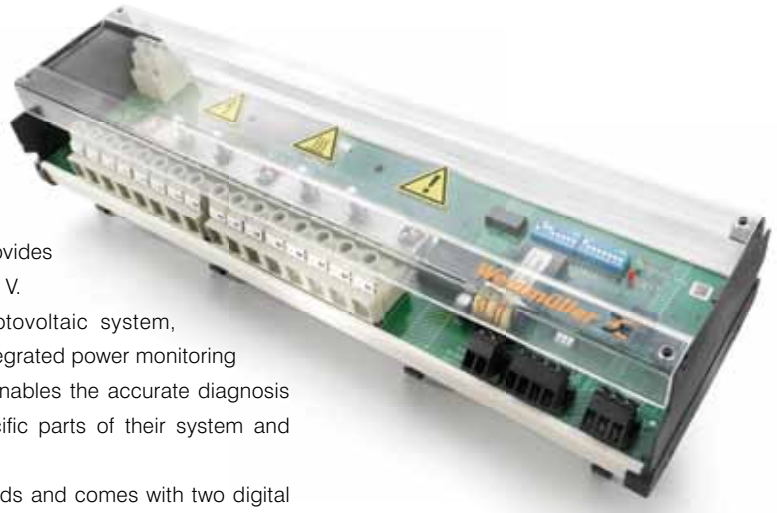
Photoelectric smoke alarms and accessories for every application.

- **Photoelectric flush mounted 240V smoke alarm**
  Unique low profile ensuring easy installation.
- **Lithium battery powered photoelectric smoke alarm**
  10 year lithium battery with built-in wireless interconnection.
- **Surface mount 240V photoelectric smoke alarm**
  Simple to install with 9VDC or rechargeable lithium backup battery options.
- **Wireless based smoke alarm**
  Easy to interconnect all the smoke alarms in your customer's home.
- **Optional mounting bases**
  Wireless interconnection, connect to/control other devices and systems or remotely test/hush your surface mount smoke alarm.

clipsal.com/smokealarms

Life Is On

CLIPSAL by Schneider Electric



Photovoltaic monitoring

Transclinic 16i+ 1K5 L photovoltaic monitoring provides string monitoring and measurement up to 1500 V.

To achieve optimum performance of a photovoltaic system, monitoring each and every string is essential. Integrated power monitoring provided by the Transclinic monitoring system enables the accurate diagnosis of errors. This means users can optimise specific parts of their system and reduce maintenance costs considerably.

Transclinic complies with all the latest standards and comes with two digital inputs for monitoring switch settings and surge protection. Special feature: depending on the version, up to two strings can be monitored via a single channel.

Weidmuller Pty Ltd

www.weidmuller.com.au

UPS

The APC Smart-UPS On-Line lithium-ion 1000 and 1500 VA 230 V UPS has lithium-ion (Li-ion) batteries. The 1000 and 1500 VA rack/tower UPSs offer all the features that users depend on and expect from Smart-UPS On-Line solutions.

This includes true double-conversion on-line power protection, pure sine wave output, high efficiency, extended run capability with external Li-Ion battery packs, flash-upgradable firmware, remote management options and much more. The advantages of the Li-ion battery are said to include greater tolerance of ambient temperatures, greater performance at these higher temperatures, longer battery life and lighter weight. This improves the total cost of ownership (TCO) of the product and provides greater life cycle management to the user, according to the company.

APC by Schneider Electric

www.apc.com

Anybus WLAN access points

HMS Industrial Networks' two new Anybus WLAN Access Points — industrial-grade infrastructure hubs for long-range Wireless LAN connectivity — are suitable for collecting data wirelessly from any system or machinery, especially those equipped with Anybus Wireless Bolt or Bridge.

The Anybus Wireless LAN Access Points allow users to set up an industrial wireless infrastructure for multiple wireless clients. Available in two different versions, one for IP30 applications and one for IP67 (outdoor and water resistant), both products feature the same characteristics in terms of range and functionality.

The Access Points enable wireless connectivity to all types of industrial equipment but are especially suited to connect to machinery and systems that are communicating wirelessly via the Anybus Wireless Bolt and Bridge from HMS.

The WLAN Access Points fit into any automation architecture, enabling high-performance wireless connections to a multitude of wireless clients. By supporting up to 1000 Mbps wired Ethernet LAN connection and up to 300 Mbps wireless connections, high data throughput is ensured for each client.

Configuration is done via a web-based interface and secure wireless connections are achieved thanks to support for WEP/WPA/WPA-PSK (TKIP,AES)/ WPA2/WPA2-PSK(TKIP,AES)/802.1X.

Key features include: wireless range up to 400 m; rugged design with IP30- or IP67-classed housing; PoE (Power over Ethernet) supported by the IP67 version; easy configuration via a web-based interface; wireless LAN interface with up to 300 Mbps link speed; industrial quality.

Global M2M

www.globalm2m.com.au

Entry-level sensor series

The mySmart MY-PA08 sensor series provides versatile and easy-to-install entry level sensors.

Designed with a single relay channel, these non-programmable sensors are available in two different mounting options — flush mount (MY-PA08-R) and surface mount (MY-PA08-R-SUR). Suitable for most applications, each sensor covers a diameter range of up to 8 m with a lens design providing a 360° 'no dead spot' detection angle.

Designed for simplicity, the sensor range utilises spring clamps for quick and easy installation and has user-friendly manual adjustments for lux and time settings, making the MY-PA08 series a suitable entry-level sensor.

mySmart

mySmart.com.au

Fire alarm cables

Prysmian Fire Alarm cables are designed to connect each piece of hardware and transfer every signal.

The Fire Alarm cable range consists of flat TPS, twisted and twisted screened configuration for various applications. They are available in sizes ranging from 0.75 to 1.5 mm^2. The outer sheath of the cable is designed with specific Easy Strip PVC material for ease of termination to help users save time during installation. Additionally, cables pass WSX1 mechanical protection test.

For convenience, they are easily identified as Fire Alarm cables through the red sheathing. They are also compliant with the marking requirements of AS1670.2015, which ensures speaker cables have a white stripe on the sheath.

As well as having the GBCA Certificate for Best Practice PVC, the Fire Alarm cables are RCM certified, compliant to AS/CA S008 and can be purchased in 200 and 500 m rolls.

Prysmian Australia PTY LTD

www.prysmiancable.com.au

High-bay LED lighting

The Cortem EXEL-L and the EVL high-bay LED lighting range is suitable for applications within hazardous environments.

Running at low operating temperatures, NHP's EXEL-L series is IECEx Certified enabling installation in hazardous areas where a high degree of protection and resistance against corrosion is required.

The range is equipped with long-life LED tubes sealed in a transparent resin. The reclining frame on which the LED tubes are housed enables access to the inside part of the lighting fixture. This system is said to simplify the maintenance and any interventions on the electrical part required by the operator.

With similar features, the EVL high-bay range incorporates an aluminium housing, specifically designed with a finned body to dissipate heat and minimise dust accumulation.

In addition to being Zone 1, 2, 21 and 22 compliant, the EVL range is also purposely designed to be compact and lightweight, allowing for quick and easy installation. When it comes to selecting hazardous area lights, NHP offers complementary in-house lighting designs to improve efficiency by optimising product placement and selection.

NHP Electrical Engineering Products Pty Ltd

www.nhp.com.au

Light fittings for hazardous areas

The R.STAHL 6036 series LED-based tubular light fittings can be used in Ex zones 1/21 and 2/22 and provide an alternative to typical linear luminaires.

With a diameter of 55 mm, the lights are said to take up less than half the space required by conventional linear luminaires, and reach less than half their weight.

The lights are said to consume only about half as much power, and the specific power consumption per 100 lx is just 1.5 W/m^2, providing savings in operating costs.

The tubular light fittings can be operated in a wide temperature range from -40 to +60°C. The maintenance-free units are suitable for general lighting purposes or for use as machine lamps.

Due to their slim design, they can be installed in hard-to-access locations. Even at an ambient temperature of +60°C, they reach a lifetime of 80,000 h. The vibration-proof units are IP66/IP67 protected, making them particularly suitable for maritime applications. In addition to ATEX and IECEx certificates, they also feature certificates for many major markets (GOST, Gazpromnadzor, UL do Brasil, GL).

Control Logic Pty Ltd

www.controllogic.com.au

WHEN IT COMES TO SWITCH-MODE POWER SUPPLIES, CHOOSE THE #1^

QUICK AND EASY ONLINE ORDERING

1 Register your business at www.techbrands.com/register
2 Check price and availability
3 Order

TECH BRANDS by ELECTUS DISTRIBUTION

Power & Ecotech | Cables & Connectors | Sound & Video | Test & Tools | Security & Surveillance

LOCAL • SERVICE • STOCK

MORE WAYS YOU CAN IMPROVE YOUR BUYING WITH TECHBRANDS...

SAVE TIME	Shop at a single reliable supplier with a large product range
SAVE MONEY	Competitive prices with volume pricing
IMPROVE EFFICIENCY	Fast despatch from local distribution centres in Sydney and Auckland
PEACE OF MIND	Providing consistently great service

www.techbrands.com
1300 738 555

COMMS 2018 CONNECT

FREE EXPO PASS

MELBOURNE

Melbourne Convention & Exhibition Centre

20-22 Nov 2018

Events for critical communications users and industry

• 1500+ USERS AND INDUSTRY EXPERTS • 80+ EXHIBITORS • 75+ SPEAKERS • 7 TRAINING WORKSHOPS • 3 CONFERENCE STREAMS

SPEAKERS INCLUDE

TJ KENNEDY
Co-Founder
The Public Safety Network

DR YONG CHANG
Senior Director, Global Mobile B2B Team
Samsung Electronics

MIKE POTH
CEO
First Responder Network Authority

LIEUTENANT DAN GOMEZ
Innovation & Strategic Planning Division
Los Angeles Police Department

CHRIS GOLDSMITH
Programme Manager
New Zealand Emergency Services

DR DAVID LUND
Vice President — Public Safety Communications Europe Coordinator — BroadMap

PRE-CONFERENCE TRAINING WORKSHOPS – TUESDAY, 20 NOVEMBER

- **LTE Connect**
- **Critical messaging in the modern world**
- **Radio spectrum management — what's trending in 2018**
- **Community safety information management: an international perspective**
- **ARCIA professional development training workshop — multicoupling**
- **Digital land mobile radio and mobile broadband landscape — key information for evolving critical wireless communications**
- **Critical control rooms for the next generation of operations**

In conjunction with the

ARCIA Industry Gala Dinner
21 November –
Melbourne Convention Centre
Book with your conference package or visit www.arcia.org.au to book your tickets

Platinum Sponsor

Hytera Respond & Achieve

Gold Sponsors

COBHAM
CODAN RADIO COMMUNICATIONS
HARRIS
MOTOROLA SOLUTIONS
rftechnology
simoco wireless solutions
omnitronics
tait communications
ZETRON

Innovation Partner

Networking Drinks Sponsor

Wireless Innovation

Media Partner

comms critical

Association Partner

ARCIA

Supporting Associations & Publications

dPMRigical
RadioResource International
IWCE
TCCA
THE CRITICAL COMMUNICATIONS REVIEW

For more information or to register visit **www.melbourne.comms-connect.com.au**

UPSKILL OR PERISH

Annaleis Bijdeveldt, Grant Collis and Joe D'Amico – Chisholm TAFE

Technological advancements, Internet of Things and automation are challenging and changing the vocational education and workforce training models.

As new technologies continue to roll out across Australia, information and communications technology (ICT) technicians are increasingly looking for optic fibre endorsements to remain employable, find new opportunities or grow their existing business. The rollout of the national broadband network (nbn) is expected to grow the demand for ICT at 2.2% a year, according to The National Centre for Vocational Education Research (NCVER) data from May 2018.

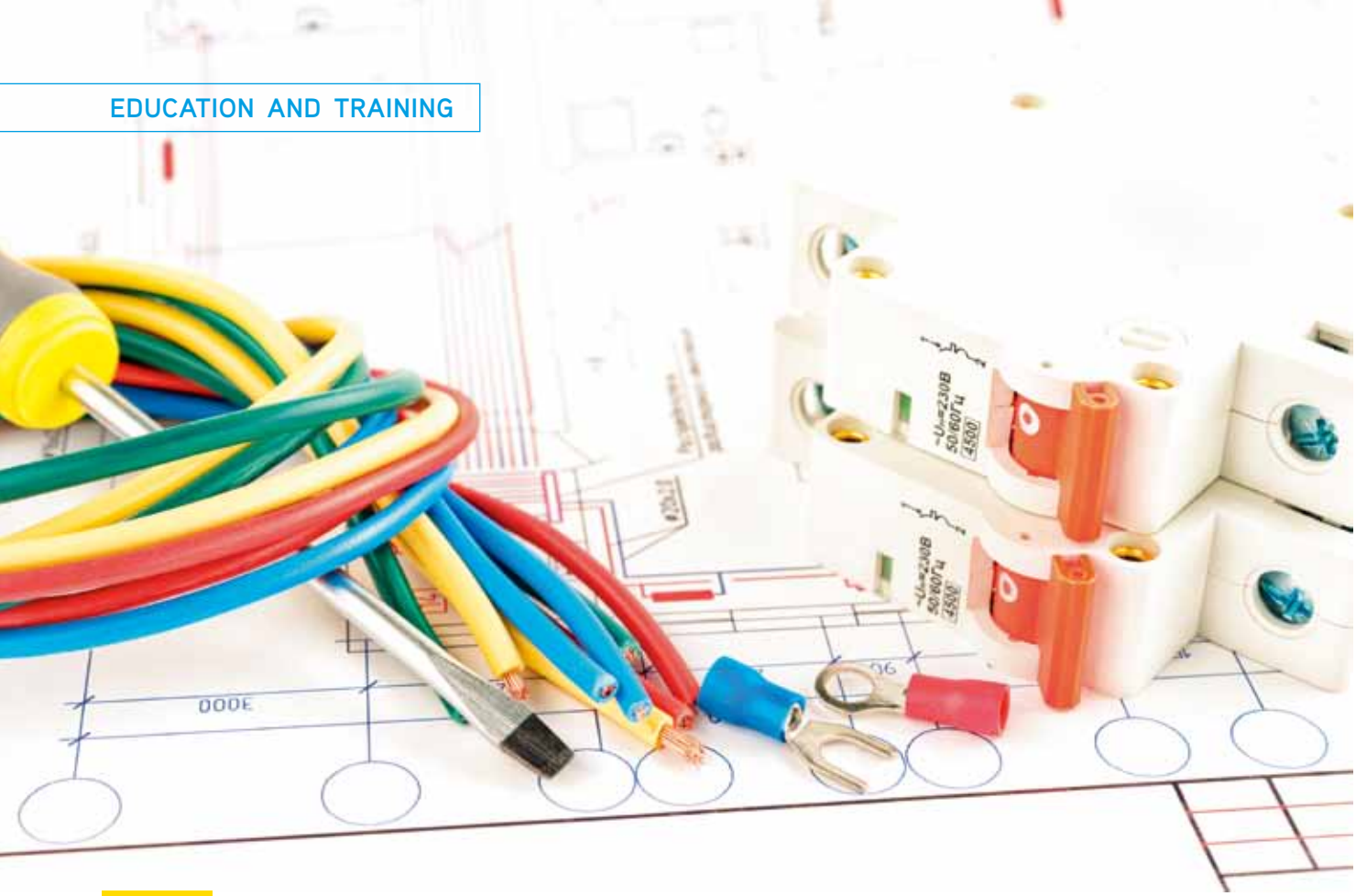
IoT and communications technologies are just a taste of things to come. Power and storage requirements need to improve dramatically to make the IoT more feasible. Network systems will need to cope with larger volumes of devices and data streaming at the same time, for instance, sporting stadiums which are generally populated for a short time during an event such as the football. Likewise, vocational education and training (VET) and university-level education will need to grow/evolve and also cover technical as well as soft skills.

Benefits of IoT to businesses and the industry include: efficient resource utilisation; reduced human efforts; lower costs and improved productivity; real-time marketing; decision analytics; better customer experiences; high-quality data.

With the changing nature of work and changing employment models (such as Air Tasker), upskilling has become even more important. The biggest challenge is the rapid pace at which technology is evolving. Short courses and online courses offer great quick and easy ways to stay professionally current within the trade with additional endorsements available.

VET provides skills required for careers in many of the fastest-growing occupations. 'Electricians' is one of the top 10 VET occupations with 11,000 extra jobs by 2022 (The National Centre for Vocational Education Research 2018). Telecommunications trades workers installing, maintaining and repairing data transmission equipment, aerial lines, conduits, cables, radio antennae and telecommunications equipment and appliances are said to have skills "in demand", according to www.joboutlook.gov.au.

Transferable skillsets have been recognised between telecommunication technicians and electricians. Training organisations such as Chisholm Institute of TAFE are adapting courses to suit changing market requirements. The institute's Electrical Department is offering its electrical apprentices the opportunity to undertake a Certificate III in Telecommunications Technology, offering apprentices the opportunity to gain dual qualifications at the same



© Stock.Adobe.com/au/Yeamske

> THE NEED FOR DIGITALLY SAVVY TRADESPEOPLE WILL BECOME MORE EVIDENT AND I.T. QUALIFICATIONS WILL HAVE MORE CROSSOVER WITH TRADITIONAL TRADES.

time as a Certificate III in Electrotechnology Electrician, saving the apprentice time and money.

Those undertaking a telecommunications traineeship or electrical apprenticeship undertaking the dual qualification will learn a range of skills in the selection, installation and configuration of equipment in convergence technologies that integrate radio, optical and internet protocol (IP) based applications. Students are taught to assess installation requirements, planning and performing installations, testing installed equipment and fault finding. On completion of the Certificate III in Telecommunications Technology, graduates can obtain the required ACMA Open Cablers License as well as specialised cabling endorsements for optical fibre, and structured and coaxial cabling. A dual qualification provides graduates with more employment opportunities and helps business owners enhance their service offering.

Although different from an education and training perspective, a relationship exists between IoT, cloud computing and big data. Chisholm's Information Technology and Communications area has integrated elements of these technologies into courses like the Certificate IV in Information Technology, Diploma of Information Networking Technology and Diploma of Software Development, Certificate IV in Cyber Security and Advanced Diploma of Cyber Security to ensure students develop employability skills. The institute has been developing telecommunications labs at the Berwick, Dandenong and Frankston campuses to service the training needs of the industry.

The growth of IoT, home automation and connected devices will continue to create opportunities in the telecommunications and cabling industry and increase the need for skilled tradespeople. As our home and environment becomes smarter and more personalised, there will be opportunities for those with telecommunications and related qualifications to install systems and technologies for individuals as well as businesses.

The growing cost of electricity and the need to improve energy efficiency will also create opportunities. For example, electricians could recommend and install energy-efficient products — eg, LED lighting, solar products etc — to their residential, commercial or industrial customers in order to help them reduce electricity usage, achieve efficiency and cut costs.

RFID and IoT-related qualifications are not just embedded into the institute's electrical and telecommunications programs but also in the information technology programs. The institute's ability to implement these changes in training comes largely from the skilled industry teachers and industry feedback. The need for digitally savvy tradespeople will become more evident and IT qualifications will have more crossover with traditional trades.

A focus for the federal government and the VET sector has been to introduce Skills First (a set of reforms for the training and TAFE sector) courses that align delivery and funding with strong employment outcomes. Courses involving the teaching of Science Technology Engineering and Mathematics (STEM) skills are of specific priority.

When operating in an industry undergoing such constant and rapid change with technology, skills can't be left to stagnate. TAFE plays a big role in connecting industry with the workforce of tomorrow. There are so many ways to keep your skills up to date with informal training, mentoring, short courses, conferences, online study, night classes and the flexible delivery of advanced formal qualifications at a Certificate IV, Diploma or Degree level.

To meet the growing demand for professionals with technological/IoT skills, Chisholm's Frankston campus is set to launch an exciting new $75.9 million redevelopment in 2019. This will make Chisholm one of the most advanced and innovative institutes in south-east Melbourne, allowing the institute to forge even stronger links with businesses and industry.

Chisholm Institute of TAFE
www.chisholm.edu.au

Comprehensive protection for people, irreplaceable goods and buildings

Easier, better, safer

Maximum safety in installations such as homes, premises with sleeping accommodation, wooden structures etc. The majority of fires in buildings are caused by faults in the electrical installation. These fires are mainly caused by dangerous arc faults.

The solution: S-ARC1. MCB + Arc fault detection device (AFDD).

Find more information at **new.abb.com/low-voltage**

Customisable distribution boards

The IPD Evolution distribution boards are suitable for inside installations, as well as outdoor with IP ratings up to IP66 to tolerate harsh environmental conditions.

The enclosures are designed to provide electricians with ample space to install wiring and cable ducts without cluttering, which can cause a safety or fire hazard. Removable mounting plates make installation and maintenance of equipment quick and easy with the ability to work on each component outside the board, while the shell is still fixed to the wall.

A split earth and neutral bar makes connections neater within the board and simplifies connections for outgoing circuits, while fully sized gland plates provide easy cable entry and connection. Pre-wired circuits for external lighting control and emergency lighting, plus standard RCD test switches for mining applications, provide specifiers with a simple solution when ensuring specific wiring regulations are met.

Evolution boards can be ordered in grey or orange, to stand out or blend in to the surrounding environment. Each board can also be integrated in the building design with the ability to specify a RAL colour at the time of ordering for respray. The Evolution range is a simple, practical solution for the designer, contractor and end user providing quick and easy installation and set-up.

IPD Group Limited

www.ipd.com.au

E-screwdriver

The Wiha speedE e-screwdriver helps users to complete their work more quickly. An electric motor assists with fastening screws up to 0.4 Nm before disengaging to ensure that material is protected. The screw can then be fixed by hand, just as with a conventional screwdriver. An electric ratchet function assists users as they complete fastening. The 3-step speedE process enables users to work faster and more efficiently, but by using a controlled, healthier technique.

Thanks to its electric drive, the Wiha e-screwdriver handles time-consuming, energy-sapping screw-fastening at a rapid rate. Compared to manual screw-fixing, speedE is designed to help users get things done at least twice as fast, increasing their working day efficiency substantially with more comfort.

Comparable to normal screwdrivers in terms of size and weight, the first Wiha e-screwdriver is a suitable portable companion in an extensive variety of sectors and application areas with its compact, lightweight design. SpeedE also provides users with maximum flexibility since they can use all available drives in the Wiha slimBit range to fasten electrically. All Wiha VDE slimBits are compatible with SpeedE, are tested to 10,000 VAC, all undergo inspection and are individually tested for up to 1000 VAC.

When fully charged, speedE can fasten electrically up to 800 times. Standard rechargeable batteries inside the handle eliminate follow-up costs, which highlights speedE's user-friendly approach.

The Wiha speedE is available to users in three starter set variants. Each set includes the electric screwdriver, two rechargeable batteries, a portable battery charger, a sturdy Sortimo L-BOXX to carry everything and an assortment of suitable slimBits and easyTorque torque adapters with content depending on the variant.

Premium Tools
www.wiha.com

IoT AND ITS IMPACT ON TRADE SERVICES

With the number of connected devices worldwide expected to jump 12% on average annually, from nearly 31 billion in 2018 to 125 billion in 2030, the Internet of Things (IoT) represents significant opportunity in the trade services market, according to IHS Markit.

The ability for equipment and data to connect and interact with one another goes far beyond allowing the human race to live like the Jetsons. The trade service industry's IoT-laden future signals effectiveness, efficiency, profitability and all-around satisfaction for everyone involved.

As the internet and smartphones become primary necessities over paper and landlines, trade services must embrace the next phase of business evolution in order to remain relevant in the market and to appear dependable, effective and cutting-edge for the modern customer.

Though not a brand new concept, IoT has become the herald of this new chapter, facilitating unique connections with the latest job management and service technology and forever changing the way trade service facilities and professionals operate.

IoT has been defined as the concept of connecting any electronic device to the internet and to other connected devices. It works an application or service that uses information collected from sensors — or the 'things' — and then analyses the data from the sensor to perform a specific function.

Through IoT a giant online network is created which allows previously unrelated technology to speak to each other and combine forces to create new functions that generate new levels of convenience for the user. Many tech experts have used smart TVs or fitness watches that generate a tailored exercise plan as examples of IoT.

According to Curtis Thomson, simPRO Director, IoT projects have now moved well beyond the initial trials and high-end proof of concepts and are being actively rolled out by leading service companies and manufacturers. For these companies, however, it's not about programming driverless cars or automatic toasters and coffee machines for the break room. Trade service companies are eager to get in on the IoT action because when their systems are all connected and talking to each other, they have the potential to improve their service delivery, considerably cut costs and deliver an improved customer experience.

"Think about the IoT in terms of field service applications," Thomson said.

"Say, for example, you have an accelerometer fitted to the cooling tower on top of a building that could take vibration readings, log them to your database and alert you when the vibrations fall out of a range.

"Or, you have sensors in the fire detection or sprinkler systems all constantly monitoring and reporting back the current state of the equipment they are tasked to keep an eye on.

"Then, when an event occurs that falls outside of a tolerable range for that piece of equipment, a notification is raised, a job is created to investigate or an alert is sent to your customer.

"How could this impact your SLAs, or your costs, for that matter? What will your customers think about this — your ability to log, report and respond to potential defects before they even can tell something is wrong, and in between maintenance cycles?"

Thomson's insight into the future of the trade service industry is why companies like simPRO are determined to add IoT to their repertoire. In June this year, simPRO introduced its new IoT solution that will be available to its 100,000+ users in Australia, New Zealand, the United States and the UK across 2018.

simPRO IoT takes hardware, software and data from businesses in the trade and field service industries and integrates them into one platform, allowing previously separate programs and machines to talk to each other and provide automated solutions ordinarily requiring extensive manual effort. The company has already begun working with airport lounge operator Swissport and facilities (building plant and equipment) management group Thermacell to keep guests at Luton Airport in the UK warm in winter and cool in summer.

simPRO Software
www.simPRO.com.au

Quality seal for PoE products

R&M has launched a quality seal, PowerSafe, for the Power over Ethernet (PoE) product range.

Cabling products labelled PowerSafe can continuously transmit high currents in local data networks. The range includes patch cords, cable assemblies, connection modules, couplers and field-mountable connectors. R&M also provides information on the consequences of transmitting high currents in the LAN.

In the future, PoE is to be operated with 90 W and with power transmission on all four pairs of the data cables. The current rating is reaching 1 A per twisted pair. In the future, current is to flow over all four twisted pairs of the copper data cabling (4PPoE). The relevant standard IEEE 802.3bt is likely to be ratified in 2018.

There will also be PoE applications which require maximum electrical output around the clock. To date, peak loads have only lasted a few seconds or at most minutes, eg, during start-up or switching operations. The entire LED lighting of large buildings (ie, connected lighting or smart lighting) or LED advertising spaces (digital signage) can be operated over data networks in the future.

The insulation displacement contact (IDC) used by R&M offers long-term safety. Two sides of a spring contact clamp the wires permanently; the contact halves cut through the insulation and flexibly terminate the wire. IDC terminations are fatigue proof, load, vibration, temperature and and moisture resistant, dust and gas tight, and thus corrosion protected.

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

UPS

The Schneider Electric Easy UPS 3S is an easy-to-install, easy-to-use and easy-to-service 10–40 kVA 3-phase UPS suitable for small and medium businesses.

It delivers up to 96% efficiency in double conversion mode and up to 99% efficiency in energy-saving ECO Mode, thanks to its advanced product features, competitive specifications and robust electrical design.

It is easy to install, operate, maintain and service, making it suitable for a wide range of small and medium business applications. This EcoStruxure-ready UPS features a wide operating temperature window and strong overload protection, all in a compact and lightweight footprint. Start-Up Service is recommended, to optimise system performance, quality and safety. The Easy UPS 3S is suitable for business continuity in the data centre or electrical room.

Schneider Electric IT Australia
www.schneider-electric.com/ups

MACLEAN
ELECTRICAL
A DISTRIBUTIONNOW COMPANY

The Vital Connection

As an official Platinum Distributor and stockist for Phoenix Contact products, MacLean Electrical are the vital connection.

A partnership for Western Australia and Queensland, this brings together MacLean Electrical's 55 years experience of distributing technical innovations with a world leader in industrial electronic and connectivity technology and solutions.

We provide an unparalleled supply of electrical, cabling & connection products with:

- a faster service
- local stock
- teams with extensive product knowledge
- wide ranging solutions for many sectors including oil & gas, process, mining, utilities & transport industries.

With access to over 60,000 products including:

- sensor/actuator cabling
- terminal blocks, connectors & controllers
- switchgear, motor control & electronics housings
- I/O systems
- lighting & signalling
- monitoring, measuring & control technology
- power supplies & UPS
- relay modules
- tools
- industrial communication technology
- charging technology for electromobility
- installation & mounting material
- surge protection & interference filters

to name only a few!

For more information on the Phoenix Contact & MacLean Electrical cable & electrical product range, make that vital connection with your nearest branch or visit maclean-electrical.com.au

PHOENIX CONTACT
PLATINUM DISTRIBUTOR

MacLean Electrical Branches

Perth, WA
MacLean Electrical
T: +61 8 9303 2248
maclean-perth@dnow.com

Brisbane, QLD
MacLean Electrical
T: +61 7 3279 3535
maclean-brisbane@dnow.com

Melbourne, VIC
MacLean Electrical
T: +61 3 9685 7522
maclean-melbourne@dnow.com

RENEWABLE ENERGY — MANAGING CONGESTION AND LOSSES

Donald Vaughan

The nature of power flows around the grid is changing rapidly, with a lot of new generation being built on the edges or middle of the transmission system.

While the problem is increasingly being recognised, quantifying the impact can be tricky.

Developers are asking — "What other generation will or can be built in the area? Will there or can there be collocated storage? When may these things be built? Will other projects in the area have a similar generation pattern to my plant?" And these questions are becoming harder to answer with the wave of renewables development.

There's no real substitute for analysis and an understanding of the degree of certainty required. A simple example of adding generation in north-east New South Wales illustrates the point.

Naturally, developers think first about competition — "Will added generation displace existing generation in NSW or generation on the interconnector? What is the most conservative assumption? What is the balance of probabilities?"

Even this simple example leads to many assumptions and choices, so proponents and owners need to understand how certain they need to be — and therefore how thorough the investigation of congestion needs to be.

Traditionally, congestion has been considered a problem of network thermal capacity. The nature of renewable energy generation adds other factors into this mix, such as — "Will fault levels

> THE OTHER EFFECT OF LARGE GENERATION ON TRANSMISSION FLOWS IS GREATER NETWORK LOSSES.

remain high enough to support short-circuit ratios? Will critical clearance times be maintained to allow the full thermal capacity to be used? Will imbalance of generation development on parallel paths reduce pre-contingency loading limits?"

These sorts of questions require complex analysis, adding further uncertainty and additional dimensions to the results. There's talk of additional network provision being required to support changes to the flows in the transmission system. Such changes will no doubt be helpful, but questions of when, how much and who pays must be asked. The calculation of congestion has real impact on expected revenues — but with so little certainty, it is hard to determine how critical any impacts may be on the overall business case.

What about losses?

The other effect of large generation on transmission flows is greater network losses. The marginal loss factor (MLF) regime that accounts for losses in the National Electricity Market (NEM) relies on many of the assumptions of congestion analysis, with similar levels of uncertainty of the input increasing the uncertainty of the output. MLF has always appeared punitive for new renewable generation distant from the load centre, since long transmission distances (often over low-capacity lines) lead to inefficient power delivery.

The MLF regime is supposed to incentivise development of efficient and timely generation and demand. The drivers for renewable generation are less about actual demand and more about displacement, so the MLF inhibits new generation in favour of the status quo.

A simplistic analysis, however, shows that, on average, new renewables see slightly higher MLFs than the established generation and new thermal assets. There could be a number of explanations for this but it shows that the density of generation has remained low enough thus far. Increased build and in-fill will ultimately lead to MLFs becoming a bigger factor for new and existing plants.

Other congestion issues

There's another form of congestion that has already started to impede the rapid deployment of solar and wind technology — a lack of capacity of network service providers (NSPs) and other regulators to deal with the influx of applications for new connections.

Add to this the increasingly technical analysis required to demonstrate compliance of these connections with the rules and a real bottleneck is created.

Removing blockage

The only answer to any congestion issue is to remove the blockage. In terms of network congestion, in the short term, we need to continue to think about the likely requirement for renewable developments (with storage) to meet the challenges of the energy trilemma — replacing coal-fired generation following retirements with reliable, affordable and more sustainable generation.

And we will need to better understand the value of transmission re-enforcement to support a changing generation fleet. It may also force a return to the Hub or Scale Efficient Network Extension (SENE) type of thinking that gives a clear signal to proponents to 'build here', as we can now see in New South Wales. Network re-enforcement may also improve MLFs, slightly. However, if MLFs are low across the board in a region, the pool price will adjust to reflect this over time. In the short term, local or regional storage may be cost-effective in raising MLFs to investment-tolerable levels.

In terms of resource issues, training and applying more skilled resources to this sector must be a focus for NSPs and regulators. The challenge for NSPs and regulators is to act more commercially and embrace an engineering approach to analysis, tolerating some uncertainty — just as proponents do.

Entura
www.entura.com.au

**Donald Vaughan is Entura's Principal Consultant for Primary Electrical Engineering. He has over 20 years of experience providing advice on regulatory and technical requirements for generators, substations and transmission systems.*
Donald specialises in the performance of power systems. His experience with generating units, governors and excitation systems provides a helpful perspective on how the physical electrical network behaves and how it can support the transition to a high renewables environment.

socomec
Innovative Power Solutions

ipd
Specialist
in power monitoring

MULTI METERING

J8 COMPLAINT

HASSLE FREE INSTALLATION

EASY COMMUNICATION

NCC/BCA, NABERS,
GREEN STAR,CBD/BEEC REQUIREMENTS

DISCOVER THE FUTURE OF POWER MONITORING

with *Digiware*

POWER MONITORING, ACCESSIBLE EVERYWHERE FOR EVERYONE

- MCCB / ACB / MCB — END TO END MONITORING
- NO LICENSING FEES
- RETROFIT SOLUTION
- PLUG & PLAY INSTALLATION
- EASE OF INTEGRATION
- EMBEDDED EMS
- IOT READY

A simple, easy to install, space efficient retrofit solution with minimal interference to your operations. Class 0.5 accuracy, Compliant to meet NCC/BCA, NABERS, Green Star & CBD/BEEC requirements. Discover the future with the specialists!

Phone: 1300 556 601

www.ipd.com.au

CASE STUDY

Heritage building beats energy shortfall with batteries

After architectural firm Williams Burton Leopardi bought the dilapidated Darling Building in Adelaide, they learned that the planned peak energy demand for the renovated building would be more than what the local power grid could supply.

The building, built in 1916 for wheat exporter John Darling and Son, had been largely neglected since the 1960s.

The peak power draw for the building during summer was calculated at 290 amps, whereas SA Power Networks could initially supply only 150 amps (although this was later revised upwards to 200 amps). Williams Burton Leopardi Director David Burton said most of the solutions were so expensive they would have made the renovated building commercially unviable. "We didn't have the space in the building for a transformer; gas would cost us hundreds of thousands of dollars and 'winging it' was not an option," he said.

"During a conversation with Simon Hackett, who was a client with his Base64 redevelopment, he said 'you need a battery as a peak management system'. When we looked at it, it stacked up, so we went with a scalable energy storage system based on Redflow batteries. We have six ZBM2s now, but we can scale the system to 12 or even 18 batteries if we require them.

"The main purpose of the system is to ensure that the batteries can supply energy if the building's demand outstrips the grid's supply capacity, so it is primarily a peak management methodology. But they are also configured to buy power at low demand times to recharge the batteries, and when power spikes past a certain price, they dribble energy into the load to manage that spike down."

The award-winning five-storey renovated Darling Building on Franklin Street now has new lighting, air-conditioning systems, kitchen facilities, and washing machines and dryers on each floor, as well as a fully rebuilt heritage-listed elevator. Redflow partner Solar Depot installed the ZBM2 batteries with three Selectronic SP Pro inverters, delivering three-phase power from the building's basement.

The only notable challenge was gaining fire compliance approval from the Metropolitan Fire Service, which acknowledged that zinc-bromine flow batteries comply with all the relevant building codes concerning fire rating as they do not present the same fire risk as lithium-ion batteries.

Burton said Redflow batteries were uniquely suited for the building's needs. "For what we want to do, zinc-bromine batteries are ideal," he said. "ZBM2s can deep cycle without damaging the battery and they embody the concept of simplicity and look quite nice in their rows.

"Lithium-ion batteries would've cost us a lot more to completely fire-rate the room because lithium is like putting a bomb in your basement. With the Redflow batteries, we just open the windows and a fan circulates the air.

"One battery system could support several buildings," said Burton. "With solar on the roof, you'd get a lot of power in, so it could operate as a mini storage facility and power station — if the statutory regs allow that kind of thing to start happening."

Redflow CEO Tim Harris said the Darling Building deployment demonstrated the unique benefits provided by zinc-bromine flow batteries. "As well as their inherently non-flammable characteristics, Redflow batteries can store and discharge energy every day for years without any loss of storage capacity," he said.

Redflow Limited
www.redflow.com

Image supplied by Redflow.

UPS

The Vertiv Liebert EXS is a compact, monolithic, transformer-free uninterruptible power source (UPS) that provides high density and maximum active power of up to 40°C. Its double conversion efficiency of up to 96.2% also significantly reduces energy cost, impact on the environment and overall total cost of ownership (TCO).

The UPS is available initially in the range of 10–20 kVA across Asia, including Australia and New Zealand.

With its optimised battery configuration, it can house up to four battery strings, eliminating the need for external battery housing, which reduces overall installation cost and floor space. It is suitable for both IT applications and other mission-critical applications, such as transportation, emergency lighting, health care, retail and government facilities.

It can be complemented with Vertiv LIFE Services, a remote diagnostic and preventive service that provides early detection of UPS conditions, allowing effective proactive maintenance, fast incident response and remote troubleshooting 24/7. The Liebert EXS is also compatible with the Trellis Data Centre Infrastructure Management (DCIM) platform, which enables real-time, unified optimisation of data centre and facilities infrastructure.

Vertiv Co
www.vertivco.com

atom

Get Downunder
our new LED Bunker

AT5812/TRI/CF/EM
LED Bunker

- Ideal for commercial lighting applications; carparks, corridors, store rooms etc
- Energy efficient
- Selectable power consumption, 27W OR 17W

DALI gateway with emergency lighting function

The ABB i-bus KNX DALI gateway with emergency lighting function combines modern flexible lighting control in intelligent building control systems with DALI emergency lighting.

Up to 64 DALI devices can be flexibly installed via 16 lighting groups and controlled and monitored by KNX. Normal DALI lighting and DALI emergency lighting can be combined as required. Lighting scenarios can support the room utilisation demands with up to 14 scenes. A staircase lighting function with a switch-off warning and basis brightness facilitates time-dependent lighting control, particularly in halls or warehouses.

With the integrated master-slave operation, any lighting groups can additionally optimise the energy consumption in buildings with a KNX light controller or presence detector.The DALI gateway with emergency lighting function supports the DALI standard EN 62386-202 that specifies DALI self-contained emergency lighting. Here the cyclic monitoring functions of emergency or safety lighting with individual batteries can be activated via KNX, and the test results are sent with the aid of coded telegrams via KNX to a higher-level emergency lighting panel. The emergency lighting tests (functional test, duration test and partial duration test) are undertaken autonomously by the DALI converter in the emergency lighting. Information relating to a lamp and ballast fault is individually available for a lighting group or for a DALI device on the KNX.

The commissioning of the normal DALI lighting and the DALI emergency lighting is undertaken via a separate set-up tool that assigns the DALI devices to the lighting groups and adjusts the brightness of the emergency lighting. Furthermore, the error state of the DALI devices is also displayed in this tool.

ABB Australia Pty Ltd
www.abbaustralia.com.au

Portable power stations

The Goal Zero Lithium Yeti 400 is compact, lightweight portable power station with a 400 Wh capacity. It features real-time usage data via an upgraded display, two AC outputs, three USB ports and a 12 V output for devices designed for car cigarette lighters.

The Goal Zero Lithium Yeti 1400 portable solution features built-in surge allowances and offers multistage protection, which means it is compatible with more devices, including power tools, lights, laptops and refrigerators. Users can get real-time usage data at a quick glance.

With over 10 ports to pick from and 3000 Wh capacity, the Lithium Yeti 3000 portable power station comes with preinstalled wheels and a telescoping handle. Fully recharged in 25 h, the solution can run a 32″ LCD TV for 30 h, a fridge for 50+ h, making it a suitable power backup for homes.

Goal Zero Solar Panels offer the ability to never run out of charge while on the go. The Lithium Yeti range is also compatible with Goal Zero solar panels (sold separately), so the users have the option to charge up off the grid or with standard 240 V mains power via the included wall charger.

Goal Zero
www.goalzero.com.au

Flexible EtherCAT device

The Trio Flex slice series of add-ons allow simple extension of an existing or new EtherCAT network.

The Flex 3-axis module can be used to send step and direction signals for stepper motor drivers. It works with most Micro stepping drives.

The Flex slice 3-axis could be used as an encoder input which turns all conventional encoders into EtherCAT encoders. Most common encoder types are supported, eg, Incremental, SSI, BISS and ENDAT, along with others.

Motion Technologies Pty Ltd
www.motiontech.com.au

Emergency lighting

The NHP Corten EXEL-L series emergency lights are certified to AS 2293.3. The National Construction Code now mandates that emergency lighting is to be designed in accordance to AS 2293.

This means the range now comes with photometric classification data (C0 and C90 values), which provides guidance in the lighting design process, and also passes the stringent charge/discharge requirements of AS 2293.

In order to ensure NHP continues offering the local market with quality products adhering to standards, compliance testing to AS 2293.3 for the company's extensive range of hazardous-area LED lighting products is currently underway.

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

GLOBALLY UNIQUE

speedE®

The first e-screwdriver from Wiha.

Drive with speed – fix with feeling.

- Increases your speed
- Protects your material
- Offers you full protection
- Protects your health
- Increases your control

speedE: Rapid electric tightening – fixing by hand with a deft touch.
www.wiha.com/speedE

CONTACT US AT:
Premium Tools Aust Pty Ltd
Phone 02 4684 1460
Email sales@wiha.com.au

wiha
Tools that work for you

TOP TIPS TO EARN REPEAT BUSINESS AS A CONTRACTOR

*Chris Strode**

Contractors find themselves constantly investing time and money in finding new customers.

©stock.adobe.com/au/prachid

While retaining existing customers can be more cost-effective than finding new ones, the sporadic nature of electrical installation and maintenance can make it difficult to keep repeat customers. This doesn't mean it's impossible, though. Here are five tips to help keep customers coming back to you the next time they need to call on an electrician.

1. Build customer trust

Electrical work can be risky, so customers are going to be more inclined to hire a contractor they know and trust for delicate work. Building trust should be at the forefront of everything you do in your business. What kind of reputation do you have online and off? Do you follow through on all your promises? Do you arrive on time and meet your deadlines? Do you clean up after yourself? Do you offer consistent communication and respond to your customers' emails or calls quickly? Do you provide professional quotes and estimates that are easy to understand? Showing you are reliable and trustworthy will not only get you the job in the first place, but keep customers coming back and referring you on.

2. Give them something to come back for

Being a small service-based business as opposed to a larger company gives you the chance to offer a more personal experience. You have the opportunity to invest in getting to know your clients while sharing your expertise along the way, so take advantage. In maintaining a friendly, personalised service, your customer will feel more valued and be more likely to come back to you for all their electrical needs in the future. To encourage repeat business, you can offer discounts like "15% off your next booking" or value-adds like free child-proofing electrical sockets for clients with young children.

3. Keep in touch with email marketing

How can you stay on top of mind with clients long after the job is completed? Email marketing is one of the most cost-effective ways to maintain a positive relationship with your customer after you've completed a service. Occasional emails will serve as a reminder of your exceptional service, and demonstrate that you care about the customer's ongoing electrical needs and safety. You can use email marketing to offer follow-up support, test-and-tag reminders, discounts and special offers, and tips for DIY electrical safety, to keep you top of mind when they next need your services or when referring a friend.

4. Acknowledge your most valuable customers

Customers who spread positive word of mouth are invaluable to any small business. Seeking feedback from these customers will allow you to better understand what drives them to your business, so you can be sure to consistently deliver what they value. Identify these customers and reach out to them on a regular basis, particularly if you haven't heard from them in a while. Put out an invitation to come back or check in to see if they require any other services from you so you can maintain that rapport and positive sentiment.

Attracting new customers is always important, but finding ways to retain your existing customers will bring you value for years to come. While it may take some time to develop repeat business in what can be a sporadic industry, adding an increased level of convenience and personalisation to your services will keep you top of mind for the next time clients require electrical servicing.

5. Offer a convenient service

A difficult payment process at the end of a project is often the last impression clients have, and the part they remember the most, no matter how smooth the project was. Offering a wide range of payment options helps ensure you can accept every way customers expect to pay. This will not only remove friction but can also help you get your invoices settled faster. Providing convenience is key to giving customers a positive experience and making sure they come back to you. Mobile invoicing apps like Invoice2go make it easy to send professional estimates and invoices from anywhere, and accept multiple forms of online payment.

**Chris Strode is the founder of Invoice2go, the mobile invoicing app for small businesses and contractors. As a small business owner from a family of tradespeople, Strode created Invoice2go out of frustration with the lack of simple invoicing options available.*

Invoice2go
invoice.2go.com

Wireless security system

The ABB secure@home intrusion and alarm system for residential properties integrates with the company's existing home automation solution and door entry system. The system is fully accessible online via the MyBuildings portal powered by ABB Ability, the company's cloud-based portfolio of digital solutions.

Working in tandem with ABB-free@home, the central unit can be used to manage and monitor all of a building's safety and security functions, including setting and disabling the intrusion alarm, either with the ABB-WelcomeTouch panel or remotely via the MyBuildings portal, through a PC or mobile device.

The wireless security system provides effective infrared detection both outside and inside the home as well as door and window monitoring. Security sensors can be split into predefined or customised zones and activated according to customer need, while the safety sensors monitor smoke or water leaks. It also uses the latest encrypted wireless technology with bidirectional communication, allowing the system to maximise protection.

ABB Australia Pty Ltd
www.abbaustralia.com.au

Contractor management solution

BNG Contractor Services' Conserve platform is a fully automated web-based system that allows businesses to effectively manage contractors and suppliers.

The system has been designed to manage every aspect of contractor operations, from prequalification through to WHS compliance and corporate and site inductions. It provides a consistent method for contractor management that multiple departments within an organisation can use. Users can collect, verify and track the expiry on all the information and documentation needed for each contractor and supplier.

The company accredits contractors on review and validation of all relevant contractor information/documentation, providing assurance to its clients that all the contractors engaged are legally compliant to provide the relevant services.

BNG Contractor Services Pty Ltd
www.conserve.com.au

Thermal imaging camera

The FLIR T640 Thermal Imaging Camera delivers high-performance thermal imaging with a 5 MP visual camera, large 4.3″ touchscreen LCD display and with autofocus. This camera is capable of 8x continuous zoom and captures images in 640 x 480 thermal resolution, which ensures highly detailed measurements from long range. It is available for rent from TechRentals.

The T640 is able to take high temperature readings, with a range of -40 to 2000°C and accuracy of ±2°C or ±2%. Additionally, automatic location data is added to every image from the built-in GPS/compass. Data and images are able to be quickly shared to Apple and Android smart devices via the FLIR Tools Mobile App.

The camera's ergonomic design includes an optical block that can rotate 120° for easy targeting and auto-orientation to ensure the screen is always easy to read. The large screen features a colour viewfinder for bright conditions and on-screen sketching. It is also capable of taking measurements from 10 different spots simultaneously, periodic image storage (time lapse) and the ability to create instant PDF reports directly from the camera.

TechRentals

www.techrentals.com.au

Cable certifier software upgrade

IDEAL Networks' software update for its LanTEK III cable certifier is helping installers certify cabling that has Modular Plug Terminated Links (MPTL).

The existing IDEAL Networks cat 6A Channel Adapter for the LanTEK III cable certifier already uses the approved 'centred' jack that can be used to measure the performance of RJ45 plugs.

Therefore, to equip the tester with the capability to test MPTL, users can simply download a free software upgrade from www.idealnetworks.net. Once the software is installed, by configuring a LanTEK III with a Channel Adapter on one handset and a cat6A Permanent Link Adapter on another, a proper MPTL certification test can be performed.

Following the free software update, the LanTEK III cable certifier with Channel Adapters will be ready to use for MPTL testing. Those that do not have a LanTEK III Channel Adapter already can purchase these individually from the company. Separate Channel Adapters will be required by users looking to test cat 6 and 5e MPTL cables.

IDEAL INDUSTRIES (AUST) Pty Ltd

www.idealnetworks.net

Insulated enclosure automatic transfer switch

The ASCO Enystar insulated enclosure automatic transfer switch consists of an intelligent controller and a modular load break switch, which automatically transfers the load to the emergency power source when it detects the normal power source under/over voltage, under/over frequency or phase loss.

The enclosure is designed with a modular system to allow for additional distribution and includes single- and three-phase configurations 63 and 80 A with manual, automatic and remote operation.

The polycarbonate and insulated enclosure is rated IP66, protecting the contents from dust, water and dirt. A transparent hinged door provides easy monitoring and access of transfer switches.

IPD Group Limited

www.ipd.com.au

Battery inverter-charger

Victron Energy MultiPlus-II battery inverter-charger comes with a stylish steel enclosure and is particularly suitable for large-scale storage projects.

The MultiPlus-II 48/3000/35-32 230V complies with the Australian Standard for grid-connected inverters (AS 4777) and is certified in an increasing number of other countries.

The redesign of the company's flagship inverter-charger is aimed to meet new demands in the market. As well as a new look and a flatter form factor, the MultiPlus-II has redesigned its proven electronics to take advantage of miniaturisation while complying with emerging energy industry standards such as a built-in double-relay to enable 'anti-islanding' for safe interaction with energy grids.

The MultiPlus-II is a 48 V inverter-charger that readily connects with a wide range of energy storage systems, from lead-acid and lithium-based batteries to zinc-bromine flow batteries. The unit is easier to install than earlier models with AC connections accessible via a single plate on its base. The 18 kg MultiPlus-II draws 11 W of standby power, less than half that used by the model it supersedes.

As with all Victron inverter-chargers, the MultiPlus-II is a transformer-based system, which can immediately deliver backup power if the grid drops out, including start-up supply for high-demand devices such as air conditioners and freezers.

The battery inverter-charger has optional internet-enabled remote monitoring, both through a secure Victron portal or authenticated third-party applications. This remote monitoring enables the 24/7 performance logging of connected batteries.

RFI Technology Solutions

www.rfi.com.au

A Deployment System That Won't Come Back To Bite You

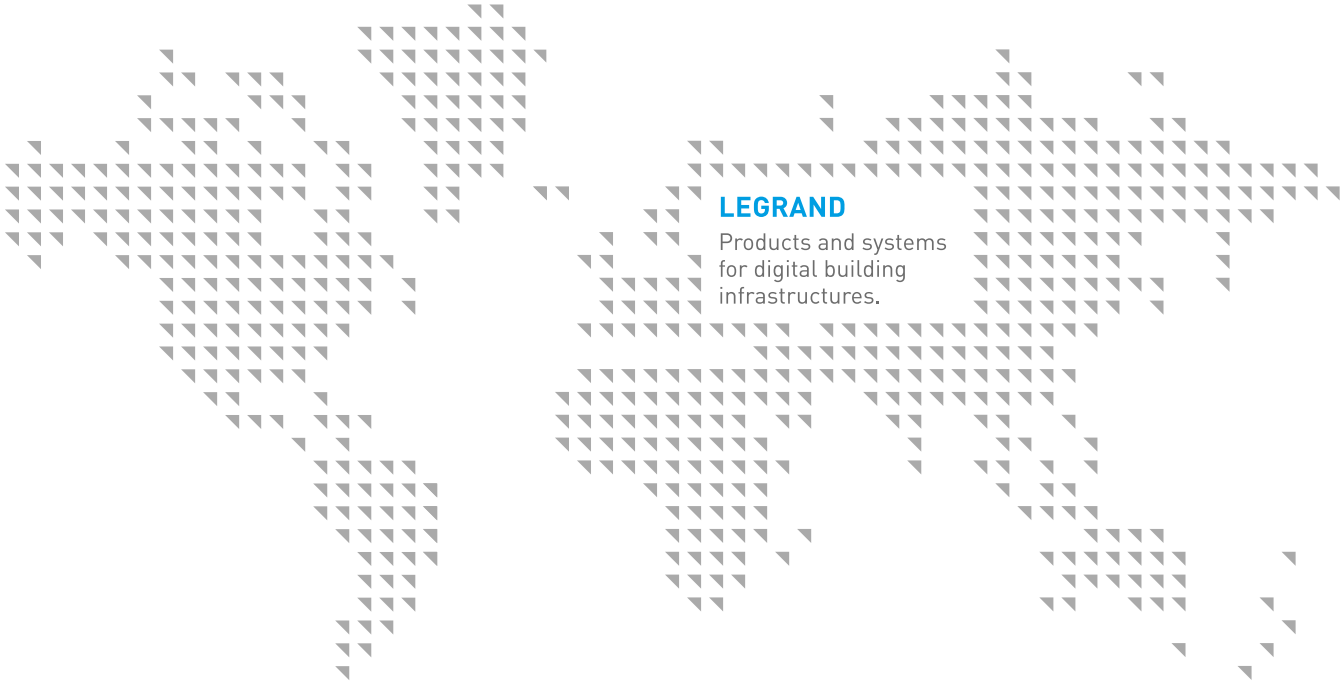
AFL's new Sidewinder™ Reels have been specifically designed for our range of customised field deployable fibre optic cable assemblies for use in extreme Harsh Environment applications. Made from light-weight, high-impact materials, the Sidewinder™ allows exceptional cable deployment and retrieval. Reels can be stacked and locked together for transport or field deployment.

Available in four sizes and three colours, with in-built storage compartment to house connectors and fold-away handle for fast sidewinding action, the Sidewinder's evolutionary design overcomes the most challenging environments.

Used with our customised multimode and singlemode cable assemblies, Sidewinder™ delivers the proven reliability and optical performance you expect from AFL – anywhere, anytime.

AFL

www.AFLglobal.com
1300 232 476



Legrand introduces LCS³: three dimensions of excellence for data centers

DID YOU KNOW: that 90% of the world's data was generated in the last two years?
Data is being produced at a phenomenally rapid rate. 2.5 quintillion bytes of data are created every day and there is no intention of slowing down. In fact, with the proliferation of smart devices, 3.5 billion daily Google searches, the popularity of social media and the growth of the Internet of Things (IoT), the pace of data generation is set to soar.

What does this mean for businesses?

Connected technologies are radically transforming businesses and industries on a global scale. This means data acquisition has become invaluable to organisations. Whether it's improving the customer experience, mitigating risks, or optimising operation, data allows businesses to make accurate, well-informed decisions to help meet their bottom line.

With the rising volumes of data exchanged and increasing numbers of networks, the demand for higher speeds and the density of equipment are vital for having more reliable, secure, and high performance electrical and digital building infrastructures.

Legrand's solution

Legrand's new LCS³ structured cabling range is specifically designed to meet these needs. It offers numerous advances in terms of performance, scalability and efficiency. These three areas are what have given the LCS³ range its "3 dimensions of excellence":

Performance

When describing the performance of a structured cabling system, irrespective of the technology used for the conductor, the transmission speed is the reference point.

Scalability and maintenance

The system has been designed to create customised solutions for you. These solutions enable you to look ahead, as they facilitate all maintenance operations.

Efficiency

Patch panels and fibre optic drawers have been completely renovated and redesigned to increase the number of connectors and simplify installation.
The LCS³ range is equipped with tool-less connectors that can cope with the most critical environments, with copper solutions as high as Category 8. It also includes a considerably expanded fibre optic offer, allowing speeds up to 100 Gbps.
As well as innovations in terms of ergonomics, Legrand's structured cabling solutions are modular, easy to install and optimised for easy maintenance. More efficient, scalable and higher performance, LCS³ satisfies the latest requirements of LANs and data centers!
From control and connection interfaces, to cable management, energy distribution and data distribution systems, Legrand provides a host of solutions to manage lighting, energy, networks and building access.
Through this integration of operation, innovation, ergonomics and elegance, Legrand rises to the challenge of developing product lines that will continue to enrich its customers' lives into the future.

legrand®

www.legrand.com.au

Digital micro-ohmmeter

The Megger DLRO 600 Digital Micro-ohmmeter measures resistance between 0.1 $\mu\Omega$ and 1 Ω, and provides test currents from 10 to 600 A subject to the load resistance and supply voltage. It is available to rent from TechRentals.

The DLRO 600 can store 300 test results which are downloadable via the RS232 port using download manager, or for real-time output to a printer.

The DLRO 600 is suitable for testing circuit breaker contacts, switch contact, busbar joints and other applications where a high current is needed. Weighing less than 15 kg, this versatile instrument is suitable for use in the workshop, on the production floor or in the field.

The unit also features a large backlit LCD screen where all test parameters and measurement results are displayed. The instrument is designed to have a voltage accuracy of ±0.5% ± 0.1 mV, current accuracy of ±0.5% ±0.1 A and resistance accuracy better than 1% from 100 $\mu\Omega$ to 100 mΩ. It also comes supplied with 5 m test leads and download software.

TechRentals

www.techrentals.com.au

Fault detection for smart buildings

The BuildingIQ Outcome-based Fault Detection (OFD) service is a closed-loop building energy management service that helps building and portfolio operators identify issues, prioritise repairs and validate work performed.

Through a combination of AI, energy analytics and human expertise, the service was created to overcome many of the shortcomings that plague today's fault detection and diagnostic (FDD) services. These challenges include a deluge of daily faults that are cumbersome to prioritise and action; the high cost of defining and writing rules that identify faults due to a lack of documentation of how systems operate in reality versus the design documents; and a lack of accountability for fault validation.

OFD works whether data is good or spotty and leverages machine learning to take the burden of data analytics into the cloud. The result is that building operators do not have to waste time and resources scouring through tables of hundreds of daily faults. Instead, operators can focus on the things that truly need fixing, their tenants and the bottom line.

OFD is the service on top of BuildingIQ's 5i Intelligent Energy Platform.

BuildingIQ

www.buildingiq.com

VIAVI | Green is life tmg

Introducing the SmartClass™ Fiber MPOLx

Industry's First Dedicated Tier 1 MPO Certification Solution

- Measures Length
- Measures Optical Loss (at multiple wavelengths)
- Checks MPO Polarity
- Native MPO testing directly on MPOLx devices
- **Test results in <6 seconds for all 12 MPO fibers**
- Full control & visibility BOTH ends (Light Source & Power Meter)
- End-Face inspection=>MPO trunks w/PCM,bulkheads w/ P5000i
- Automated Pass/Fail Analysis Testing in seconds
- Pre-configured with industry standards or customize criteria
- Dual Wavelength Optical Light Sources
- 3.5" color touch-screen interface on all MPOLx devices
- Certification Reports (Integrates with FiberChekPRO/CERTiFi)
- Encircled Flux Compliant
- All-day battery life

FiberChek Sidewinder™

First Automated multifiber connector inspection & analysis solution

- Fully autonomous multifiber inspection
- Automate the inspection workflow
- Certify end face quality to customer requirements
- Accurate/fast test performance,**automatic test results < 12secs**
- Easily access connections in any location
- Connect with anything and test anywhere!
- Live fiber viewing
- Auto-center, Auto-focus & Auto-pan/scroll
- Built-in fiber end-face analysis
- Also tests simplex fibers (works with FBPT inspection tips)
- Audible sounds for Pass/Fail results
- User-selectable acceptance profiles
- Stores results on device or export
- WiFi & USB connection to a PC or mobile devices
- Built in acceptance criteria=>industry standards (61300-3-35)
- All-day battery life

VIAVI | Green is life tmg

ABN 43 064 478 842
231 osborne avenue clayton south, vic 3169
PO box 1548, clayton south, vic 3169
t 03 9265 7400 f 03 9558 0875
freecall 1800 680 680
www.tmgtestequipment.com.au

VIAVI ELITE Partner

2017 Viavi Velocity PINNACLE Award Winner

HOW DO SMART CITIES SUCCEED?

Urbanisation and digitalisation are transforming cities around the world. But what do smart cities do to succeed?

By 2050, two-thirds of the world's population will live in cities. Population growth presents new challenges and exacerbates existing ones, like traffic congestion, pollution, energy consumption, circular economy and safety.

The Internet of Things can enhance the delivery of everything from street and traffic lighting to garbage collection and crime prevention. Research firm IDC predicts the spending on smart city technology to reach US$135 billion by 2021. Fifty billion IoT-connected devices are expected to be online by 2020.

Tests, trials and pilots

Many cities around the world are already running "exciting tests, trials, pilots and proofs of concept" using IoT technologies, and the time has come to scale and replicate deployment, said Mark Saunders, global Director of the Centre of Excellence for Cities, established by urban and services infrastructure group Ferrovial Services.

Ferrovial Services' Australian business Broadspectrum* has identified the upcoming Smart Cities Week Australia as a strategic platform to build momentum in smart cities.

Saunders points to Ferrovial Services' project with Granada City Council and Cisco, which is using sensors and data to enhance waste collection services. Sensors in waste bins provide real-time data that enables Ferrovial Services to optimise and prioritise waste collection routes. Fill level data, when overlaid with information relating to weather, traffic and special events, enable predictions to be made and truck routes redesigned for maximum efficiency, Saunders said.

But without the involvement of citizens, smart cities won't take off, Saunders said. It would be futile to install smart bins if people toss their rubbish on the street, for instance.

"Listening to people is central to smart city success," Saunders said.

Ferrovial's Citizéntrica project, implemented in the district of Chamberí in Madrid, offers solutions to street cleaning and littering problems by listening to the residents in a series of face-to-face interviews, Saunders added.

"The technology works. The challenge we have is to make it fit the specific operational context and then move it to scale. And it's only when smart cities technology is deployed at scale that it becomes interesting and delivers attractive business cases."

Local context

Paul Francis, KPMG's Smart Cities Lead in Australia, said enhancing efficiencies through IoT offers "billions of dollars of potential" in Australia alone.

But he warns local governments not to focus solely on the technology, nor get distracted by "shiny toys".

"Firstly, focus on gaining a better understanding of the problem space — the 'why' in the local context," he said. Local governments must ask, "What challenges are we looking to solve, or opportunities are we seeking to capitalise upon? And then, of those, which might be accelerated, unlocked or better sustained through the deployment of emerging technologies such as IoT?

"The technology is a key enabler, in service of council and citizen outcomes."

Francis said local governments leading in the smart cities space are starting with the 'low hanging fruit' of operational efficiency.

"By digitising the physical world through the use of IoT sensors and similar, councils can get data and therefore insights that help with things such as the efficient and effective utilisation of assets, power and resources," he said.

"That's why we're seeing a lot of smart lighting, waste management and parking."

Data insights can, though, also enable economic development — powering start-ups or university research, for example — or

enhance citizen and stakeholder 'experiences'. Think digital wayfinding, personalisation of services and citizen democracy for example.

Francis said the rollout of IoT is "effectively a digital nervous system" that "unlocks data insights from physical infrastructure". When we look at IoT in these terms, we can "uncover insights and get a level of visibility right across the city" that is impossible when relying on anything other than real-time data.

Seizing the opportunity to lead

How can local governments get ahead of the curve?

Saunders agreed that city decision-makers should focus on outcomes, not technology. "What do we want to achieve? What does success look like? This is what cities should be asking," he said.

He warned the decision-makers "not to buy something because it is smart or special. Instead, buy it because it's right for your city, plan for scale and seek to incorporate into service contracts for the best chance of success."

Francis said he'd like to see IoT become "part of the DNA of councils when they are considering their strategic and operational plans".

"It's not an IT or a Smart City Department problem, while the rest of council continues on as normal," Francis said. Instead, advances in technology should become "part of the standard day-to-day toolkit".

The implications stretch far beyond technology, and will influence processes, culture and organisational structures.

"It's a challenge. But establishing a vision and strategy and rallying around a stepped change to that 'light on the hill' is a good first step."

**Broadspectrum (a Ferrovial company) and KPMG are sponsors of Smart Cities Week in Sydney from 29–31 October 2018. Tickets are available online at https://www.smartcitiesweek.com/2018-australia/.*

"THE IMPLICATIONS STRETCH FAR BEYOND TECHNOLOGY, AND WILL INFLUENCE PROCESSES, CULTURE AND ORGANISATIONAL STRUCTURES.

Intelligent cables

Igus has advanced its intelligent cable with the CF.Q module, making maintenance easier and more efficient.

With the CF.Q sensor, the electrical properties can be tested in real time and continuously compared with existing empirical values of a given chainflex cable. Damage by bending or extreme loads can be detected and guide values for the cables can be defined in advance. This is made possible by an Industry 4.0-capable application called isense-online.

If the CF.Q module is installed, the user will be informed to initiate maintenance when fluctuations are detected. This is done before the damage occurs and the production or plant shutdowns become a risk.

Treotham Automation Pty Ltd
www.treotham.com.au

Contactors

The Allen-Bradley Bulletin 100-E IEC contactors help machine builders design small, energy-efficient panels. They replace the Bulletin 100-D IEC contactors.

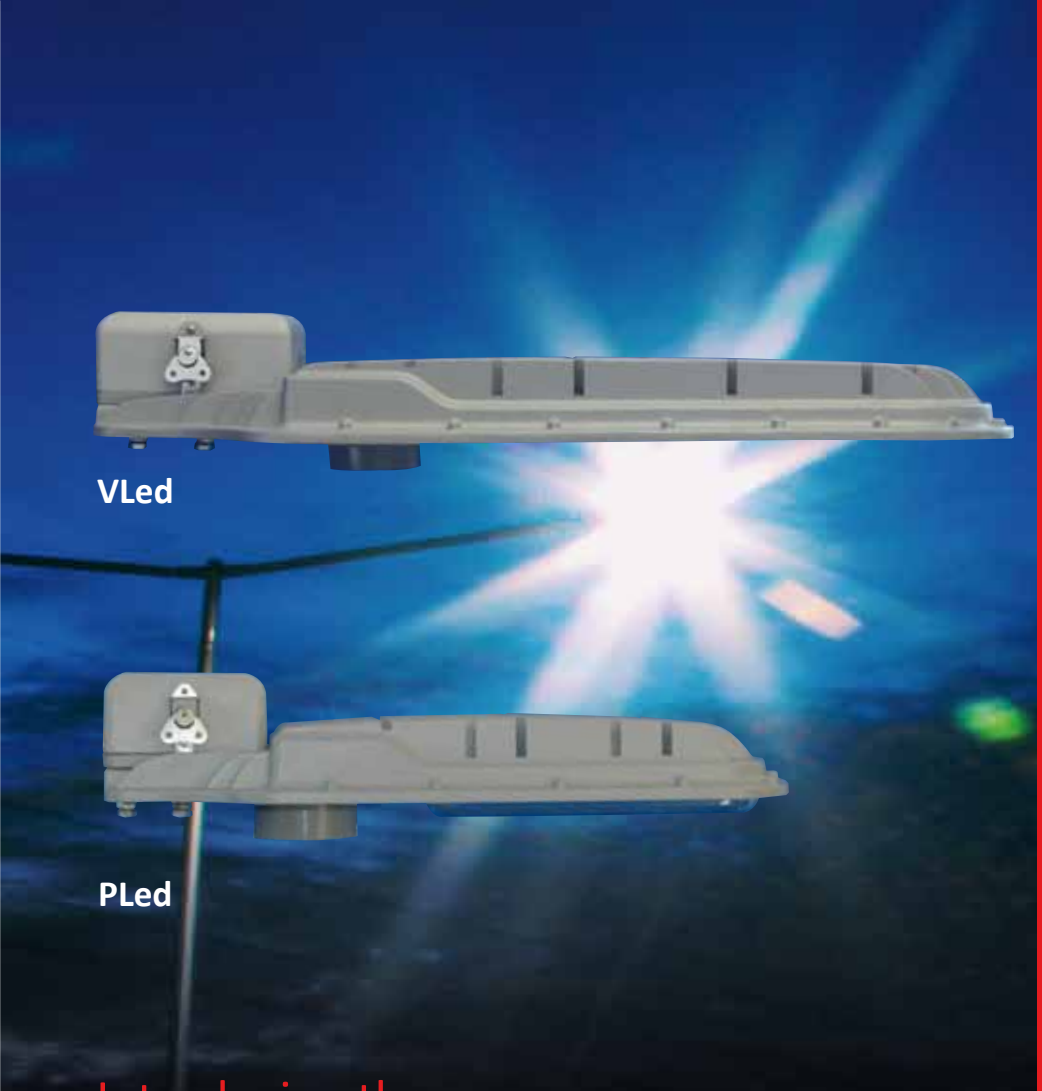
While the previous line featured contactors for applications from 115–860 A, the latest contactors are designed for applications from 116–2650 A.

Traditionally, contactors have been used to switch electrical loads in numerous applications, such as motors, fans and pumps. However, large contactors are increasingly used in applications to isolate or bypass these loads and for switching of resistive loads. To accommodate this change, contactors now feature a universal coil, which offers operators flexibility when controlling with multiple voltages.

Previous options were available in multiple voltages and often required an AC or DC coil to control applications. With the introduction of the universal coil, operators can more easily control voltage on multiple applications with fewer parts. Operators can also operate the same applications with a smaller power supply.

In addition to the universal coil, the Bulletin 100-E IEC contactors have a 25% smaller footprint than previous product lines.

Rockwell Automation Australia
www.rockwellautomation.com.au



Introducing the TST SmartCity Management System

Aldridge Traffic Systems (ATS) is proud to introduce the Traffic SmartCity Technology (TST) – a holistic, wireless solution that monitors lighting and associated assets. Driven by real-time feedback, the TST platform integrates with ATS's award-winning VLed and PLed range of lighting infrastructure, to drive savings through optimisation of the management process.

Total data capture

All data is captured and viewed through the TST – CAMS Portal, allowing you to monitor and control energy usage through a network of TST intelligent remote sensoring, which gathers information on a wide range of inputs: the environment, waste functions, pole tilt or damage, plus the management of asset maintenance.

Full integration

At the heart of the ATS offering are our VLed and PLed lighting systems, one of the most energy efficient, reliable and easily maintained LED assets in the market. ATS has invested 40 years' of experience – and its own R&D division – into developing these assets, and their integration into our TST platform completes the most advanced, efficient solution for customers Australia-wide.

TST
TRAFFIC
SMARTCITY TECHNOLOGY

SmartCity Management System

- Lighting
- Environmental
- Waste
- Motion
- Tilt
- Video

- Minor Road – P Cat.
- Major Road – V Cat.
- Tunnel Lighting
- Highmast Lighting
- Outdoor – Area Lighting

Lighting Systems

ALDRIDGE

Contact Details:
1300 ALDRIDGE
info@aldridgetraffic.com.au
www.aldridgetraffic.com.au

Powering data centres of the future

© Stock.Adobe.com/au/vladimircarlbb

In the 19th century, Nikola Tesla's alternating current (AC) caused ripples in the way power was transmitted. What distinguished AC — much to the chagrin of his employer and the inventor of direct current, Thomas Edison — was its ability to travel large distances and change voltage and direction.

Today, Tesla's ingenious invention has paved way for technologies such as substations and transformers that make it possible for us to run everything from home appliances to railway networks. What it also helped create is a flexible source of electricity that gave its operators more control and choice.

The future of the data centre industry hinges on this flexibility, too. Data centres — a network of computer servers that remotely store, process and distribute information — have become indispensable in today's digital world. The first image of a data centre that comes to mind is a large building that houses rows upon rows of servers, emanating a familiar hum as they send and receive millions of bytes of data every second.

However, the advent of technologies such as the Industrial Internet of Things, deep learning and cloud computing changed the way data is stored, processed and retrieved. Data centre infrastructure needs to be more elastic by expanding and contracting with demand or technology that can be quickly scalable. They need to have complete visibility of the operation to ensure that energy efficiency and uptime are at their maximum levels and connect with intelligent grids to give operators more control.

Like most technologies, data centres have also kept with Moore's Law of being able to store larger amounts of data on smaller devices. Micro-modular systems, such as the Secure Edge Data Center (SEDC) developed by ABB, Hewlett Packard Enterprises and Rittal, which was unveiled at the Hannover Messe trade show in April, is a breakthrough in secure and scalable data centre technology. The SEDC blurs the line between data centres and IT capacity as it can be installed near industrial facilities within 12 weeks.

Often called the heart of the internet, the value of a data centre lies in its availability, and a host of supporting technologies such as heating, ventilation and air condition systems (HVAC) and data centre infrastructure management software, which help increase their efficiency. One such technology is the ABB's TruONE automatic transfer switch (ATS), which packages all necessary sensors and controllers into a single, easy-to-install device. TruONE helps improve protection and makes installation 80% faster, ensuring that the least amount of time is wasted while switching between loads.

The data storage industry is no more homogenous. Cloud-based data centres represent a faster rate of data delivery and improved performance, while renewable power sources are gaining traction globally. This rapidly evolving business needs equally robust and reliable grid connections, such as ABB's smart grids and micro grids that work to reduce intermittency and, thereby, downtime.

Just as Tesla's AC model has been a game changer in the power transmission universe, technological advances such as micro-modular and cloud-based data centres promise to transform the industry.

Dave Sterlace is the Global Head of Technology for the Data Center Industry Sector at industrial technology company ABB, and brings with him more than 25 years of experience in critical power. Sterlace also chairs the marketing committee for The Green Grid, an industry organisation with a mission to drive accountable, effective, resource-efficient, end-to-end ICT ecosystems.

Integrity.

- **One Piece** – Integrated Sealing Technology
- IP68, IP69 performance
- Simple push and twist connection

Strength.

- **360° Strength** – All round teeth
- 70kg Tensile Strength
- Anti-tamper, Dynamic & Vibration performance

Assurance.

- **Lifetime sealing & reliability**
- Independently tested to extremes
- UK Manufacturer

FLEXICON
FLEXIBLE CONDUIT SOLUTIONS

MADE IN THE UK

www.flexicon.uk.com/ultra Tel: **1300 00 FLEX (3539)** Request a sample

UNLOCKING OPPORTUNITIES

Eduardo Yudowski, General Manager – Retail

The lighting industry has undergone significant changes in recent years. Technology has advanced in commercial and residential applications, and demand for smart lighting has increased. The development and miniaturisation of technology has created enabled contractors to fit existing buildings with connected lights without re-wiring or installing wall controls, which makes it more accessible to the wider market. A few years ago, only a small per cent of new residential property had some degree of automation. Today, this figure has grown as accessibility enables smart lighting to be installed in any home or commercial premises, not just new builds.

With the growing awareness, affordability and accessibility of smart lighting, the Internet of Things (IoT) is becoming a reality. Demand for devices to connect to each other and be controlled via voice or a smart device has increased significantly and has influenced the change in lighting technology. It's expected the average Australian household will have 30 connected devices, 14 of those being IoT 'at home' devices by 2021, according to Telyste's 2017 report.

Advances in Wi-Fi technology and computing processing power have enabled the development of a smart distributed intelligence platform. This provides residential and commercial buildings with a suite of intelligent lighting control functions bringing together infrastructure, sensors, devices and people into a single unified smart environment.

Lights can be programmed to change intensity and white colour to complement a person's natural body clock or circadian rhythm. Human-centric lighting allows luminaires to adapt to mimic natural light, which can enhance vision, wellbeing and performance. Applications such as offices, aged-care facilities and clinics are opting for this technology to provide a high level of care to staff and patients.

As Generation Z, known as the 'iGeneration', enters the property market there will be an expectation that homes will already have a high level of automation and connectivity built in. The demand for whole home automation will increase and the skills of contractors will expand and merge into other areas, such as networking. Unregulated, cheap products will be a future challenge for the industry. Manufacturers are constantly improving technology and safety to meet the evolving Australian electrical standards and sell through a reputable supplier, but products from overseas do not always meet these requirements.

Commercial and residential buildings moved away from inefficient lighting such as dichroic low-voltage lighting to LED luminaries, providing long-lasting light. However, new smart LED lighting technology is constantly improving and evolving, providing commercial and residential applications with greater efficiencies, health and wellbeing benefits, and integrated automated control.

Preparing for the future, contractors should be aware of current and future technology. Knowing what's possible to achieve and becoming familiar with technology, while understanding what hardware and software are required, will enable a smoother integration into an application.

Evolt Pty Ltd
www.evolt.com.au

wfmedia
connecting industry

Westwick-Farrow Media
A.B.N. 22 152 305 336
www.wfmedia.com.au

A.B.N. 22 152 305 336
Head Office
Cnr. Fox Valley Road & Kiogle Street,
(Locked Bag 1289) Wahroonga NSW 2076 Australia
Ph: +61 2 9487 2700 Fax: +61 2 9489 1265

Editor: Mansi Gandhi
ecd@wfmedia.com.au

Editorial Assistant: Amy Steed

Publishing Director/MD: Geoff Hird

Art Director/Production Manager: Julie Wright

Art/Production:
Colleen Sam, Wendy Blume

Circulation: Dianna Alberry, Sue Lavery
circulation@wfmedia.com.au

Copy Control: Mitchie Mullins
copy@wfmedia.com.au

Advertising Sales:
Sales Manager – Liz Wilson
Ph: 0403 528 558
lwilson@wfmedia.com.au

Caroline Oliveti
Ph: 0478 008 609
coliveti@wfmedia.com.au

Tim Thompson
Ph: 0421 623 958
tthompson@wfmedia.com.au

Subscriptions:
For unregistered readers - price on application

If you have any queries regarding our privacy policy please email privacy@wfmedia.com.au

Audited Media Association of Australia cab

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

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

energetic®

Smarter lighting

Stellar LED Batten

Options:
Tri-colour
Emergency
Microwave dimming sensor

5 YEAR WARRANTY

Features:
Easy installation
Plug in LED module
Switchable wattages
Encapsulated LEDs

Features:
Universal mounting
Large terminal block
Retained screwless end cap
Large diameter cable access

Lighting Council
AUSTRALIA MEMBER

www.energeticlighting.com.au

ARE YOU WIRED IN PREPARATION FOR THE UPDATED STANDARDS?

With the much anticipated release of the new wiring rules AS/NZS 3000 on June 26 2018, it is critical that installations are protected and comply with the updated standards.

With the much anticipated release of the new wiring rules AS/NZS 3000 on June 26, 2018, it is critical that installations are protected and comply with the updated standards.

In residential installations, all circuits will now be required to be protected by 30mA Residual Current Devices (RCD), this now includes hard wired devices such as hot water systems, ovens and air conditioning systems.

NHP have you covered with a complete range of Residual Current Circuit Breakers (RCBO) and RCD devices to suit these needs with the NHP MOD6 range offering:

- 6kA fault level
- 6A to 40A current ratings RCBOs
- 40A to 63A current ratings RCCBs
- 10mA & 30mA sensitives
- 1P, 2P and 3P&N
- Switched neutral and un-switched neutral options.

Not only have requirements for residential installations changed but there are also changes for non-residential installations. Formerly, socket outlets and lighting circuits up to 20A required RCD protection, however this has now increased up to and including 32A. All fixed wiring equipment up to and including 32A should now have a 30mA RCD fitted.

To ensure these requirements are met, NHP have complete range of RCBO and RCD devices with the NHP DIN-T offering:

- 6kA and 10kA fault levels
- 6A to 40A current ratings RCBOs
- 40A to 125A current ratings RCCBs
- 10mA, 30mA, 100mA & 300mA sensitives
- 1P, 2P, 3P and 3P&N
- Switched neutral and un-switched neutral options.

For medical installations or medical equipment in the home, NHP have RCDs meeting the required Australian Standard AS/NZS 3003. These solutions are with 10mA devices with switched neutral in 1P width devices, saving half the space of a typical 10mA RCD.

Higher risk applications such as outdoor equipment, kindergartens, or bathrooms, NHP have a 10mA range of devices to offer that extra level of protection.

When choosing to have upstream RCD protection it is important that special selective RCDs are used. Selective RCDs prevent the upstream RCD accidentally operating which would normally cut power to many circuits instead of the intended individual circuit. NHP also offer these selective type RCDs, Type S.

These changes are improving safety at home and at work so why wait for them to be enforced and make the first step to a safer environment now with NHP.

Ensure you are protected with advanced RCD testing!

Does your RCD operate safely providing protection to personnel and equipment? Regular RCD (Safety Switch) testing is the only way to ensure your RCD operates effectively, this can now be achieved with a Wi-Fi based device, Rapid Test, which removes the tester from live work against other traditional testing methods.

NHP's modular and flexible break through range of Concept Panelboards delivers a touch of sophistication to your application, and with the integration of Rapid Test from NHP will not only save you time and money, but will safeguard your operations.

For more information, visit nhp.com.au/more/rapidconcept

NHP ELECTRICAL ENGINEERING PRODUCTS
1300 NHP NHP | nhp.com.au |