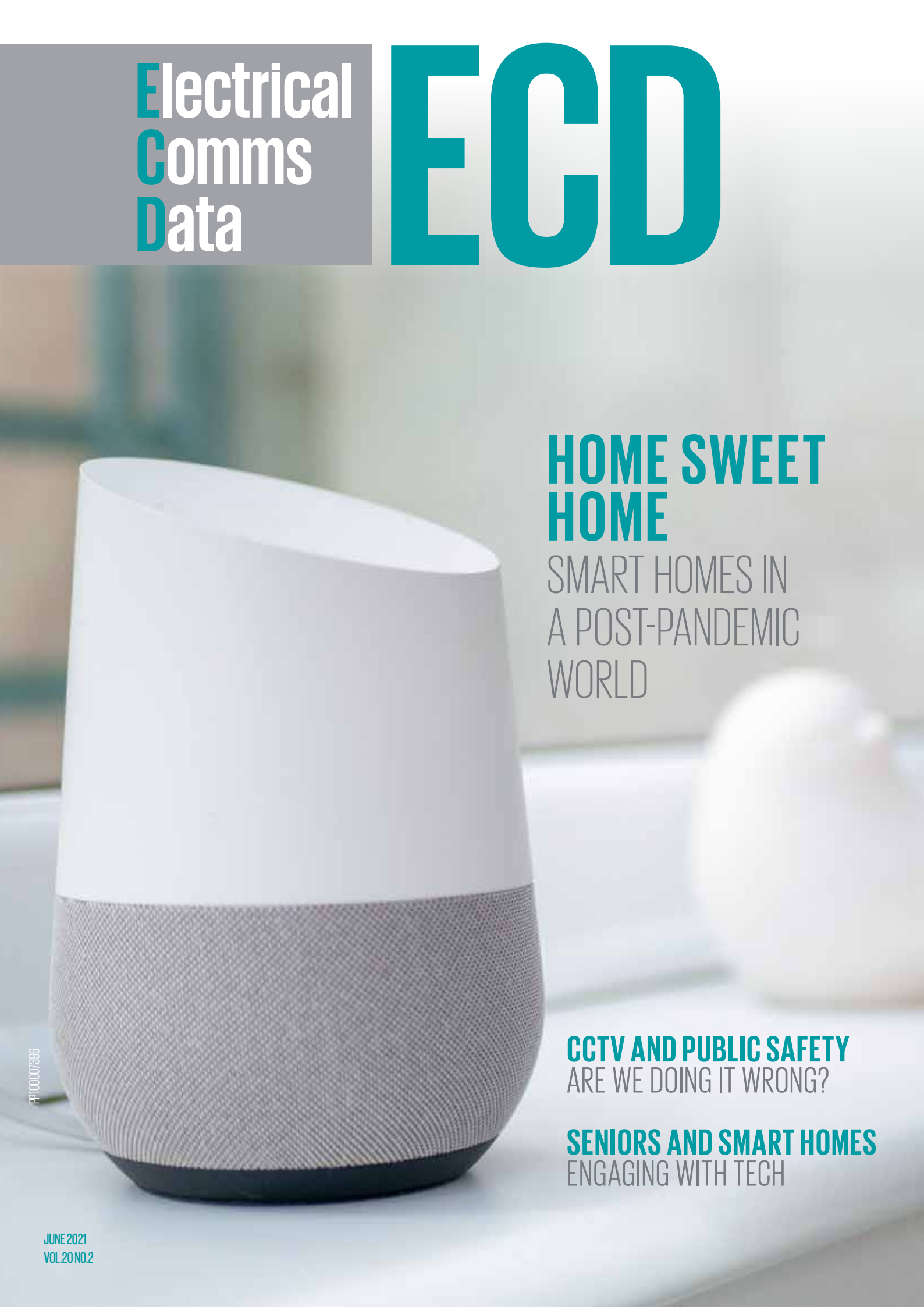
Electrical Comms Data

ECD



HOME SWEET HOME

SMART HOMES IN A POST-PANDEMIC WORLD

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CONTENTS

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FROM THE EDITOR

Here we are again at the midpoint of the year. 2021 was supposed to save us from the horror that was 2020 and give the world a much needed reset. Turns out, it isn't so different from last year, with the exception of (thankfully) far fewer cases of COVID-19 and only the occasional circuit-breaking three-day lockdown.

Though international travel is still a dream for the most part and the vaccination program remains a little shaky, we are seeing a slow return to something that resembles normal. But what will our lives look like in the longer term?

We've now come to realise that this 'once in a lifetime' pandemic could easily happen again once travel opens up and we resume moving around the world. Will we be better prepared next time round, or will panic-buying still mark the early days of the next global health incident? The pandemic certainly taught many of us to appreciate our homes and the sanctuary they offer, which can only mean good things for the smart home industry. Trapped at home and with little else to spend money on, consumers started buying entry-level smart home devices like never before — behaviour that bodes well for the industry in the long run, as our interest in connectedness and comfort increases.

We cover the post-pandemic potential for smart homes in this issue, along with some outstanding examples of home automation installations. Automation, the IoT and the sheer number of connected devices in any one location — before, during and after the pandemic — are on the rise, which puts networked security front and centre. Read on for more information.

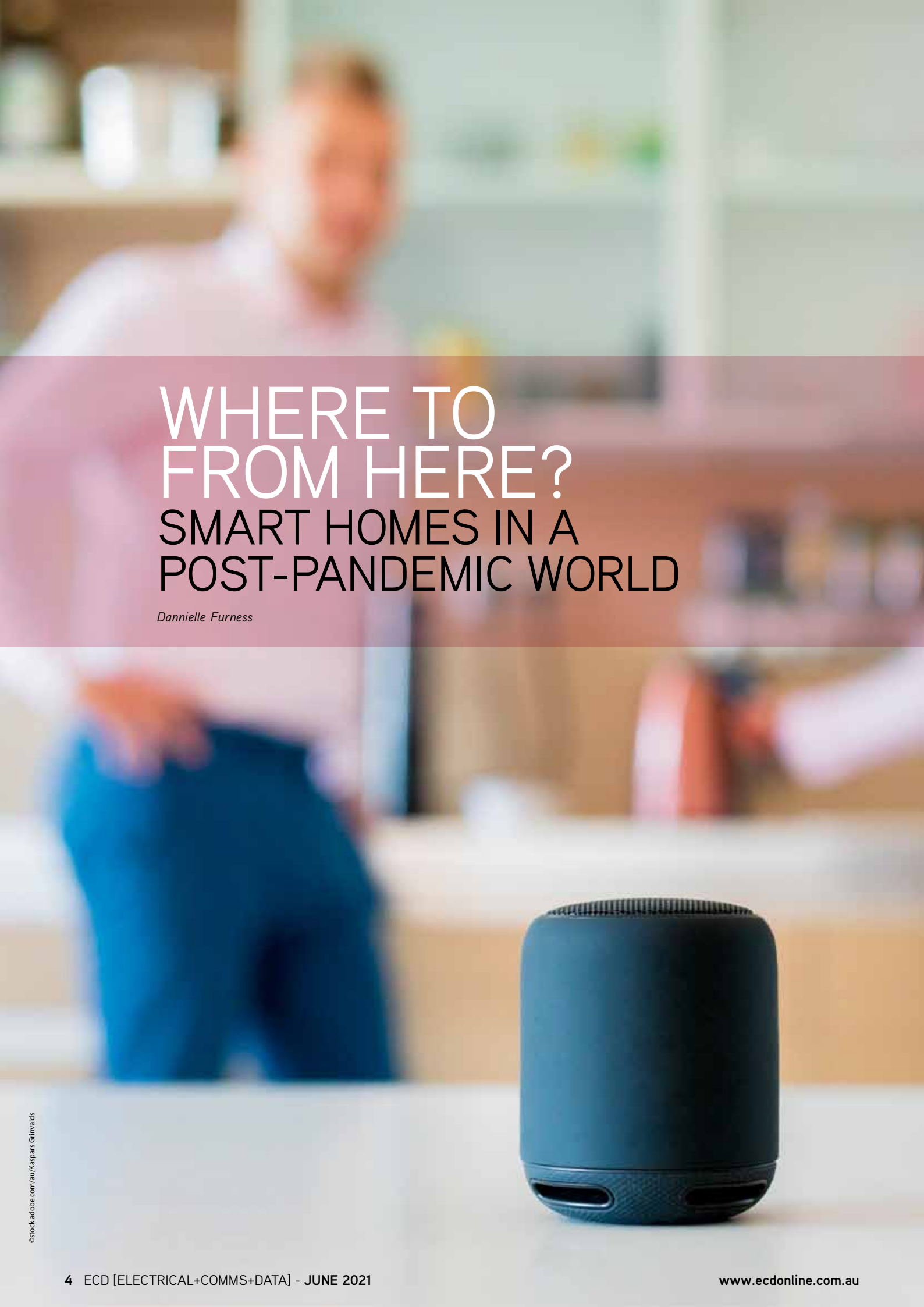
I hope you enjoy this issue.

Dannielle Furness – Editor
ecd@wfmedia.com.au

WHERE TO FROM HERE?

SMART HOMES IN A POST-PANDEMIC WORLD

Dannielle Furness



Plenty has been written about life after COVID-19 and what it will mean for work, travel, entertainment and our day-to-day lives. So, what changes will 'the new normal' bring for the home automation industry?

Once upon a time, control and automation was reserved for high-end homes — luxury residences complete with home theatre, access controls and intelligent lighting systems that were the exception, rather than the rule.

Pulling all those elements together took some serious integration capability and a reasonable amount of money. While the technology may not have been in the mainstream then, there was continual promise that the smart home would soon be within reach of everyone.

Flash forward to 2021 and home automation technology is easily available to the average consumer, but how does the ever-increasing range of affordable, disparate wireless devices stack up against an engineered solution comprising a dedicated wired network full of intelligent devices capable of complex conditional logic? Are they chalk and cheese, or does one inevitably lead to the other... and does it even matter?

Home, sweet home

Collectively, we've obviously all spent more time at home throughout the last year and a half. That's been good news for suppliers of smart products at the lower end of the automation scale — devices including smart plugs, lightbulbs and cameras, along with mini speaker/automation hubs like the Amazon Echo Dot or Google Nest Mini. Combined with a smart phone and a voice-activated AI assistant, consumers can use these devices to initiate low-level home automation and control music, lighting and implement a basic security set-up.

For plenty of people, that's enough... for now.

But that's not really how things generally play out in the longer term. Once we've had a taste of additional lifestyle benefits or increased convenience, we humans tend to stick with labour-saving devices and technologies that deliver better outcomes. No-one went back to the horse and buggy or doing laundry by hand once the alternatives arrived, after all.

Can I help you?

The 'traditional' smart home market has always been fragmented, with vendors typically offering solutions that operate within their own discrete ecosystem. As the market matured, it became more commonplace for these vendors to make APIs available to other solution providers to make interoperability easier to achieve, but it's still pretty much every man for himself at the foundation.

That situation still applies to today's entry level automation options, with massive tech companies like Google, Apple and Amazon (I think we can agree Amazon is no longer a 'retailer') centring their smart home hub products around their virtual assistants. Your choice of smart home solution is now driven by the phone you already own along with the assistant and ecosystem you are accustomed to or are willing to adopt.

The AI-powered virtual assistants are the strength of these products and their increasing capability will begin to rival the 'scene setting' functionality offered by more mature automation solutions, where multiple actions can be carried out by a single command — where a phrase like "Goodbye House" can initiate lights off/on, security armed and blinds down, for example. Beyond that, the real hope for AI is the pre-emptive capability the assistants will offer. As they become more familiar with the behaviours and habits of users, they put those learnings to work and make system adjustments without any intervention.

In making these virtual assistants indispensable, tech vendors are ensuring their products are relatively sticky in the hope of fostering a long-term connection with users. Traditional home automation systems are also inherently sticky, though not necessarily for the same reason — it's more likely because they are hard-wired in and are expensive enough to make changing to another system a bridge too far for many homeowners.

Topping out device numbers

One of downsides of the 'hub and smart-plug' approach is a reliance on wireless technology, which can exhibit significant limitations when it comes to device numbers and reliability — an area where wired alternatives tend to have an edge.

For many homeowners, wireless networks were stretched to the limit through COVID-19, with parents and kids competing for bandwidth while working and studying at home. Privacy and security concerns subsequently also rose in recognition of the fact that every connected device increases network vulnerability. Throw a proliferation of smart home devices into the mix and things start getting messy.

The devices themselves are often the cause of privacy concerns, with consumers questioning the security of speakers and hub devices that are programmed to continually listen for trigger words.

This combination of issues makes a wired network solution a compelling option for concerned homeowners, particularly in the face of an increasing number of smart device options including appliances like fridges, washing machines and microwaves.

Blending lifestyle improvement with environmental concerns

Early smart home systems were basically adaptations of lighting control and building management systems, where sales arguments were heavily skewed towards the energy-saving benefit offered by these solutions and their substantial impact on the bottom line — something close to the heart of commercial building owners, operators and tenants.

In residential environments, energy saving may have been a concern for some consumers but it was usually overshadowed by the lifestyle benefits offered by smart homes — convenience, aesthetics and prestige.

Things look a little different in 2021, with climate change and environmental concerns top of mind for many consumers. While more likely to incorporate climate control in their homes, today's homeowners are equally keen to ensure they are environmentally responsible. Consumers are as interested in where the power they use comes from as they are in how much they are using — it's a notably different mindset from, say, 20 years ago and has helped Australia achieve one of the highest uptakes of rooftop solar systems in the world.

This new attitude is driving expectation around monitoring and reporting from smart home systems, whereby energy consumption is tracked and reported.

Convenience, connectivity and sanctuary

While COVID-19 lockdowns drove many workers and homeowners to 'simpler' distractions — like baking bread or learning an instrument — they also heightened the benefit of smart home technology backed by reliable connectivity.

With homes designated the epicentre of pandemic existence, many of us were obliged to use — and share — the same space for work, health, rest and entertainment. Wanting to improve that space was an obvious effect, with sales of homewares, appliances and electronics soaring in the early days of lockdown.

As long as international travel remains off the table (for the most part) and our vaccination programs suffer fits and starts, it's still hard to estimate when things will officially be 'back to normal' — or if they ever really will.

For the home automation industry, this isn't such a bad thing. As consumers learn to trust and rely on existing devices and assistants, and to venture into the automation space with entry-level products, the market potential grows. We know that 'nice to have' eventually becomes 'can't live without' and that consumers will seek the solutions that offer the best alternative for their particular set of concerns, including convenience, connectivity and security. If the pandemic has taught us anything, it's that uncertain times cause us to seek comfort, connection and sanctuary... which sound like ideal conditions for the smart home industry.

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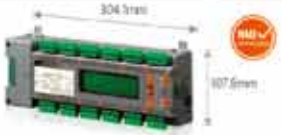

MODEL	EM133XM	BFM136	BFM-II
INSTALLATION TYPE	SMALL	MEDIUM	LARGE
^ELECTRICITIES Tenants	Up to 3	Up to 36	Up to 54
UTILITIES Water, Gas	Up to 14	*Up to 72 With BFM utility module	Up to 72

PIERLITE TO ILLUMINATE UP TO 1000 NSW PUBLIC SCHOOLS

Pierlite has been appointed by Schools Infrastructure NSW (SINSW) to provide LED lighting across a large number of NSW public schools as part of the statewide Lighting Upgrade Program (LUP), designed to improve the wellbeing of students and teachers, provide energy savings and create hundreds of NSW jobs.

Pierlite will supply LED products to up to 1000 NSW public schools, replacing existing fluorescent lighting and aiming for a reduction in energy consumption of at least 50%. The majority of components and labour will be sourced from NSW-based businesses and manufactured at Pierlite's Padstow facility.

The company's solution is centred on its range of Vandalux and Unilux EP upgrade kits, offering energy savings, reduced environmental waste and wellbeing benefits to those interacting in the installed spaces. Additional benefits include a 50% faster install time, reduced installation risk and a lower risk of exposure to ceiling contaminants.

The initial phase of the project will see a number of new jobs created at Pierlite, its component suppliers and service providers.

The LUP has been designated as a COVID-19 economic stimulus recovery program. In addition to delivering operating cost reductions in electricity and maintenance, the program aims to support student learning behaviours by improving the indoor lighting environment across NSW public schools.

Pierlite Australia CEO Gustav Arianto said, "This is a strategically important contract for Pierlite and we are proud to partner with SINSW to ensure successful outcomes for NSW public schools.

"Our commitment to local job growth and manufacturing has always been a strong focus for Pierlite. Throughout the 70 years we have been operating here in NSW, we have continued to invest locally to retain our industry-leading innovation, design and testing capabilities at our Padstow facility, despite significant technology and market changes in our industry.

"We are delighted with the job creation and local manufacturing opportunities this contract provides — especially as our state economy recovers from the COVID-19 pandemic. We look forward to delivering products that will result in lower energy usage and less maintenance for NSW public schools, and will support student learning for years to come," he said.

THREE INCIDENTS SPARK CONCERN ABOUT WORKING UNDER POWERLINES

Three serious incidents in regional Victoria throughout April have Energy Safe Victoria (ESV) Commission Chairperson Marnie Williams pleading for machinery operators to take more care when working near overhead powerlines.

On 12 April a crane truck offloading building material connected with powerlines in Dromana, with the crane arm making contact with 22 kV lines and injuring two men.

On 27 April a man suffered a severe electric shock and was left in a critical condition after a grain auger hit powerlines in Harston. The auger was being towed by a forklift the man was standing on when it hit one of the bare overhead powerlines. A second person driving the forklift received a shock but did not require treatment.

In a third incident, on 30 April a tip truck hit a high-voltage conductor at Trafalgar South, resulting in hospitalisation for the driver.

The three incidents are all being investigated by ESV and WorkSafe.

"To have three in the space of 18 days is deeply concerning," Williams said.

"Anyone operating machinery such as cranes, crane trucks and tipper trucks must look up because incidents like these are preventable if operators of machinery take the proper precautions.

"They need to be aware of powerlines — particularly in rural and regional areas, where single bare powerlines are often hard to see.

"You only need to see the consequences from these three incidents, which have all caused serious injuries and in some other cases people have died."

ESV is unable to comment on the specifics of these incidents as they are still being investigated.

In late 2020, a farmworker was killed when the extendable boom on the telehandler he was operating came into contact with overhead powerlines in Gerung Gerung, in north-western Victoria.

The Look Up and Live campaign has been running for almost 10 years. It calls on workers and operators of such machinery to be aware of powerlines and plan how to safely undertake their work before they begin.

ESV recommends the following:

- Understand No Go Zones. These include rules and distances for safety clearances near overhead powerlines. People and equipment working anywhere near powerlines need to understand the No Go Zone requirements to stay safe and away from live powerlines
- Monitor weather conditions closely — powerlines can sag in extreme heat and sway in strong winds.
- Remember that powerlines are more difficult to see at dawn and dusk.
- Remember that electricity can jump across air gaps.

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FACTORING HUMAN INTERACTION INTO SMART CITIES

Technologies in urban spaces are monitoring weather conditions, understanding pedestrian foot traffic, determining when bins need to be emptied and monitoring public spaces through CCTV — but how do the city's residents understand and interact with these technologies?

A recent project between the City of Melbourne and the Emerging Technologies Research Lab (ETLab) at Monash University is looking at the experiences and perspectives of emerging technologies in and around Melbourne's CBD, to better plan for inclusive future cities.

Just like any other major city, emerging technologies are adopted to improve urban efficiency. Technologies like artificial intelligence (AI), Internet of Things (IoT) and 5G are just some of the advancements that are improving the quality of life for many residents. Despite the benefits emerging technologies can offer, they're often deployed without the proper consultation of local residents.

Taking a more transparent approach, this project will combine research expertise with industry knowledge to engage the community in the early process of testing new technologies.

"This is an important initiative to provide a community lens on emerging technologies that have the potential to transform the way we run the city for the benefit of all Melburnians," said Councillor Le Liu at the City of Melbourne.

The team of researchers from the ETLab, which is part of the Faculty of Information Technology and the Faculty of Art, Design and Architecture at Monash University, will employ a three-pronged approach that focuses on awareness, perception and partnership.

"By helping the City of Melbourne engage with the local community early in the process of testing new smart technologies and planning the future city strategy, this project will contribute important insights into how people perceive, value and use emerging technologies in the urban environment," said Professor Sarah Pink, Chief Investigator and Director of the ETLab.

The second phase of the project extends upon this research and launched a live activation in Argyle Square as part of Melbourne Knowledge Week (26 April–2 May).

Locals were able to interact with each emerging technology by scanning QR codes dotted throughout Argyle Square that explained the role of each technology. By providing their feedback and interacting with the technology, members of the community were able to take part in the live experiment and play a vital role in shaping their city.

"This partnership employs a transparent approach to data collection, which is also why it was so important for us to include the local community and invite them to take part in our live experiment," said Professor Pink.

The findings and information gathered from this partnership between the City of Melbourne and the ETLab have the ability to be replicated in other urban spaces and major cities.

CREATIVE LIGHTING GUIDE FOR ELECTRICAL CONTRACTORS

Lighting Council Australia (LCA) has published a new Creative Lighting Guide designed in the main for electrical contractors and consumers.

The guide provides a complete introduction to lighting including the basic tenets of lighting design, along with available technologies and their uses to achieve desired effects.

Lighting is used to enhance space, define beauty and maximise value. It is a critically important element in the use of a specific space and the desired mood to be created in that space.

The guide outlines the human response to light and the different types of light that can be used to highlight architectural features, add interest, relax or stimulate and provide functional outcomes for various tasks from simply safe movement through to detailed work. It also uses various images to illustrate real scenes and the lighting used.

The LCA says that guide users should note that Council Australia members agree to abide by our code of conduct and supply products that comply with Australian regulations and standards.

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AUSTRALIAN HOME OWNERS INSTALL BATTERIES AT RECORD RATES

COVID-19 has failed to dampen enthusiasm for solar storage in Australia, with more than 31,000 batteries installed in homes around the country during 2020 (up 20% from 2019), according to analysis released by solar and storage market analysts SunWiz.

This brings the cumulative tally of solar storage systems installed in Australia to almost 110,000 batteries including residential, commercial and the many large-scale "big" battery installations announced by state governments and private enterprise.

South Australians are leading the trend, with just over a quarter (26.0%) of all battery installations in 2020 occurring in the state, despite its relatively small proportion of Australia's population. SunWiz analysis found state government incentives played a major role in driving this technological trend.

Victoria and New South Wales were close behind with around a quarter (25.1% and 24.7% respectively) of all battery installations also occurring in each of those more populous states. On a per capita basis Queensland is lagging behind, with 9.6% of all batteries installed, despite being home to around a fifth (20.1%) of Australians and having a high proportion of solar panel installations.

"It was a surprisingly good year for battery installations in Australia," said Warwick Johnston, Managing Director of SunWiz.

"Home battery systems proved particularly popular in South Australia where there is such high demand from home owners that the state government had to reduce its subsidy in order to avoid overheating the market and exhausting available government funds too quickly.

"In Victoria, the popularity of solar batteries for homes was so high the state government subsidy allocations were exhausted within minutes of each release; a situation only remedied when the government directed some COVID stimulus funding towards the sector.

"The popularity of batteries is strong even without state subsidies, particularly where home owners can benefit financially by taking part in so-called 'virtual power plants' — which combine the power of individual batteries to support the energy market and network.

"In 2020 Australians continued to demonstrate a desire to reduce their power bills by making the most of the nation's abundant and cheap solar power and empower themselves with a battery. Batteries also continue to demonstrate they can support the Australian electricity network," he said.

Roughly 9% of new home solar systems installed in 2020 included a battery, which is down from the high of 12% recorded in 2017 but an improvement on 2019's 8%. The capacity of residential battery storage is also on the rise (up 27%) as the average battery size increased.

"This energy transformation in Australia is happening quickly and the continued increase in solar panels and batteries installed shows Australians are enthusiastic about the benefits. State and federal governments can play a role by ensuring battery rollouts are safe and smart, and demonstrating to the public that batteries are a legitimate solution for homes, communities and electricity networks," Johnston said.

In 2021, SunWiz forecasts an additional 33,000 home battery installations, plus an increase in grid-scale storage.

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CASE STUDY

State-of-the-art automation for SA's largest private hospital

ABB has partnered with Australian intelligent building control integrator mySmart to deliver world-class building automation solutions for the largest KNX healthcare project in the Southern Hemisphere.

Having cared for South Australians for over 120 years, Calvary Adelaide Hospital (CAH) completed building the largest private facility in the state in late 2019. The $345 million 12-storey hospital offers the community a comprehensive range of services including orthopaedic, cardiac, neurosurgical and rehabilitation specialities.

With a floor area of 57,000 m² and five levels of patient wards, the hospital houses Adelaide's only 24-hour private emergency department and has capacity for 344 overnight beds with 16 operating theatres, a rehabilitation wing with a hydrotherapy pool and a mobility garden. It is also home to a custom-designed Hybrid Theatre, combining an operating theatre and radiology suite to diagnose and treat patients faster.

ABB partnered with mySmart to equip CAH with the latest building automation solution using the ABB i-bus KNX system for all lighting control and monitoring, based on the worldwide KNX standard. The solution provides this critical healthcare facility with intelligent and integrated building control for easier lighting management and increased flexibility, security, economic efficiency and convenience.

Featuring more than 1200 KNX devices, it is the largest KNX Health Care project in the Southern Hemisphere.

Life-saving matters

Many clinicians and worldwide healthcare providers are turning to smart technology as a positive route to provide innovative, cost-effective ways to help reduce and relieve the pressure on personnel and financial resources in health trusts. This comes at a critical time in healthcare provisioning, when global healthcare spending is projected to increase at an annual rate of 4.1% in 2017–2021, up from just 1.3% in 2012–2016[1].

The chosen lighting technology and control systems play a critical role in the cost structure of hospital maintenance given the countless number of lighting points in patient rooms, research facilities, hallways, waiting rooms, laboratories and lobbies — all requiring lighting that best serves their purpose.

For CAH, the ABB i-bus KNX, coupled with DALI (digital addressable lighting interface), gives hospital personnel and maintenance staff full command of the lighting functions. All these functions can be managed automatically according to a schedule, sunset or sunrise, or presence of people, or by the touch of a button. This level of controllable lighting system is key to energy saving, with the additional benefit of increased comfort and safety.

Hospitals always need light — regardless of the time of day or the day of the week — and it must be reliable and well designed to not only guarantee the best conditions for medical and nursing staff, but also provide optimal conditions for the wellbeing of patients.

Technology leadership in health care

The ABB's i-bus KNX solution integrates the hospital's lighting and energy metering to interface with the building management system (BMS) and Nurse Call system. This provides lighting automation and control critical for effective lighting, operational efficiency and safety. This interface enables the lighting and heating/cooling systems to work in unison, so as lighting sensors detect the movement of people and turn lights on, it triggers the heating/cooling system to respond accordingly.

An important challenge for hospitals is reducing operational costs without adversely affecting patients. With the implemented solution, customers can realise energy savings of up to 60% of the electrical energy for lighting and significant cost reductions in managing and maintaining the system due to intelligent monitoring.

KNX can result in energy savings of up to:

- 10% in time switched (eg, automatically turn off lights in the evening)
- 20% as a result of presence detection (lights turned on only when person detected)
- 40% in presence and brightness detection (the system detects the level of sunlight to regulate how much lighting is required)
- 50% in constant brightness control (the system maintains a constant level of light based on the level of natural brightness).

The key advantage of ABB's i-bus KNX solution is the range of features it now successfully integrates and manages. Where KNX might support a simple light dimmer, the ABB solution allows users to set timers and lighting levels, measure the energy being used and perform many other functions. It delivers the full automation concept and is entirely scalable.

Making buildings smarter

ABB's i-bus KNX allows all devices to communicate with one another via a single bus cable which is installed alongside the normal power lines. This means that all electrical functions are connected with

one another via the bus system. For CAH, specific KNX features selected to ensure easier facility management and operational effectiveness and flexibility include:

- Automation and remote access: timed and logical functions, system supervision, internet access, remote programming — all enabling the optimal, energy-efficient interaction of the subsystems such as lighting control and heating, ventilation and air conditioning (HVAC), which is almost impossible with conventional technology.
- Automated lighting: light scenes, timed control, automatic occupancy detection, constant light control — by automating these functions, the building reacts on changes of the environment automatically and is not reliant on human intervention.
- Energy management: diverse control and interface solutions to reduce building operating costs and to employ the required energy according to demand — bringing the various systems under the ABB i-bus KNX solution and using one common user interface or head end software enables easier maintenance and reduced opex. Also offers ability to provide support and make changes remotely.
- Easy operator uses and visualisation: touch panel and computer display ensuring clear representation of the control processes.

The KNX Protocol has been adopted by Standards Australia as SA/SNZ ISO/IEC TS 14543.3.1-6:2018 Technical Specification meaning it is likely to be supported for years to come.

1. Source: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-hc-outlook-2018.pdf.

ABB Australia
new.abb.com/au

Cable reel

The igus e-spool flex 2.0 from Treotham is a cable reel that allows cables to be guided from start to end without slip rings or other connecting elements. This is made possible by a spiral guide which reels the cable in a controlled manner when it is rolled up.

This new type of cable reel can carry all cables and hoses for the transmission of energy, signals, data, liquids, compressed air and vacuum without interruption. Fully harnessed cables can thereby be used, which can be inserted into the drum in a few easy steps. The user simply inserts the cable into the spiral guide and fastens the cable stowed in the outer and winding housing of the e-spool flex 2.0.

The e-spool flex is available in three sizes for cables with a diameter of 5 to 15 millimetres and an extension length of 5 to 15 m. The cables can be quickly replaced at any time. In addition to a subsequent connection of the e-spool flex 2.0 with an existing cable, Treotham also offers the cable reel solution as 'readychain' or, better said, 'readyspool', fully harnessed with chainflex cables specifically designed for moving applications and with cables of other manufacturers.

The e-spool flex 2.0 is available in four versions: a low-cost version with a hand wheel to rewind the cable, a tool variant for cable reeling with cordless or pneumatic screwdriver, an automatic solution with spring-operated retraction mechanism or a version with spring drive and additional brake (in development).

The 'classic' applications for the new type of movable energy supply system will certainly be the external operating/programming panel for robots as well as operating units of (larger) machine tools. In addition, there are many other possible applications, such as the convenient guidance and height adjustment of suspended operating units, as used on indoor cranes, for example. Further areas of application are laboratories and test facilities as well as medical technology.

Treotham Automation Pty Ltd
www.treotham.com.au

Dual sensor gimbal

The FLIR Vue TZ20 high-resolution, dual thermal sensor gimbal purpose-built for the DJI Matrice 200 Series and Matrice 300 airframes is now available in Australia. Featuring both a narrow-field-of-view and a wide-field-of-view 640 x 512 resolution FLIR Boson thermal camera module, the Vue TZ20 offers greater situational awareness with a 20-times digital thermal zoom capability to complete public safety and industrial inspection missions both near and far.

IP44 rated to provide operability in poor weather conditions and weighing just 640 g in total, the Vue TZ20 includes a wide-angle Boson with a 95-degree field of view and a narrow-angle Boson with a 19-degree field of view, enabling pilots to put more pixels on target with ease.

FLIR developed the Vue TZ20 with the DJI Payload Software Development Kit (PSDK) and DJI Skyport 2.0 platform, offering simplified, plug-and-play operation through the DJI Pilot Software. Payload functions include thermal video streaming, video recording and still-image capture with 20-times zoom, enabling operators to conduct missions at safe distances while capturing the thermal data and detail required.

FLIR Systems Australia Pty Ltd
www.flir.com.au

Handheld thermal transfer printer

The THERMOMARK GO.K handheld thermal transfer printer from Phoenix Contact is a robust, easy-to-use solution for fast marking onsite. The printer offers versatile functions, processes continuous media for terminal marketing, cable and wire marking, equipment marking and plant marking.

Features include: maintenance-free operation, with proven thermal transfer printing technology; alternative, easy control with PROJECT COMPLETE software; printing of self-adhesive and non-adhesive labels as well as shrink sleeves; prints materials in cartridge format, which contains the material to be marked and the appropriate ink ribbon; intuitive user guidance thanks to a well-structured menu and direct input keys; eight different barcodes and over 300 symbols can be integrated, up to 20 projects can be created and stored directly on the device.

MacLean Electrical (Australia) Pty Ltd
www.maclean-electrical.com.au

HOW WILL YOUR BUILDING INFRASTRUCTURE EVOLVE TO MEET YOUR GOALS?

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Utility Grade INFRASTRUCTURE (UTG℠) is a technology platform, assurance program and design approach that redefines the infrastructure layer to support building subsystems, technologies and applications to help facilities and businesses meet their goals.

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UTG can help address different challenges and opportunities that drive decision-making for many stakeholders in commercial buildings.

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Learn how UTG can help you address challenges and opportunities in commercial building infrastructure at anixter.com/utg/apac.

Rugged tablet

The Winmate M101P, a 10.1″ rugged tablet, uses an Intel Pentium N4200 Processor 1.10 GHz, up to 2.50 GHz with turbo boost technology, and a fanless cooling system to provide stable performance and low power consumption.

The product supports the latest Windows 10 IoT Enterprise operating system to fulfil increasing industrial application requirements and to provide an alternative solution for those between general consumer-grade and extremely rugged solutions.

The device supports real-time data access, which is crucial for mobile workers. It offers GPS, GLONASS, Wi-Fi 802.11 a/b/g/n/ac, BT 5.0 and optional 4G LTE to enable robust communications anytime and anywhere. It is designed to be tough and rugged, withstanding shock, vibration and drops up to 1.2 m to concrete according to military standard MIL-STD-810G. It features all-around rubber edges and covered I/O ports, making the device dust-tight and waterproof.

The 10.1″ screen features projected capacitive (PCAP) multi-touch technology for an optimal user experience that allows the user to switch windows, take snapshots, zoom in and rotate objects easily to take full advantage of the touch interface. It supports Rain, Glove and Stylus modes.

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

Lightning and surge protection

The protection of sensitive electronic equipment against the harmful effects of lightning and surges is becoming more important as system complexities increase. Each critical area, from the incoming AC mains and distribution boards to final circuits and individual devices, can be protected using Weidmüller's VARITECTOR range of surge protection devices.

The VARITECTOR PU AC family of mains surge protection devices provides Class II surge protection. It has an Imax of 50 kA (8/20 μS) and complies with IEC/EN 61643-11 as well as AS/NZS 1768: 2011.

Available in 1 ph, 1 ph+N, 3 ph and 3 ph+N formats, all MEN-connected domestic, commercial and industrial Class II installations can be protected.

To ensure sensitive equipment is protected over time, the VARITECTOR PU AC green flag indicator changes to red as the device nears its end-of-life signalling. Remote signalling is an option advising a replacement cartridge is required.

For further protection, versions are available with an additional yellow warning flag to indicate the partial end of life. This can be advantageous in areas of critical infrastructure where the need to always maintain protection is necessary. The replaceable plug-in cartridges are securely held in place with a positive locking lever. A high level of protection is afforded by a typical Up of 1500 V.

Weidmuller Pty Ltd
www.weidmuller.com.au

High-density, multi-circuit power meter

Schneider Electric has released a high-density power meter range, the PowerLogic HDPM6000. This meter range enables custom solutions for cost and network management in critical facilities. Leveraging the latest in IoT-enabled technology, including MODBUS, SNMP and BACnet TCP/IP, the HDPM6000 is designed to enable customers to better manage power consumption, optimise uptime and allocate energy costs.

Designed for new construction or retrofit installations, these switchboard or busway multi-circuit meters meet a wide array of customer power applications. Ideal for data centres, hospitals or industrial facilities with critical power needs, PowerLogic HDPM6000 meters are highly versatile and equipped with enhanced features that facilitate simple installation. They also provide building operators and facility managers with valuable power quality data at the branch circuit level that can be easily integrated with EcoStruxure edge control software or other third-party management systems.

With monitoring of up to 192 circuits to identify increased harmonics and help prevent potential failures, the HDPM6000 is the optimum solution for high-density metering applications. Its user-friendly web interface allows easy commissioning and configuration on branch circuits, and it easily adapts to changes in distributed architectures and scales to future requirements.

Schneider Electric
www.se.com/au

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As an official Platinum Distributor and stockist for Phoenix Contact products, MacLean Electrical are The Vital Connection.

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- 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

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SENIORS AND SMART HOMES: BRIDGING THE DIVIDE

From digital voice assistants to automated smart lights and robotic vacuum cleaners, readily available off-the-shelf smart home devices can support the wellbeing and independence of older Australians, according to new research.

As part of the The Smart Homes for Seniors project, a group of researchers from Monash University and Deakin University, in partnership with McLean Care, evaluated the benefits, opportunities and challenges of incorporating smart home devices into the homes and lives of older people living in regional communities.

The research involved participant insights, electronic data from the devices showing participants' usage patterns, user reviews and end-of-trial surveys.

From the findings researchers were able to identify the usability challenges, expectations, as well as the hopes and anxieties older people have with smart home devices in assisting them to live more independently and to improve their overall wellbeing.

A marginalised demographic

"Older people are a marginalised demographic when it comes to the design of smart home devices and are often underrepresented in user studies," said Monash University Project Lead, Associate Professor in the Emerging Technologies Research Lab, Yolande Strengers.

"Despite the many benefits smart home devices can offer the elderly population, many older Australians are increasingly concerned about being left behind in the digital age, highlighting the need for proactive policy and research initiatives to help bridge this gap."

As part of this study, the researchers identified a number of recommendations to equip older people and bridge the digital divide.

These recommendations included offering smart home devices as optional extras for in-home services, providing opportunities for learning to gain digital living skills, providing affordable and reliable internet services, and designing and installing smart

> DESPITE THE MANY BENEFITS SMART HOME DEVICES CAN OFFER THE ELDERLY POPULATION, MANY OLDER AUSTRALIANS ARE INCREASINGLY CONCERNED ABOUT BEING LEFT BEHIND IN THE DIGITAL AGE

home devices that support older people's independence, mobility and memory.

"The Smart Homes for Seniors project was designed to address the research and knowledge gaps relating to older people's use of smart home technologies. We want this project to dispel the stereotypes around older people's interest and capacity to engage with emerging technologies," Associate Professor Strengers said.

"Through our ethnographic research we were able to understand how smart home devices could support older people's wellbeing and their ability to live independently. Our field work also identified certain challenges older people experienced when using smart home devices."

McLean Care Chief Executive Officer Sue Thomson explained how the unique combination of ethnographic and technical research offered through this innovative collaboration sets this project apart from many others.

"The Smart Homes for Seniors project is a testament to how an effective industry–research partnership can work to shed light on areas of emerging opportunity at the intersection of person-centred care, and the field of assistive technologies," Thomson said.

Associate Professor Ben Horan from Deakin University's CADET Virtual Reality Training and Simulation Research Lab explained how the technical research revealed complementary insights about how older people use smart technologies.

Usage data delivers insights

"Our team recorded usage data from the devices to identify how often they were used, at what times and using what functionalities. We were also able to understand the kinds of voice requests and challenges with voice activation that older people faced when engaging with Google Home functions," he said.

"Participants were given the opportunity to have fun with the smart home devices, make mistakes and take their time to learn each function with technical support of the project team, creating an ideal learning environment."

The project was funded by the Australian Government Department of Health through a Commonwealth Home Support Program Innovation grant. To learn more about the Smart Homes for Seniors project, visit: https://intelligenthomesolutions.com.au/.

SHIFTING THE FOCUS ON CCTV

Nicole Kalms, Associate Professor, Department of Architecture and Director of the XYX Lab

Research from XYX Lab suggests the use of CCTV in public spaces is shaping women's behaviour in unexpected ways.

Closed-circuit television cameras on trains and city streets are meant to reassure us that we're not in danger — but women don't always see them that way.

Technology-enhanced surveillance, such as CCTV, is often used as a forensic tool after an incident, but there are some risks to this deployment that can negatively affect women's perceptions of their safety and their actual safety.

"The camera makes her feel hyper-vigilant, it makes her modify her behaviour, she might choose to quickly leave that area," said Nicole Kalms, founder of the XYX Lab, which researches gender and public spaces.

"Her immediate response is to think that she's in an unsafe place … The symbolic impact of the CCTV camera is really shaping women's behaviour in cities."

Safety still in numbers

Although people tell researchers that they want to see CCTV cameras monitoring busy streets and spaces, Associate Professor Kalms said their impact on females is misunderstood.

Women and girls "are telling us all the time that CCTV cameras cannot replace the experiences of being with and around other people who are looking out for you", she said. "So, there's a lot of contradiction between what councils, politicians, local government want, and what women and girls see as safe."

By driving women away, cameras perpetuate the problem they're trying to solve, she said.

"The more women we can have in public spaces, the more women will want to be in public spaces, and we [can] build that live surveillance, if you like, of us looking out for each other."

Women and girls also prefer the presence of security officers and guards to cameras, she said.

"Real people, authority figures who are trained in gender-sensitive, trauma-informed ways of working with women and girls, they want to see those kinds of people in the space."

Cameras may provide a short-term solution, but they don't capture all forms of sexual harassment (such as verbal harassment or stalking). At present, such technology may be a short-term measure deployed while we plot behaviour changes and education about gender violence and gender stereotypes. Until this changes, women will feel vulnerable when moving through public spaces, particularly at night, Associate Professor Kalms said.

If CCTV is used, then live monitoring with the ability to respond to any incident is viewed as optimal. But on public transport, maintenance can be a problem, quality is patchy, security footage isn't always monitored and not all the cameras work, Associate Professor Kalms said.

She's also sceptical of 'digital bodyguard' mobile phone apps, which are designed to allow women to tell friends or family members that they're safe when they travel alone at night.

"What we're starting to increasingly see is that digital bodyguards are being used by partners, and even family members, to monitor women's and girls' experiences and their movements through cities, which you would understand is quite problematic when we're thinking about domestic abuse and domestic violence, family violence," she said.

The apps can also give a sense of false security.

"No digital tool can stop random acts of violence and the perpetration of violence against women in city spaces," she said. "Actually, they're taking away some agency that women and girls really deserve in cities."

So what can women do?

The XYX Lab has been asking women and girls to share their experiences of public spaces through a 'geolocative tool' on their

> CAMERAS MAY PROVIDE A SHORT-TERM SOLUTION, BUT THEY DON'T CAPTURE ALL FORMS OF HARASSMENT.

smartphone or devices that allows them to share what's happened to them in particular urban spaces.

The tool "allows us to understand … what kinds of experiences they're having, but also how we might make spaces that are more gender-sensitive, how we might design better cities, what kinds of things women and girls need in those spaces".

Using the tool, the lab gathers the urban experiences of women. In 2018, with Plan International and long-term collaborator CrowdSpot, the XYX Lab conducted research across five continents — in Sydney, Lima, Kampala, Madrid and Delhi. (It began with a pilot in Melbourne in 2016.) Altogether, 21,000 women under 35 recorded their experiences in these cities using their smartphones.

Although these cities are vastly different, all the participants recorded experiences of sexual harassment.

"We can't get this information in another way," Associate Professor Kalms said, "because women and girls don't report this kind of experience to authority figures."

Yet harassment is so prevalent that if women did report these incidents, "they would be at the police station or talking to the public transport authorities almost every day".

When women used the tool for public transport spaces, researchers realised that sexual harassment was most likely to take place on crowded vehicles where detection was difficult.

The tool is "not surveillance", she stressed. While the geolocation tool allows researchers to "locate exactly where particular incidents are happening, the findings are made available to women and their communities so that they are empowered to make change".

Importantly, it allows the participants "to detail in their own time and in their own way what's happening", she said.

"They want to tell their story. They can also see other women's stories. Women's experiences are validated through this crowd-mapping tool.

"This dataset becomes a factual, evidence-based way for us to negotiate with policymakers," Associate Professor Kalms said. "Councils and communities use this to decide what becomes a priority for them."

It allows researchers to "put evidence in front of people who are in positions of power. It helps city-makers make better decisions, and to prioritise the needs of women in the cities that they're building."

This article was first published on Monash Lens.

Giving new eyes to Aurora Place

By the numbers

- 46 floors (including carparks)
- 80 cameras
- 3000m of Siemon CAT 6A cable
- 180 Siemon Z-Plugs terminations
- 4 PC monitoring stations
- 4 racks
- 100 TB DVR storage
- 5 Jacques video intercoms
- 60 days project delivery

Located in the heart of the CBD, Aurora Place is a familiar feature on the Sydney skyline thanks to its distinctive curved facade and towering steel spire. Featuring a mix of commercial and residential tenancies, parts of the building have recently undergone refurbishment, including a major digital CCTV camera upgrade and overhaul of the main security control room.

The CCTV upgrade included the addition of thousands of metres of structured cabling and the installation of state-of-the-art networked security equipment including multiple racks with connecting fibre links, along with CCTV DVR and cameras. Sydney-based security and technology specialists Micron Group supplied the integrated security solution and its purpose-built control room.

The system comprises Axis cameras and a Milestone main head end, and includes Jacques IP servers to deliver a solution that meets the Micron Group philosophy of delivering cutting-edge technology with superior performance. Micron engineers, technicians and IT staff worked with security consultant Scott Myles from ICS Group over three months to bring the project to life.

The installation included four new comms racks strategically located throughout the building from the basement to level 41. Each houses a FOBOT for termination of fibre-optic connections between racks, a network switch and a backup UPS.

The team specified and installed high-grade Siemon CAT 6A cabling throughout the building, to ensure best-in-class performance and usability. Coupled with CAT 6A terminations, the wiring approach delivered an innovative solution for connection of IP-enabled cameras to the Aurora's HD multimode fibre-optic backbone.

Physical access of the many elevated cameras around the building perimeter presented a unique challenge for Micron engineers. The team worked with building tenants, consultants and management to develop a safety plan that allowed installation through the use of high-reach access equipment. Technicians utilised Fluke Networks industrial DSX network cable analysers to verify cable integrity during cable routing to network racks. Ground floor lobby and external cameras were installed in specified positions to give security personnel eyes into every corner of this premium building. An additional project consideration was continuity of the existing analog CCTV system pending changeover to the new Micron IP solution.

A catalogue of Axis cameras provide vision to the Milestone system, including the 1080p AXIS M3045 V dome installed in corridor and lobby locations and the flagship AXIS P3717-PLE 8MP 360° four-lens multidirectional camera with infrared illumination for uninterrupted coverage of external areas, even at night.

The external public courtyard is monitored by an Axis Q6055-E PTZ dome camera with 32x optical zoom, auto subject tracking and 256 programmable angle and zoom settings.

At the head of the system is the Milestone XProtect video management software (VMS). The team integrated the XPVMS platform across multiple networked PCs within the fully refurbished security control room to drive three large-format 4K TV panels on the wall and a desk-mounted monitor. Additional remote terminals are located in the Security Manager's office and the fire control room, which also houses the main CCTV rack loaded with a UPS-backed 100 TB combo CCTV management/recording server.

The CCTV set-up is augmented by a Jacques IP video intercom system, with units installed at key locations including ground floor pedestrian and underground carpark entry points. The new system and the building's existing PACOM access controls are seamlessly integrated with Milestone CCTV to deliver an intercom video stream to within the Milestone XProject interface, giving security personnel a complete picture.

Micron Group Australia
www.microngroup.com.au

High-end servo cable

ÖLFLEX SERVO FD 796CP is an EMC-compliant high-end servo cable that delivers faster speed and accelerations, which goes on to increase the economic efficiency of machines.

High-speed multiple changes of position are exactly where the Servo FD 769CP cable showcases its performance, in energy supply changes with an acceleration of up to 50 m/s², at speeds of up to 5 m/s and travel distances up to 3 m. This makes work considerably faster and more efficient than previous drag chain cables. Furthermore, the proportional run-up and braking times have been reduced by up to 96%. In summary, the premium cable is designed to save time and increase productivity, offers a long service life, is compact and is lightweight.

With an extensive application range, this cable is suitable for various applications. It can be used for connecting cables between a servo controller and motor, in power chains or moving machine parts, or even for use in assembling and pick-and-place machinery. In addition, it is safe to use in wet areas of machine tools and transfer lines.

The low-capacitance polyolefin insulation provides lower EM-effective leakage currents while simultaneously providing high dielectric and electrical strength. It is halogen-free and flame retardant and meets the key certifications, including UL-AWM, CSA AWM and VDE.

LAPP Australia Pty Ltd
lappaustralia.com.au

Three-phase string inverter

FIMER has released its PVS-10/33-TL three-phase string inverter solutions for commercial and industrial applications.

Available in outputs from 10 to 33 kW, the units offer high power density and strong energy harvesting potential. Featuring in-built digital capabilities, the PVS-10/33-TL is designed for simplicity. It is flexible enough to fit anywhere and can be easily installed in new or existing plants to provide lower installation and maintenance costs.

For installers, the PVS-10/33-TL platforms offer key benefits, including quick installation, easy handling and maintenance, and fast commissioning with FIMER's Installer for Solar Inverters app.

The inverters feature current monitoring on each string, which can reach up to 1100 VDC input voltage, allowing for longer strings as well as the ability to operate across wider temperature ranges.

Integrated Wi-Fi/Ethernet for TCP/IP networking allows for cost-efficient networking and off-the-shelf replacements. And, for retrofit applications, the inverter range offers DC side flexibility.

FIMER Australia
www.fimer.com

Electrical engineering data management service

A digital service from HARTING enables efficient data management in engineering, which should help save time and money during the design phase.

Behind every electrical engineering project there are many individual components and thus a whole collection of data: 2D/3D CAD data, data sheets, type sheets and certificates are all part of any decent documentation.

The latest functions from HARTING are aimed at the rapid provision of product data and documents that are necessary in the electrical design documentation. The design data, data sheets and type sheets for all individual components often add up to hundreds of documents. Previously, these often had to be downloaded from the provider in individual steps. Using the data manager, product data for up to 50 HARTING articles can now be obtained in a single step from the company's website as a collected data packet.

The MultiCAD download function makes available native 2D/3D CAD data for HARTING products in over 50 different formats. This means that HARTING articles can be processed immediately in the desired data format for design purposes. The MultiCAD function is currently available for over 13,000 items in the company's online catalogue.

HARTING Pty Ltd
www.harting.com.au

Slave to M-Bus master gateway

The DAS GW-7828 Modbus RTU Slave to M-Bus Master Gateway from ICP Australia is suitable for remote reading of most types of consumption meters and various sensors and actuators. The GW-7828 is designed for the M-Bus slave device and offers Modbus RTU communication via RS-232, RS-422 and RS-485.

The device features two rotary switches for serial port and M-Bus port baud rate and supports Modbus RTU function code 0x03 and 0x04 to read data of M-Bus meters.

M-Bus is a communication interface widely used for remote reading of meters including electricity, water and heat meters. It is simple to install as its two-wire system already includes power and comms functions. M-Bus has its own physical layer and protocol usually requiring switching to other systems, such as Modbus, to facilitate overall application.

Key features include: supports M-Bus Standard: EN-13757, CJ/T -188, supports Modbus RTU Function Code 0x03 and 0x04 to Read Meter data, adjustable baud rate (300 to 115,200 bps), supports up to 100 M-Bus slaves, short circuit protection, over-current protection, serial port firmware update.

ICP Electronics Australia Pty Ltd
www.icp-australia.com.au

Around 93% of sunlight can penetrate the special surface texture.

ROOFTOP SOLAR GETS A DESIGNER MAKEOVER

Photovoltaic and solar thermal systems are not generally thought of as aesthetically pleasing. New custom-coloured modules, being developed at the Fraunhofer Institute for Solar Energy Systems in Freiburg, Germany, aim to challenge that perspective.

Inspired by the phenomenon that causes the shimmering shades of blue or green on the wings of the Morpho butterfly, the underlying mechanism of spectrally selective reflectance allows finished modules to be a homogenously uniform colour — from bright, stand-out tones to more subdued greys.

Issues with current designs

The appearance of rooftop solar panels has evolved with advances in technology, and modern solar panels now feature a sleek design to maximise kerb appeal. However, some less-than-desirable aesthetic elements still remain and are the result of variances in the solar panel design including make, model, cell type, backsheet, frame and busbars.

Solar modules can be integrated almost invisibly into facades and roofs, but they are not seen as a design feature among building owners and architects. The new panels can be manufactured in a specific desired colour and integrated fully into both roofs and facades — a key requirement to fully utilise available space.

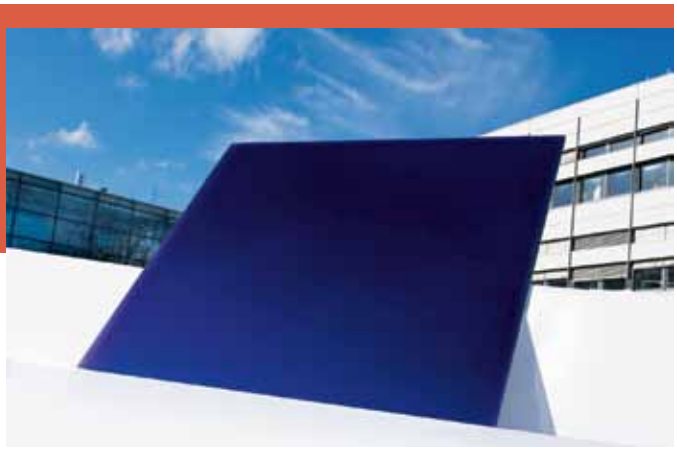
They can even give the finishing touch to modern buildings with a ventilated curtain-wall facade.

"The brainwave behind this development was not to colour the protective glass on modules with pigments, but to imitate the physical effect of butterfly wings," said Dr Thomas Kroyer, head of the coating technologies and systems group.

If glass was coated with pigments, the modules would lose a greater portion of their efficiency because the light could no longer penetrate unhindered. The MorphoColour panels allow around 93% of light to penetrate, with only around 7% being reflected to cause the colour effect.

Aesthetically pleasing

The MorphoColour coated protective glass is produced using vacuum technology and can be laminated to form photovoltaic modules or used in a collector for solar heat generation. In the future, it will be possible to have photovoltaic and solar thermal modules in the same colour, mounted almost invisibly next to each other on the roof or the facade. When the colour is matched to the rest of the building, the result is an exterior wall with a perfectly uniform finish and a facade that supplies electricity as well as heat. In that sense, future homes can be aesthetically pleasing plus-energy houses, supplying more energy than they consume.



Images ©Fraunhofer ISE

The new photovoltaic modules can be manufactured in the desired colour.

New assembly design

Colour alone does not make for a visually appealing design. The Fraunhofer researchers found another solution to make PV systems more attractive: to prevent soldered photovoltaic cells from shimmering through the coloured protective glass, they developed an assembly method that evokes the effect of roof shingles.

Roof shingles are laid on top of each other so that the rain runs off. In a similar fashion, the solar technology researchers in Freiburg are now producing photovoltaic cells in strips that overlap by a few millimeters, gluing them together to form a larger module. This creates a homogeneous overall look without unsightly gaps or visible connecting cables.

The panels were on display at the BAU trade fair in mid-January.

DC uninterruptable power supply

The PULS UB40.241 is an addition to the range of 24 VDC uninterruptable power supplies, and is now available from Control Logic.

A maximum continuous output current of 50 A (below 50°C), and up to 60 A for 5 s burst and maximum battery size of 200 Ah, provides for higher power and longer buffer times. At a constant load of 20 A, the buffer time would be over 10 h, and at constant 5 A, the buffer time would be nearly 2 days.

The UB40.241 uses the 1-battery concept where each 12 V battery is charged and monitored separately, so that matching of batteries is not necessary. A battery size selection switch enables optimising for system battery size, and the temperature-controlled charging extends battery service life. A selectable buffer limit timer can be tuned to specific requirements to disable buffering after the set period in order to reduce recharge times and further extend battery service life.

Comprehensive diagnostic and monitoring functions and dry contact status outputs can be connected to a PLC or to local indicators for early warning and remedial action. An inhibit input can also be used to prevent system buffering during servicing or other requirements.

Multiple UB40.241 can also be arranged in various architectures to allow for increased voltage, higher current or to create a redundant UPS system. Designed for industrial applications, the UB40.241 is DIN rail mount and has an operating temperature range of -25 to 70°C.

Control Logic Pty Ltd
www.controllogic.com.au

Cold aisle containment

Cold aisle containment is a cost-effective method of heat removal from cabinets in a data room. The MFB system is designed around the flagship S2005 Data Cabinet and is a modular system, which builds a room around two rows of cabinets.

The containment principle captures the underfloor cooling provided in a data centre. The cool air can flow into the containment area where it is drawn through the equipment and expelled to atmosphere at the rear. The system is made up of acrylic roof panels and sliding doors fitted either end of the data racks, creating an energy-efficient, temperature-controlled room within a data centre environment.

The modular system can be adapted for most data centres, including provision for infill panels around pillars and overhead cable trays, plumbing etc. A cold aisle containment solution can be integrated into an existing data centre installation featuring a range of different cabinet types. MFB's design centre operates Autodesk modelling software to help maintain the accuracy of design.

MFB Products Pty Ltd

www.mfb.com.au

Fibre certification tool

The VIAVI Optimeter network test tool is designed to speed and simplify last mile optical fibre activation and maintenance, helping improve first time install completion rates for faster service activation and revenue.

The device combines the functionality of a broadband or GPON/XG(S)-PON power meter with fibre certification and connector inspection in a simple, all-in-one solution for effortless FTTx certification and troubleshooting — regardless of field technicians' experience level. The Optimeter was designed to reduce truck rolls and trouble tickets by proving successful fibre install passes, or providing clear fault ownership information to stop unnecessary handoffs.

VIAVI Solutions Inc

www.viavisolutions.com.au

A SPOTLIGHT ON THE SAFETY ELEMENTS OF THE AS/NZS 61439 STANDARD

Nick Rabba, Engineering Manager, LVA, CPC

The long-awaited AS/NZS 61439 standard was mandated on 24 May 2021, meaning all switchboard builders and electrical contractors across Australia and New Zealand must now comply with the new series of standards for low-voltage switchgear and control gear assemblies.

The much-anticipated industry mandate introduces major safety benefits, such as fault containment, that will provide more safety to the operator and peace of mind to the end customer, and sustain equipment in the long run.

The dangers of arc fault and risks of downtime

Keeping a continuous supply of electrical power running through power-critical commercial buildings such as process plants, hospitals and factories is today a non-negotiable.

Delivering reliable power in these buildings is dependent on the low-voltage distribution panels that sit at the core of the electrical installation. The demands placed on these panels, particularly as operations and infrastructure expand over time, leaves them vulnerable to arc faults.

An arc fault within an electrical distribution panel is a high power discharge of electricity between two or more conductors. A major build-up of pressure within the panel discharge translates into heat, which can break down the wire's insulation and possibly trigger an electrical fire. An explosion of this kind sends components shooting through the air, destroying the installation and threatening the life of anyone nearby — which in many cases is the switchboard builder themselves. In fact, recent statistics have found that more than 2000 people are admitted to burn centres with severe arc-flash burns each year.

An extreme power incident brought on by an arc fault can last days or even weeks, leaving organisations and commercial buildings alike to suffer the rising cost of downtime and recovery. Commercial buildings with critical power needs are especially vulnerable to power failures where the continuity of power supply is vital. Valuable products may need to be destroyed in the case of a sudden loss of power during an industrial process, plus, there could be detrimental environmental outcomes too, if hazardous substances or materials need urgent disposal.

Research from Eaton has estimated that for a typical food industry plant, the cost of production downtime alone could escalate to the tens of thousands of dollars in 24 hours. It's also worth noting that a typical replacement cost for a panel bears a hefty price tag worth hundreds of thousands of dollars, while the actual process of designing, manufacturing and installing a replacement can take up to six weeks. During that time, of course, the facility is effectively out of action.

Ensuring safety above the standard

Unfortunately, electrical distribution panels can be easily overlooked in the context safety analysis for commercial building infrastructures, despite the dangers arc faults being present. While the mandate is indeed a positive step towards increasing the level of switchboard safety, on its own, it doesn't necessarily go as far as it could. For business leaders, going above and beyond the minimum safety standards as specified by AS/NZS 61439 is critical to ensuring longevity in operator, equipment and customer safety.

Indeed, a higher level of safety above the standard can be achieved with the implementation of new, state-of-the-art technology. Circuit protection and control products, such as Eaton's xEnergy solution, are the best tools available to promote fault containment and type-tested assembly, which will inevitably protect both individuals and businesses from the dangers of arc faults. It exceeds the safety requirements for the AS/NZS 61439 and is a licensable system, providing maximum protection for people and equipment either in parts as an assembly licence or as a local manufacturing licence.

To maximise safety, there are two effective strategies that can be deployed in switchboards. Firstly, it's critical to monitor for unusual temperature rises that could indicate an imminent fault. Secondly, in the occurrence of an arc fault, the event must be identified in real time in order to promptly shut down the switchgear and minimise damage to the panel itself, and also any connected equipment.

Historically, the use of thermal imaging in temperature monitoring provides a limited snapshot that doesn't necessarily cover all of the main areas of the panel, including the crucial bus bars in some cases. However, newer technology to the market has the ability to continuously monitor temperature trends at critical points and send data wirelessly to a separate controller. This enables engineers to efficiently analyse heat levels of a selected period of time and conduct further investigations or preventive maintenance work accordingly.

Today's compliancy for tomorrow's benefit

Ensuring complete compliance and investing into the right technologies can indeed accelerate a business's scalability. For organisations looking to expand now or in the future, there's zero disruption to the process of extending or refurbishing switchboards. With switchboards already standardised and type-tested as per the mandate, they can be purchased as required, instead of all at once — providing a cost-saving opportunity to organisations.

The AS/NZS 61439 mandate welcomes a newfound focus on safety for switchboard builders and vital equipment that keep the wheels churning of today's organisations and power-critical commercial buildings across Australia and New Zealand. Going above and beyond the standard will provide further safety to the operator and ensure a sustainable, scalable infrastructure.

Eaton Electrical (Australia) Pty Ltd
www.eaton.com

SINGLE PAIR ETHERNET
USEFUL IN BUILDINGS

Matthias Gerber, Market Manager Local Area Networks

Single pair ethernet is creating high expectations. Where can the new technology unroll its benefits?

The key technology in the Internet of Things

Expert authors are reporting on revolutionary potential. Single Pair Ethernet (SPE) will open up new dimensions in EtherNet/IP data transmission, they say. Experts agree: SPE is becoming an application-independent, inexpensive key technology in the Internet of Things (IoT) and Industrial Internet of Things (IIoT).

SPE requires — as the name suggests — just one twisted pair for data transmission. A thin two-core cable and a small connector are all that is needed for the cabling. The link distances range between 15 and 1000 metres. The bandwidth spectrum ranges from 10 Mbps to 1 Gbps. SPE cabling should be able to provide terminal equipment with up to 50 watts of electrical power via Power over DataLine (PoDL).

Standardisation process ongoing

Several committees are working at high pressure on the standards. Various connector systems have been specified. IEEE has defined six transmission protocols and four transmission distances. But neither the influence of remote power supply nor the implementation of multi-drop capability has been adequately addressed so far (at the time this article was written in Q2 2020).

So much for the current framework conditions. With regard to expectations, the following should be noted above all:

- SPE should not and cannot replace the universal RJ45 network interface. We at R&M see SPE as an extension to RJ45.
- SPE can replace field bus technology. However, it is not suitable for the application-independent LAN infrastructure in buildings, for broadband data transmission or even for the backbone in local data networks.
- There is currently no uniform solution for the connector systems. R&M supports the most suitable solution for an application. This can be one of the connector systems defined by the standardisation but does not have to be. For industrial applications, R&M advocates the aims of the SPE System Alliance but the company is keeping all options open when it comes to building automation.

Digital ceiling

If you look deeper into building cabling, useful and promising application possibilities arise. Specifically, we are referring to the digital ceiling, structured ceiling cabling and digitalised building automation.

Single Pair Ethernet could connect many small IoT applications with the EtherNet/IP data network via the service outlets of the digital ceiling zones. For example:

- Light, temperature, smoke and air sensors.
- Controls for windows, locks and blinds.

R&M recommends two models for cost-effective, rapid integration of SPE in Digital Ceiling (see figure). A 10Base-T1 switch is used as a bridge between SPE and LAN. It is positioned either in the zone or in the floor distributor. R&M describes further specifications in the specialist magazine Connections No. 58.

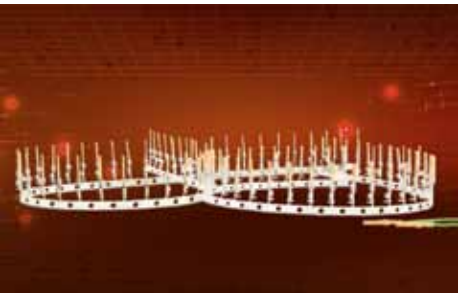
Reichle & De-Massari Australia P/L
www.rdm.com

Gold-plated crimp contacts

The ILME SI 5 A gold-plated stamped crimp contacts from Treotham are suitable for signal and data applications, including the automation and robotics sectors and on installations on electrical panels.

The series are suitable for high-volume automatic processes. They are also compatible with the main data connectors and standard or modular inserts used in the automation sector. The open-barrel crimping structure is compliant with EN/IEC 60352-2:2006, and the contacts are available in several variants to suit any type of installation requirement.

Variations include: 2 different sizes: 0.2 for 0.08-0.21 mm^2 wire cross section/AWG 28–24 or 0.5 for 0.21–0.52 mm^2 wire cross section/AWG 24–20; 3 types of gold plating thickness: 1D for 500 mating cycles, 2D for 250 mating cycles or 3D for 50 mating cycles; and 3 packaging options: loose parts (200 pcs), coil (500 pcs) or reel package (10,000 pcs).



Dedicated easy handling manual crimping tools are available for loose contacts or for coil packaging.

Treotham Automation Pty Ltd
www.treotham.com.au

Multi-circuit power meter

ICP Australia has introduced DAS's PM-4324 series multi-circuit power meter that monitors up to 8 three-phase circuits or 24 single-phase circuits or any combination of single- or three-phase circuits.

The PM-4324 series can measure up to 24 currents via external current transformers (CTs). This flexibility makes the PM-4324 series suitable for multi-tenant facilities such as residential projects, office buildings, and shopping malls. This compact instrument is designed to easily fit into existing panelboards or be flush mounted nearby, thus eliminating the need for expensive retrofit projects or for allocating extra space for the device.

The PM-4324A option features the same functionality as the PM-4324, with the addition of AC Measurement. The PM-4324A features two separate main circuit inputs that can use in the different power systems. Built for tough conditions, it has an operating temperature of -20 ~ +70°C and ambient relative humidity of 10% ~ 90% RH (non-condensing).

ICP Electronics Australia Pty Ltd
www.icp-australia.com.au

Stackable 10G/100G managed switches

D-Link A/NZ has launched two new DXS-3610 Series Layer 3 stackable 10G/100G managed switches: the DXS-3610-54S, which houses 48 x 10Gb SFP+ ports and 6 x 40/100Gb QSFP+/QSFP28 ports, as well as the DXS-3610-54T, which provides 48 x 10GBASE-T ports and 6 x 40/100Gb QSFP+/QSFP28 ports.

The DXS-3610 Layer 3 Stackable 10G/100G Managed Switches are compatible with SDN-enabled network architecture for deployment in high-performance data centre, enterprise and campus applications. Hot-swappable PSU and fan modules with load-sharing capabilities significantly reduce network downtime and power consumption. These two switches are stackable up to 12 units per stack and with ultra-high port density counts make the DXS-3610 Series a suitable choice for futureproofing any aggregation or core network.

The DXS-3610 Series has high-performance switching capacity of up to 2.16 Tbps with forwarding rates of up to 1607 Mpps. It also features a modular fan back-up design, providing n+1 redundancy for the system. The modular power design allows either AC or DC power sources for maximum deployment flexibility. With dual power modules, power loads are distributed seamlessly across both modules.

The ability to stack up to 12 x DXS-3610 switches with up to 1200G (1.2 T) of stacking bandwidth makes them suitable for data centres across a broad spectrum of businesses, including enterprise or campus applications using leaf-spine or top-of-rack (ToR) architectures.

D-Link Australia Pty Ltd
www.dlink.com.au

ENERGY NEXT: CONNECTING MARKET-LEADING TECHNOLOGIES WITH THE CLEAN ENERGY SECTOR

As New South Wales is gearing up to become a renewable energy superpower, an exciting clean energy event is coming to ICC Sydney on 13–14 July 2021. Energy Next is a free-to-attend B2B exhibition showcasing the latest clean energy innovation and technologies, which will be held for the first time alongside Clean Energy Council's Australian Clean Energy Summit.

The addition of Energy Next to the Australian Clean Energy Summit will form the most comprehensive clean energy event in NSW, generating even further conversations and connections to improve clean energy generation and adoption in the country.

Energy Next is organised by the same people behind All-Energy Australia, the largest renewable energy event in the country. Across two days, Energy Next will bring a quality exhibition to New South Wales and provide technical sessions and networking opportunities for those working in the clean energy industry.

"With NSW's exciting plans to shift to renewables, Energy Next's inaugural edition arrives on the industry's calendar at an important time and is well-positioned to cater to the NSW clean energy market. The event is set to be the destination in NSW for the industry to connect with suppliers face-to-face, collaborate with peers and learn from industry experts about the latest industry developments. We're proud to be partnering with the Clean Energy Council in delivering an event that can help build the future of NSW's clean energy industry," Robby Clark, Portfolio Director at Energy Next, said.

Energy Next's exhibition will feature the latest renewable energy and energy management technologies and solutions from leading suppliers. Some of the exhibitors include AC Solar Warehouse, Fimer, Italwind, NEXTracker, NHP, Prosun Solar, Shoals Technologies, SMA Australia and Solar Analytics.

Visitors to Energy Next will also have free access to sessions, with expert speakers discussing the latest technical issues and opportunities facing the industry. An extensive range of topics will be covered including hydrogen energy, electric vehicles, battery storage, digital transformation and much more.

With Energy Next's strategic partnership with the Clean Energy Council, the event will host the Clean Energy Council's Solar Masterclass, a one-stop shop for solar installers to get their fix of expert advice on the big design and installation issues facing the industry. Installers and designers will also be able to earn CPD points and hear the latest updates on standards and compliance issues.

Energy Next is proudly supported by the NSW Government. With the state government's support, Energy Next will strengthen the renewable energy community in NSW and help drive Australia's clean energy transition.

Energy Next will be held from 13–14 July 2021 at the ICC Sydney. To access the program and register for free, visit Energy Next's website: www.energynext.com.au.

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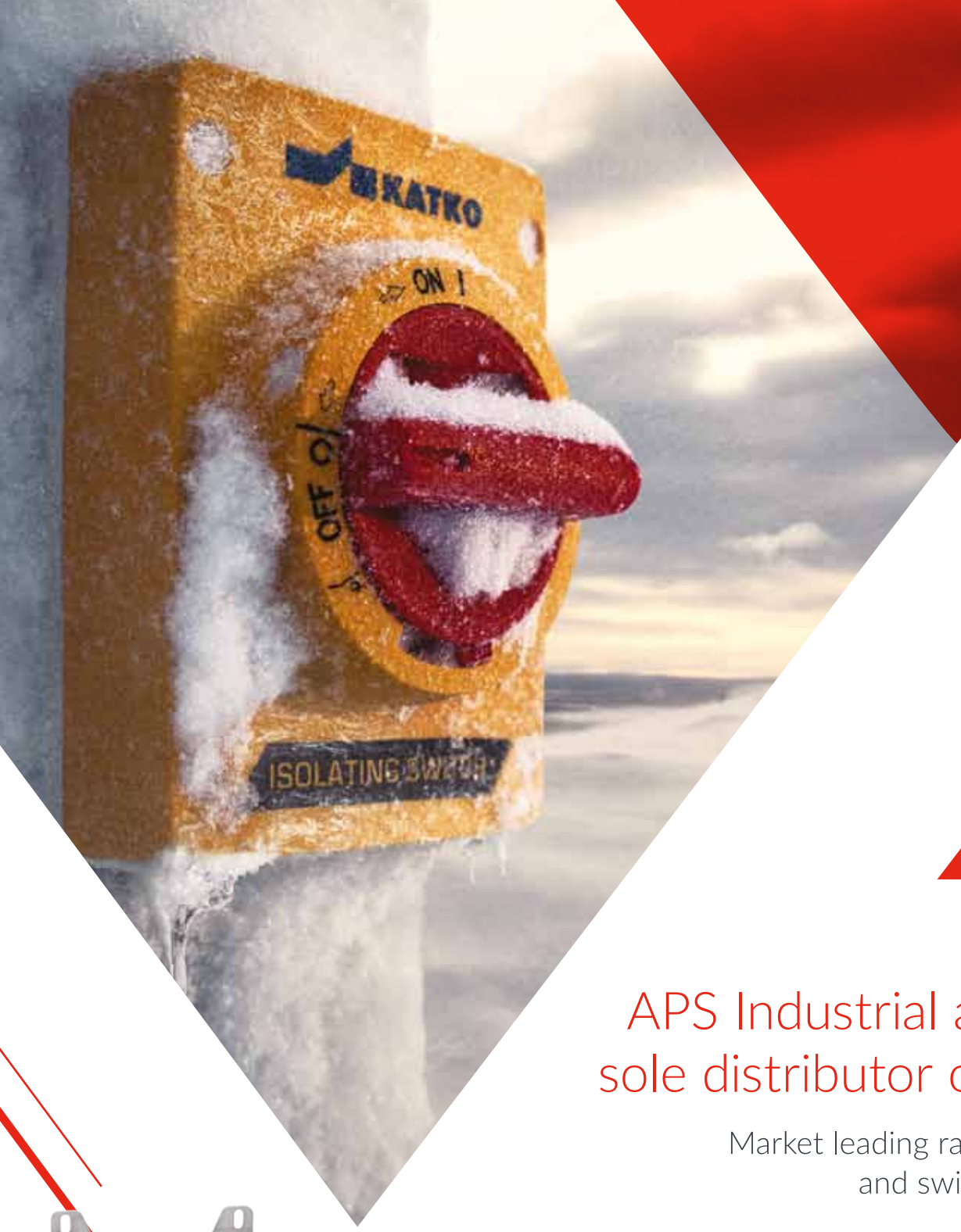

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