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MAY/JUNE 2015

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TAKING CONTROL

Mansi Gandhi

With increased penetration of LED lighting and significant advances in technology, the demand for lighting controls is soaring.

The total building automation and controls market is expected to reach $55.48 billion by 2020 at a CAGR of 9.04% from 2014 to 2020, according to US-headquartered research firm MarketsandMarkets. The market in 2013 was valued at $29.78 billion.

Multifunction devices

"A major development in lighting control seems to be the realisation by many players in the lighting industry, and in the information technology industry, that luminaires will evolve from single-function devices (providing light) to multifunction devices connected to data networks," said Marc Ledbetter, manager of advanced lighting at the US Department of Energy's Pacific Northwest National Laboratory. Ledbetter is one of the key speakers at the SPARC International Lighting Event 2015.

"Not only will the data network connections support improved lighting control, but many believe luminaires will become new sensor/data collection platforms for supporting building energy management, building security, data transmission for mobile devices, and other services. This evolution is likely to take place for both indoor and outdoor luminaires," added Ledbetter, who has around 30 years' experience in the field of energy and the environment, primarily on policies, programs and technologies to improve energy efficiency.

Australia implemented the phase-out of inefficient incandescent lighting in 2007. The move is expected to generate savings of around AU$380 million a year by 2020 to the Australian economy and more than $50 per year for each household that changes all incandescent light globes to CFLs.

Efficient street lights

Street and road lighting in Australia is very efficient compared to other countries; however, the government is working with industry and the relevant Australian Standards Committee to reduce the amount of energy used by street lights, according to the Department of Industry and Science.

Ledbetter also predicted a strong surge in the sales of outdoor LED lighting. "Cities and highway agencies seem to have bought into the idea that LED roadway lighting can offer significant energy and maintenance savings," he said.

A number of Australian councils have already achieved significant cost savings and reduced emissions by installing energy-efficient street lighting. For example, the City of Sydney has already saved almost $370,000 and reduced energy use more than 46% since March 2012, with the rollout of more than 5100 energy-efficient LED (light-emitting diode) street and park lights. Changing all of the streetlights in Australia will mean changing 2,303,896 lights, according to consulting firm Ironbark.

Performance-based approach

"Lighting is presumed to improve road safety performance and so we've stopped our exploration of it," said Dr John Milton, director of enterprise risk and safety management for the Washington State Department of Transportation in the United States. Milton recently presented at the Road Lighting 2015: Smart City Investment conference in New Zealand.

Standards-based application of lighting design is slowing the evolution of lighting to optimise road safety, and in the interests of road safety that needs to change, said Milton. "In Washington State we are shifting from standards-driven application to a performance-based decision-making process."

Much of our road lighting technology, said Milton, is now 40 years old and so is our understanding of lighting and "road crash potential". New adaptive lighting technologies will enable us to optimise road lighting cost-effectively to create conditions that result in the fewest crashes, but we need to understand how to do that.

Growth drivers

Among the big growth drivers for lighting are the many new functions and value streams possible from LED lighting, according to Ledbetter. "Promises of superior lighting quality, reduced maintenance, spectrally tuneable light sources, new form factors and controls integration into data networks reaching into the internet will provide substantial new value to users and lead them to make bigger investments in lighting products," said Ledbetter.

If the lighting and controls industry can work together to greatly improve interoperability among lighting system components and data networks, we will see a new era for lighting controls, allowing much wider use of controls than we have seen to date, noted Ledbetter.

"Digitally controlled products are also trending in the commercial space and have grown steadily over the last 15 years. From

© freeimages.com/profile/john204

their infancy in architectural applications, DALI controlled fixtures have become a feature of many new office developments and the occasional industrial building. As a result, it's fairly simple to achieve savings from daylight harvesting, occupancy control and centralised load management."

Colour-tuneable lighting

There is "an increasing interest in colour-tuneable LED products, not only for aesthetic purposes, and for imitation of the red-shifting seen with incandescent product when dimmed, but also for health, wellbeing and productivity purposes," said Ledbetter.

While the LED lighting technology is evolving rapidly, the market is still quite young. "There is no doubt that governments will continue to regulate lighting to achieve deeper energy savings for the purposes of addressing climate change. LEDs and OLEDs will allow much deeper energy savings to be achieved than have been possible with previous technologies. OLEDs currently lag LEDs with regard to energy performance, but they appear to be poised for strong growth within the next few years, and technology developers are steadily improving their energy performance. One major US luminaire manufacturer recently started selling OLED luminaires via a national hardware retailer," Ledbetter noted.

OLED is yet to prove a functional technology for general illumination, said Adele Locke, national president, Illuminating Engineering Society of Australia and New Zealand (IESANZ). "It can be used to great effect for decorative and dynamic lighting installations and is certainly revolutionising the television market; however, it is not a strong consideration for the lighting market in Australia and New Zealand at this stage."

Installers' role

Ledbetter believes designers and installers can play a key role in standards and codes development by participating in the committees that develop these products. "It's important that new codes and standards reflect the needs and concerns of designers and installers. It's always difficult for people from these professions to find the time to serve on the relevant committees given the costs and time involved, but their voices are needed to improve product outcomes," said Ledbetter.

Inês Azevedo, Associate Professor of Engineering and Public Policy at Carnegie Mellon University and co-director at the Centre for Climate and Energy Decision-Making (CEDM), agreed that designers and

installers play an important role in successful adoption of new technologies and in standards and codes. "One of the issues that I see as being particularly interesting pertains to the need of voltage standards for DC circuits to be used in residential and commercial buildings. Using LED coupled with DC circuits, in particular for buildings powered by solar photovoltaics, could result in substantial energy savings. In commercial buildings where solar panels are already installed, we have found that a transition to DC may be actually cost-effective. However, we lack a voltage standard." Lighting expert Azevedo is also presenting at the SPARC International Lighting Event 2015.

Keeping up to date

Contractors and installers are key influencers, so it is important they keep up with the latest lighting technologies, applications, standards and regulations. "The key contribution that designers, manufacturers and installers can provide is 'in the field' knowledge and experience which, when shared, enables everyone involved in lighting to work towards higher quality results on projects. One of the best ways to ensure your voice is heard is to become involved in your local IESANZ Chapter."

Lighting manufacturers, universities and industry bodies such as IESANZ, NECA and MEA offer lighting courses. "I anticipate greater opportunities for highly technically minded lighting professionals as the equipment used for lighting becomes more complex and diversified," said Locke.

"With so many innovations every year, and such a quick development cycle for new products, those who have a deep understanding of the technology of lighting will be well placed to evaluate the new products available on the market, providing support to the construction industry," noted Locke.

The price challenge

With technological advancements, the prices of LED products will continue to drop. Price competition in this sector is fierce, said Ledbetter, noting that industry growth will not only be challenged by continuing trouble in the global economy but also by thin profit margins due to intense competition among LED product manufacturers.

"Pushing on price is a challenge in any industry - service or product based. Lighting has notoriously suffered from price squeeze, sometimes, sadly, resulting in sub-par installations. As the push for quality and performance takes centre stage, the old mindset of cheaper is best and any light will do, the job will still be a challenge to the advancement of good light. Also, the drive for energy efficiency - which is still critical and important - can distract from the benefits of using the right light, in the right place at the right time," noted Locke.

"More broadly speaking, it is vital that specifications written by qualified lighting professionals be upheld and not treated as interchangeable with any 'similar but different' cheaper options. Lighting professionals rely on their own deep technical understanding of light and luminaires as well as accurate approved data from suppliers to qualify their selections for projects. This knowledge should not be disregarded in the final stages of a project where budget and time constraints can push on quality. We should not compromise on quality, safety and performance merely for the sake of price. If quality is upheld as the key driving principle throughout every project, then we can be confident that Australian Standards are upheld," Locke said.

Light it right

Locke's only tip for installers is, "Contact a qualified lighting professional, whether that be an IESANZ MIES (Member) or IESANZ RLP (Registered Lighting Practitioner) or IALD member or Electrical Engineer. Luminaires and lighting controls are advancing at a dramatic pace - the last 12 months showed exponential growth in performance, quality and control available, and a lighting professional who works with the technologies every day is the best source of both information and collaboration.

"Lighting and controls are used everywhere - from offices to roads to industrial facilities. Each environment has different needs, boundaries and performance requirements. There is no one right answer - every location and project is different, so finding the right lighting professional for your project is the best way to identify the right lighting and control systems," Locke concluded.

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CABLING STANDARDS UPDATE

Ashley Martin, Technical Manager Australia/ New Zealand, TE Connectivity

BICSI's representative on the CT-001 Australia New Zealand cabling standards committee - Ashley Martin, Technical Manager Australia/ New Zealand at TE Connectivity - attended the recent CT-001 meeting and compiled the following update.

Since the last Standards Update, there have been only minor updates to provide all of the BICSI members. Factors such as the Christmas/New Year holiday period have meant that project work slowed slightly. However, with the new year now fully upon us, work is back underway and I thought it best to let all members know what is in the pipeline.

The first project on the horizon will be the localised adoption of ISO/IEC 14763-3:2014 to become an Australian/New Zealand Standard. This adoption, however, creates some headaches. Anyone who has read, or used, the latest edition of ISO/IEC 14763-3:2014 would have noticed some confusion between test reference methods and the newly devised Channel Test method. The AS/NZS adoption aims to include an Appendix ZZ (as done in the previous AS/NZS 2012 edition) to better clarify all three test reference methods (1 Test Cord, Enhanced 3 Test Cord and Channel Test) to make the document much easier for field testing of fibre-optic cabling systems. As this project progresses, members will be updated on its details.

The second major project will be the update of AS/NZS 3084:2003. As most are aware, this Standard has been around for some time and is well overdue for it to be modernised. A Working Group has been set up (WG65) to discuss how best to collate information from other Standards - including AS/NZS ISO/IEC 14763.2, and to harmonise all of the content with no duplication. This project is still in its infancy and will take some time to provide a Standard that is usable and relevant to today's installation practices.

The final major project underway is the local adoption of the ISO/IEC 14543-3-X series of Standards. These Standards deal with Home and Building Electronic Services - specifically those using the open KNX protocols. WG66 has reviewed all Standards and determined their suitability for the Australian and New Zealand landscape. One exception to this is the decision to not adopt Part 7 - which deals with wireless devices. The decision not to adopt this Part was taken due to conflict with the chosen frequency of devices listed in the Standard to that which is permissible by the ACMA. Until this issue is resolved, this Part shall not be a local adoption.

BICSI
www.bicsi.asn.au

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FIVE TIPS FOR IMPROVING
BUSINESS EFFICIENCY

Kirstin Stewart, HLB Mann Judd

Efficiency is the first step in business success, so it is worthwhile investing the time.

Five key areas to focus on to improve business efficiency include:

1. Get organised

Decluttering and organising inboxes, filing systems and other paperwork is essential. For every piece of correspondence received, whether physical or by email, there are four options:

• Bin it/delete it
• File it/archive it
• Give/forward to someone else
• Action it

It is important to retain a lot of financial information for tax and other purposes. Having an adequate and systematic filing system will help. Also do some research, or get advice on what information needs to be kept and for how long.

2. Reduce debt

Review current debt and the different types and interest rates being charged. With the level of competition amongst financial institutions it is worthwhile doing a comparison of offerings to see if there is a better deal - it may be possible to refinance to pay less interest. The usual rule of thumb is that high-interest-bearing liabilities should be paid off first.

Also consider paying off non-tax deductible debt as quickly as possible. For those that can afford to do so, slightly increasing repayments and increasing the frequency (from fortnightly to weekly) can also decrease the life of the loan and overall interest paid.

3. Look after cashflow

On the other side of the coin to debt is cashflow, often called the lifeblood of a business. Any business that offers credit needs to actively manage this, including setting - and sticking to - terms of trade and following up on outstanding payments. Business owners shouldn't feel concerned or embarrassed about following up with slow-paying customers - if they're not paying, they're probably not worth keeping. Experience has shown that slow-paying customers often become non-paying and ultimately cost the business money.

4. Review expenditure

Insurance for both business and personal needs should be reviewed at least annually to ensure cover is adequate in the event of a claim. Reviewing other expenditures is also important. For instance, a better deal could be negotiated with the telecommunications provider, or consider if there are high bank account fees that could be eliminated, as a change to a different plan or account may be all that's needed, rather than changing suppliers.

5. Business succession

While no-one likes to think about it, illness or death can occur at any time, and if contingency plans haven't been made, this can leave business partners and employees, as well as family, in extremely difficult circumstances. Business succession is often perceived as being 'too difficult' to think about, but it is better to have some plans in place rather than nothing at all. Everyone's circumstances are different and it is important to spend some time identifying requirements and any issues so that an action plan and time frame can be developed.

SUBSTANDARD PRODUCTS

ACT NOW ON
INFINITY CABLES

The Australian Competition and Consumer Commission (ACCC) is urging the community to get a licensed electrician to check if degrading Infinity electrical cables are installed in their homes or businesses, as recent progress reports show that only 179 premises have so far been rectified and approximately 5% of the supplied cable remediated.

The ACCC is very concerned about how many homes and businesses still have degrading Infinity cables installed. Consumers that purchased new properties, undertook renovations or had electrical work carried out in the past few years should contact a licensed electrician for a safety inspection to determine if Infinity cables were installed," ACCC Deputy Chair Delia Rickard said.

"An electrician would typically be able to inspect a home for around $100, though costs will vary depending upon the size, location and design of the property. Such costs can be recovered from the supplier should Infinity or affected Olsent cables be discovered.

"Consumers should not attempt to inspect cables themselves. Any affected cable installed in accessible areas or near heat sources must be removed and replaced under the safety recall. We also urge electricians and builders to alert their consumers and their cable supplier if they have installed Infinity cables," Rickard said.

The ACCC is monitoring progress of the remediation and has also been working with relevant industry associations to encour-age their members to contact their customers and to advise their suppliers where the problematic cable is located.

Background

The recalls apply to all sizes and configurations of TPS and Orange Round mains power cables sourced from Infinity Cable Co and supplied under INFINITY and OLSENT brands. Further details on the recall are available.

Data received from suppliers as at 1 March indicates that between recall notifications and that date, the following progress had been made:

- At least 182,415 metres of cable had been remediated (approximately 24,186 metres of cable had been replaced and at least 158,230 metres of cable had been returned to suppliers for a refund).
- 12 suppliers had begun carrying out remediation.
- 3 of the smaller suppliers had completed their remediation.
- 179 homes had been remediated.
- At least 216 premises scheduled for future remediation.
- Over 400 home remediation jobs in total forecast to be performed in the coming weeks.

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SENSOR CABLE MONITORS FENCES

New technology containing magnetic field sensors is being developed by a team of experimental physicists in Germany to be used for surveillance in fenced-in places such as airports, nuclear power stations, industrial sites or even private plots of land.

The sensors respond immediately to disturbances, like fence cutting or a person climbing over the top, and provide information on the precise location of the security breach. They can even detect a low-flying metal drone passing overhead.

"Our magnetometers (magnetic field sensors) are highly sensitive and can reliably measure even the smallest of changes in the ambient magnetic field," said Professor Uwe Hartmann, from Saarland University, who is heading up the project.

"The cable can be attached to a fence, built into it or even buried beneath it."

The cable, with a diameter comparable to a standard electrical cable, contains linearly arranged magnetic field sensors. Once attached to, or near, perimeter fencing, the sensors are able to detect activity for kilometres along the line with a range extending out by several metres, which can all be monitored remotely.

The contactless sensors use low levels of power and are also unaffected by rain or fog.

"The sensors function independently of the weather and this gives them a significant advantage over other surveillance techniques, such as cameras, where moisture is often a problem," Hartmann said.

"The measurements are unproblematic from the point of view of privacy. The sensors simply report that a vibrational disturbance was caused by a human agent at a specific location. No other information is gathered."

The research team is currently attempting to teach the system to recognise the cause of a disturbance and therefore automatically

Fences on the Saarbrücken campus are undergoing long-term monitoring to determine how the system is affected by factors such as wind. From left: Physicists, Professor Uwe Hartmann, Dr Uwe Schmitt and Dr Haibin Gao. Photo credit: Oliver Dietze.

identify false alarms such as animal movement or strong wind. Various disturbances are being simulated on Saarland University's fences for long-term monitoring and data capture.

The team is collaborating with industrial partners to produce a cable suitable for mass production. A number of different types of sensor systems developed by the research group have already been deployed in airport traffic management systems.

Single-phase UPS

Schneider Electric has expanded its family of single-phase Smart-UPS On-Line uninterruptible power supplies (UPS) with the APC 5-10 kVA models, which claim to offer reliable power backup for users.

From network and server rooms to branch offices and secure power uses, the units provide scalable, extended runtime, and efficient power quality and performance for critical applications. The 5 kVA UPS units have a power factor of 0.9 and the 6-10 kVA units feature unity power factor capability, helping reduce complexity when specifying power protection while providing more power for active power factor corrected electronics.

The units utilise built-in automatic bypass to ensure seamless power to the load even in the event of a failure, allowing users to avoid corruption of data and equipment caused by transients, noise or hard system shutdowns. Double conversion online capability also provides tight voltage, frequency regulation and zero transfer time for reactive loads such as machinery.

The graphical LCD display with multi-colour backlight provides a real-time display of UPS status as well as diagnostic and log information. Additional features include: switchable outlet groups, hot-swappable batteries and intelligent battery management with predictive battery replacement.

The models are ENERGY STAR qualified and are operable in a 'green' mode that can reach 97% efficiency. The units can be configured for rackmounted or freestanding applications and come with a 3-year warranty. An integrated PowerChute Network Shutdown and an embedded network management card with environmental monitoring and remote user interface enable further accessories and communication options to be added.

Schneider Electric Industry Business
www.schneider-electric.com

Insulating gloves

The Ansell Marigold Industrial Rubber Insulating Gloves (RIGS) are designed to protect the hands of people who work with exposed energised, de-energised or re-energised electrical circuits.

The live working gloves are shaped to reflect the hand at a natural rest position with non-splayed fingers and have a flared cuff to allow room for clothing and ventilation.

Addressing the need for workplace safety compliance, the product provides the wearer with flexibility and dexterity of movement across all electrical applications.

The product is available in low voltage (Class 00 and 0) and high voltage (Class 2) in yellow, red and black at various lengths. The low-voltage gloves allow for a maximum AC/DC of 500/750 V (Class 00) and 1000/1500 V (Class 0). The high-voltage gloves allow for a maximum AC/DC of 17,000/25,500 V (Class 2).

The product meets US ASTM standards for tensile strength and stress, ultimate elongation, tension set, and tear and puncture resistance. The product also meets EN and US standards/regulations ASTM, NFPA, OSHA and CSA.

Ansell Healthcare
www.ansell.com.au

4-pole earth tester kit

The Megger DET4TCR2 kit is designed to measure soil resistivity, resistance of earth rods and other associated installations. It is available to rent from TechRentals.

This IP54-rated unit will measure earth voltage from 0 to 100 V, with user-selectable test frequencies and noise rejection to 40 V peak-to-peak (Vpp). Ground current measurements can be made from 1 mA to 20 A with automatic circuit checking functionality also available.

The kit comes with both ICLAMP and VCLAMP options, the former allowing for earth rod testing without the need for disconnection from the system. The VCLAMP option is used in conjunction with ICLAMP for stakeless measurements when driving auxiliary stakes is impractical.

Other features include: resistance range 0.01 to 20 kΩ; accuracy 2% ±3 digits; choice of two, three or four terminal measurements; meets EN61010-1 and CAT IV 100 V standards.

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Lithium battery bank

The Magellan 1200-1600 Ah lithium battery bank consists of 15 x parallel cells of 400 Ah, making a 48 V bank, and an Australian-made battery management system (BMS).

The lithium battery bank has up to 3000 charge/discharge cycles and a long shelf life. It weighs 1/3 less and is half the size of VRLA, operating at a high temperature of up to 60°C.

The BMS ensures the battery is safe and reliable. It uses non-intrusive measuring techniques that can be performed automatically every day. The regular testing of the individual cells or blocks means that the user becomes aware of a problem on the day that it occurs and is not left exposed to sudden battery failure.

Magellan Power

www.magellan-power.com.au

Thermal imaging firefighting camera

The FLIR K55 has been added to the FLIR K-Series suite of thermal imaging firefighting cameras.

The camera is designed to operate in tough operating conditions, built to withstand a 2 m drop onto a concrete surface, water resistant (IP67) and fully operational up to +260°C.

The product incorporates FLIR's Flexible Scene Enhancement (FSX) technology, designed to produce sharp thermal imagery and allow firefighters to see clearly in smoke-filled environments. The camera also displays 320 x 240 pixel thermal images on a 10 cm LCD screen, enabling users to navigate safely and make accurate decisions when attacking fires and searching for victims.

The product features onboard video recording with storage for up to 200 thermal JPEGs, which can be reviewed from the camera's archive or exported via USB. The product can also be operated while wearing heavy gloves with its three-button user interface.

FLIR Systems Australia Pty Ltd

www.flir.com.au
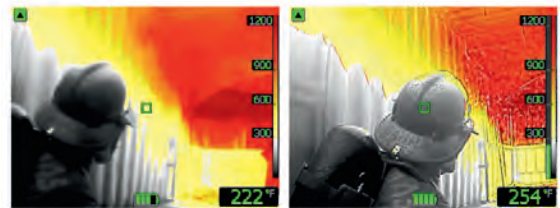
Wireless sensors

The Oleumtech OT Series battery-powered wireless sensors, I/O and gateways have achieved formal IECex certification for use in hazardous installations. The sensors, I/O and gateways have a wide range of applications. They can be used for: hydrostatic, ultrasonic or magnetostrictive level monitoring as well as pressure, temperature (RTD or Thermocouple) and flow monitoring in hazardous areas previously not available in standard wireless products.

This opens up applications in areas such as: automotive refuelling stations or petrol stations; oil refineries, rigs and processing plants; chemical processing plants; printing industries, paper and textiles; aircraft refuelling and hangars; surface coating industries; underground coalmines; sewerage treatment plants; gas pipelines and distribution centres; grain handling and storage; woodworking areas; and sugar refineries.

The sensors, I/O and gateways can be applied in point-to-point, point to multipoint and peer-to-peer to create or extend monitoring and control networks where there is limited access to power lines. By enabling wireless connectivity for SCADA monitoring and control, the Oleumtech OT Series eliminates trenching, running conduit or wires. It enables organisations to reduce commissioning time and implementation cost (equipment, labour and maintenance). The OleumTech Wireless Network ties into virtually any backbone SCADA solutions and is compatible with most third-party RTU, PLC, DCS and HMI devices.

Automation Group

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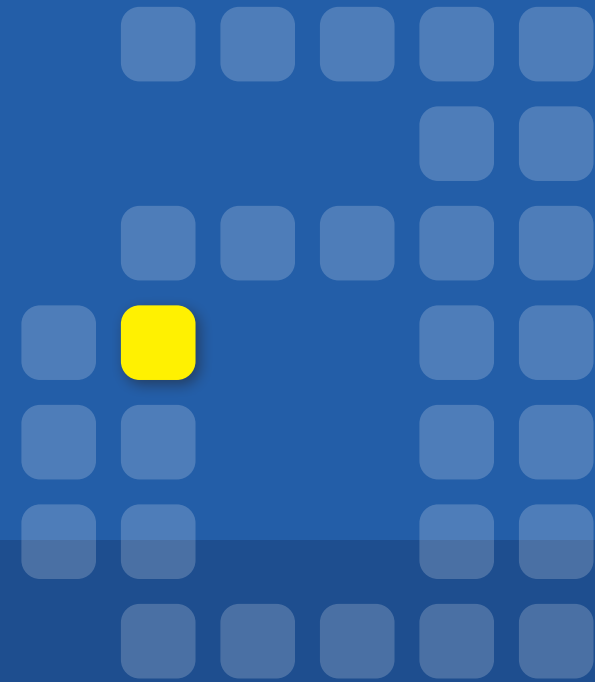
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THE TOOLS YOU
NEED TO GET RID OF

Martin Stirling, National Segment Manager Electrical Trades, Hilti

As any contractor will tell you, 'time is money'. Persisting with tired old tools and outdated work methods hinders workers' productivity, either because they are tiring to use and slowing them down or because they are not benefiting from faster, smarter technologies that help them get more work done in less time. Either way, doing things the old way is eroding your bottom line.

Since the 1970s, labour costs have increased 300% while the cost of tools has remained much the same. So there is really no excuse for not upgrading to the latest and most efficient technologies.

Here is my recommended list of tools you need to get rid of, and the modern technologies to replace them, in order to move your business forward:

Cut the cord and optimise labour hours

If you are still using electric drills, it is time to replace them with safer and more efficient cordless alternatives. By opting to use battery-powered tools you will not need to rely on a mains power supply, which is often difficult to find on a jobsite. It also allows teams to mobilise and demobilise between task sites much faster, as there are no cords to manage. Another productivity gain is that you reduce the time needed for the 'test and tag' procedure,

a process that adds time and hassle to an average project. With battery tools you only need to 'test and tag' the charger, and this can be easily managed so that tools are constantly available for use.

A common misconception about cordless tools is that they are not powerful enough to perform heavy-duty tasks, but this is no longer the case. Battery technology is so advanced these days that cordless tools perform just as well as, if not better than, their corded counterparts. The Hilti TE 30-A36 combihammer, for example, can drill large-diameter holes with the speed of a corded tool two classes larger.

Switch to purpose-built tools for clean cutting and grinding

Using a grinder to cut channels for laying cables in brick walls is an outdated practice. A much better, faster and safer way to do this is with a specialised slitting tool such as Hilti's DC-SE 20

© auremar/Dollar Photo Club

functions. However, the vibrations it generates during operation cause discomfort and fatigue, which leads workers to pause for a rest regularly. Replace old-model combihammers with the latest, low-vibration models. Hilti has Active Vibration Reduction (AVR) technology built into its combihammers and demolition breakers. It reduces vibrations by up to two thirds, allowing the operator to work continuously for longer periods without needing a rest.

Another potential hazard of old-model combihammers is the possibility of the tool rotating out of control when the drill bit jams on rebar, causing a serious wrist injury to the user. Active Torque Control (ATC) technology, available in Hilti combihammers, stops the motor and disengages the drill bit from the unit instantly when a jam happens, protecting the user from being injured.

Old-style drill bits and chisels can also hamper your productivity as they are not optimised for faster drilling progress and are more prone to breakage. The latest design improvements in drill bits include a solid carbide head with four cutting edges, which slows down the wear of the bit and prevents it jamming when it hits rebar. Also, look for chisels that have a special polygon design. These sharpen themselves while in use, improving their breaking performance and making them last longer.

Ditch the tape measure for fast and highly accurate technology

The humble tape measure has long been a staple in every tradie's toolbox, but its length limits its usefulness. It becomes very difficult to accurately measure long distances with measuring tape, and never mind trying to measure heights.

A laser range meter will allow you to measure large distances up to 200 m with an accuracy of within 1 mm. It can also perform calculations and has digital recording, so you can ditch the calculator and the pen and pad as well. And if you're still using a tape measure and spirit level for vertical alignment of electric sockets and cable trays, consider investing in a multiline laser to get the job done single handedly and far more accurately.

Save time with faster fastening methods

Installing cable runs on concrete ceilings and block walls is usually done by anchoring. It is a two-step process whereby you have to first drill the holes, then set the anchors. Gas- or powder-actuated fastening technologies reduce this job to a single step, so you can finish quickly and move on to the next thing. These clever tools allow speedy fastening because you simply attach the fixing to the tool and shoot it directly into the wall or ceiling. They can even be installed with a magazine option so you can complete many fixings in a line very fast, increasing your productivity even further.

Continuing to use conventional tool technology is likely to be costing your business time and money on a daily basis. It's worthwhile evaluating your current practices and looking for modern technologies that will improve your productivity. Whether it is a matter of upgrading your tools to the latest models or adopting new, smarter and faster work methods, the investment is sure to improve your bottom line.

Hilti (Aust) Pty Ltd
www.hilti.com.au

wall chaser. A slitting tool has twin blades which allow you to cut two lines simultaneously and wheels that keep you in a perfectly straight line, a result that is impossible to achieve with a standard grinder. The wall chaser can also be connected to a vacuum cleaner so you benefit further from a dust-free work area.

Old model cutters and grinders that throw dust and debris in your face and all around the work area are doing you no favours. They present health risks such as asthma, ear, eye and throat infections, and even cancer. The dust left behind also leaves you with the added task of having to clean the work area when you are finished.

Look for models that have a built-in dust hood that connects to a vacuum cleaner which collects the dust while you work. Not only does this provide you with a cleaner and healthier work area, it also allows faster cutting progress as there are less particles getting in the way of the blade. An added benefit of a built-in dust hood is that it will prevent the tool from overheating, prolonging its useful lifetime.

Upgrade your hammer drills and reduce downtime

The combihammer is a versatile tool found in every electrical contractor's van that can perform both drilling and chiselling

ECD SOLUTIONS — ELECTRICAL DISTRIBUTION

Pluggable multiconductor terminal

Phoenix Contact's Combi product range includes PT 2.5-HEXA multiconductor terminals with up to six contact points.

These can be configured as three push-in contacts for internal wiring and three PIN contacts for pluggable external wiring. This allows for fast start-up of modular system sections, as well as fast replacement of system components during servicing.

The high count of contact points makes the terminals suitable as compact, pluggable marshalling distributors. The product also has large, identically contoured labelling surfaces with end mounting, which make it easier to read matrix labelling.

The components come with a touch-proof design of both the terminal and the plug connectors. A double pluggable bridge shaft also facilitates voltage distribution and marshalling.

With the Combi plug zone, various plug connectors can be used, while individual coding increases the wiring safety and reliability as it helps to avoid erroneous plugging.

A range of optional snap-on accessories, such as connector catch mechanisms, strain relief elements and shield connections, also ensures the wiring process is versatile.

*Phoenix Contact Pty Ltd*
www.phoenixcontact.com.au
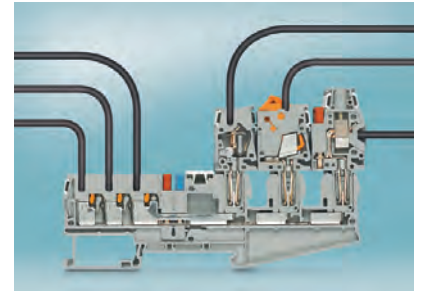
Regulated distribution transformers

Schneider Electric's Minera SGrid range of transformers is designed to manage voltage fluctuations and improve energy quality for sensitive loads, such as data centres. The regulated distribution transformer is created to help utilities eliminate the risk of voltage fluctuation, a threat that has grown due to the evolution of the distribution grid (increasing integration of decentralised power generation, renewable energy, integration of storage devices [EV] and multidirectional power flows). Whether intended for new substations or for retrofitting in existing locations, the product helps improve network quality.

Conceived as a plug-and-play solution, the device can be installed simply and will fit into new and existing substations. As the product has no mechanical parts inside the transformer tank, this ensures low maintenance and enhanced reliability. The transformer also has remote supervision capabilities so it can be connected to Schneider Electric's ADMS supervision and control system, allowing existing customers to reduce intervention costs and have full control over their assets.

Schneider Electric
www.schneider-electric.com
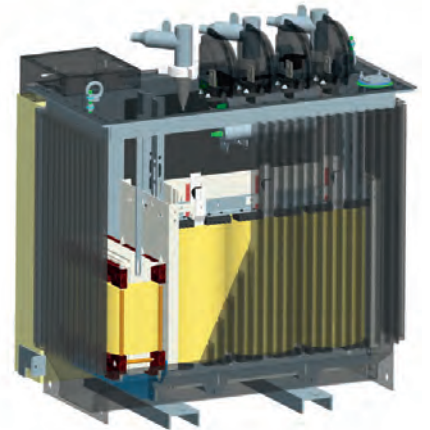
LA to control street lights through mobile and cloud-based technologies

The City of Los Angeles (LA) will become the first city in the world to control its street lighting through an advanced Philips management system that uses mobile and cloud-based technologies.

The new technology confirms LA's Bureau of Street Lighting as a trailblazer in next-generation LED street lighting with a new solution that saves energy, reduces maintenance and provides quality lighting that makes streets safer for LA residents. The technology also supports LA Mayor ERC Garcetti's Great Streets initiative, promoting the revitalisation of neighbourhoods through more pedestrian-friendly streets for LA's citizens.

With the addition of the Philips CityTouch connected lighting management system, the LA Bureau of Street Lighting can remotely control lighting fixtures as well as monitor energy use and the status of each light. Using mobile chip technology embedded into each fixture, the street lights are able to identify themselves and network instantly. This smart plug-and-play approach not only reduces the cost of programming each fixture, it also reduces the time of commissioning from days to minutes and eliminates on-site commissioning completely. Furthermore, the entire system can be securely controlled and managed remotely through any web browser.

LA has more LED street lights than any other city in America, with about 7500 centreline miles (12,070.08 centreline km), said Ed Ebrahimian, director of the Bureau of Street Lighting for the City of Los Angeles.

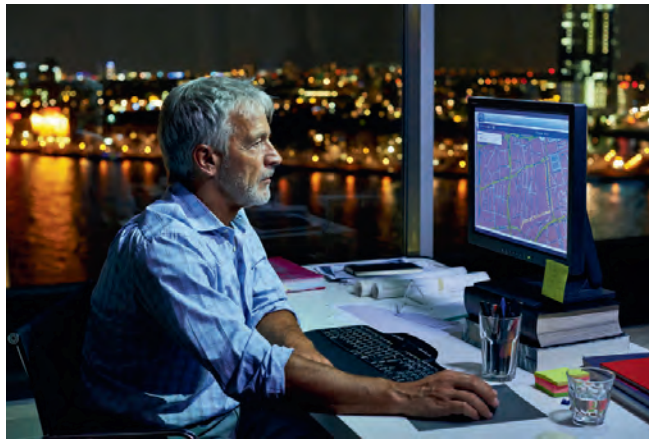"This required a solution that would allow us to remotely control street lights and accurately report how much energy each light is consuming, while also being easy to install and flexible enough to adapt to broader Smart City plans. We piloted several solutions over the last year and decided to implement CityTouch as it required no further investment or intervention in our infrastructure."

While CityTouch is already in use in 31 countries, the LA solution is the first in the world connecting directly to each light point using the Philips CityTouch connector node, which can connect street lights from any manufacturer. This extends the life of legacy and LED systems alike, enabling them to become connected light points. CityTouch gives the Bureau of Street Lighting a clear picture of the entire city's lighting system at its fingertips, with map-based visualisation, charts and diagrams. The combination of LED technology and management software will enable the bureau to better manage its assets, while Angelinos benefit from the increased uptime with safer, well-lit streets.

"Philips CityTouch supports Mayor Garcetti's Great Streets program by taking the management of LED street lighting to the next level, increasing safety through uptime, ensuring better visibility and providing the capability to further adapt lighting to the needs of a particular neighbourhood," said Amy Huntington, president of Philips Lighting Americas. "Not only does better lighting management support the city's energy-efficiency initiatives, but it has a beneficial effect on the streetscape, contributing to more vibrant and engaged communities."

Philips Lighting Pty Ltd
www.philips.com

Medical switches with antimicrobial technology

The Legrand Excel Life Medical Range includes panel boards, power points, switches and wall boxes that feature antimicrobial technology, enabling healthcare facilities to reduce cross-contamination risks.

The wiring devices and electrical accessories are constructed with silver ions to deliver a kill rate of up to 99% against common hospital bacteria (tested by an independent TGA-accredited laboratory to JIS Z 2801:2010 and found to be an effective antibacterial agent). The antimicrobial properties kill contagions such as *Escherichia coli* and *Staphylococcus aureus* bacteria within 24 h.

Marked with the antimicrobial symbol, the range includes complete medical functions and service panels in stainless steel and antimicrobial plastic for patient rooms and operating theatres. Colour-coded devices in accordance with Australian medical standards are also available, including integrated circuit IDs for power points and switches.

Designed to provide good electrical safety, the range meets AS/NZS 3112, AS/NZS 3003 and AS/NZS 3190 standards. Internal safety shutters are incorporated as an additional feature in all power points, while the range also features Electresafe power points with a built-in 10 or 30 mA residual current device (RCD safety switch). Developed specifically for the healthcare industry, the 10 mA has a sensitive tripping threshold enabling greater protection for staff and critical medical equipment.

Compatible with other Legrand Excel Life products in non-medical environments such as offices and meeting rooms, the range can be finished with Excel Life skirting lights, dual USB chargers in power points and switches and no touch switches, to provide facilities with a sleek and seamless look.

HPM Legrand
www.hpmlegrand.com.au

MINIMISING NON-COMPLIANCE:
IS MORE SELF-REGULATION THE ANSWER?

Gary Busbridge, Standardisation Manager

Last year, NSW Fair Trading issued a warning to consumers about the potential risk of using non-compliant electrical products.

To minimise danger the trading body announced it would no longer tolerate the sale of unapproved products in Australia and threatened that corporations that do not adhere to Australian Electrical Safety Standards would face penalties of up to $875,000.

Despite these changes and considerable company fining, consumers are still not aware of the risks and the potential for faulty products entering the market remains high. The transient nature of political parties has also hindered regulators from implementing stricter standards. Because of this, the onus is also on electrical contractors to ensure they purchase quality electrical products. On top of this, the rise of direct online purchasing means the need to educate consumers on product reliability and safety has now become more important than ever.

Although Australia is highly regulated in numerous sectors, there is very little review process for electrical goods, especially in comparison to similar markets like the US and UK.

The electrical sector in the US, for example, has a strict verification and screening process for products before they go to market, demanding products reach high standards of safety and functionality before being approved for the market. Online selling is also observed closely so counterfeit products are recognised and removed quickly. This intense screening not only ensures the integrity of local and international electrical companies but also safeguards the wellbeing and belongings of consumers.

In some instances the Australian market will prohibit products found to be sub-quality in the US market. But in the majority of situations, Australia is considerably more reactive in the identification and prohibition of such faulty goods. Overseas manufacturers have taken advantage of these factors to exploit limitations in regulatory systems and flood the market with sub-par products. As a result of this, it has become critical for the electrical industry to self-regulate at a contractor level, especially considering consumers are increasingly accessing products directly through wholesalers and online retail.

The rise of e-commerce has caused a major shift in the Australian electrical products market. With the flurry of products available, it isn't uncommon for consumers to do their own research on the electrical solutions available. But these products aren't necessarily the best and they may not comply with Australian Electrical Safety Standards.

What customers don't always understand about electrical purchases is that they present a much higher risk than other products they may purchase. For example, if they purchase a faulty or lower quality item of clothing, it will fade after a couple of washes or break apart after a few wears. With electrical goods, the potential problems are much more serious. We've even encountered non-compliant household products that have reached temperatures of up to 100°. They can also cause electrical shocks, create electromagnetic interference, damage devices or even start fires.

It's important that electrical contractors explain to customers the risks that they face when purchasing cheaper electrical goods that may not meet Australian Electrical Safety Standards. This is especially significant considering many customers today are savvy when it comes to purchasing goods through a website, directly for themselves. Whether manufactured locally or overseas, not all products sold in Australia meet these safety standards, and the onus is on the end user and their electrical contractor when it comes to potential risks.

Image supplied by Schneider Electric

> CONTRADICTING THOSE WHO EMPLOY CONTRACTORS CAN BE A DELICATE SITUATION, BUT THE ALTERNATIVE - AUTHORISING THE USE OF POOR FUNCTIONING OR DANGEROUS GOODS - IS A MUCH GREATER RISK

When customers buy products from electrical contractors they do so in good faith and expect them to work effectively for a long time. While contractors may pride themselves on their ability, the recommendation of a product that isn't completely functional will reflect negatively on their expertise and the advice they give. Electrical contractors should be aware that everything they do can affect their business in the short and long term. Buying quality products from reputable wholesalers with strong reputations can minimise these risks. When working with cheaper products from lesser-known brands, asking for compliance documentation and test reports is a simple way to cover liabilities and avoid trouble down the track.

Despite the efforts of regulators, non-compliant goods are still reality in Australia. It is the responsibility of contractors to be aware of the pitfalls that exist in the sector and to educate consumers who may be searching for the best price rather than the best fit. Contradicting those who employ contractors can be a delicate situation, but the alternative - authorising the use of poor functioning or dangerous goods - is a much greater risk. The reputation of the individual, the company and the industry as a whole is affected by these decisions. Awareness of these issues is high in the industry, but more education for both contractors, as well as consumers, is needed to reduce the possibility of dangerous situations.

Electrical contractors can be assured of high-quality products by working with brands with strong reputations. This not only protects their business, but also the safety of their customers. A detailed adherence to Australian Electrical Safety Standards also ensures an efficient and worry-free experience. Clipsal's products, such as its USB charger mechs, are manufactured to a high standard to suit the needs of Australian homes and businesses and have been developed using Schneider Electric's global expertise.

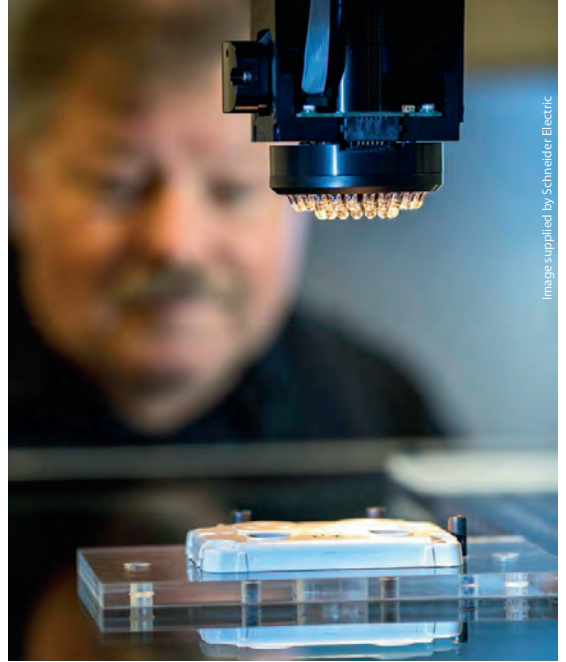*Schneider Electric Clipsal Partner*
www.clipsal.com

ELECTRICAL DISTRIBUTION

Battery bank electronic tester

The Magellan Electronic Load is a maintenance tool designed to test the integrity and working order of battery banks.

Suitable for 12, 24, 32, 48, 110 and 220 V substation load banks, this small and lightweight DC load will automatically discharge the battery bank and calculate the true capacity.

Optional data loggers are available that enable wireless communication with a computer to monitor the whole process of discharge, including voltage of each cell.

Magellan Power
www.magellan-power.com.au

Cordless grinder

Snap-on Tools has added a cordless grinder to its range of power tools with the CTGRA8850.

This 18 V lithium grinder has a large torque capacity with up to 8000 RPM and both a low voltage and overcurrent protection. Users have more freedom with portability as the total weight of the product is 2.5 kg, including the battery.

Other features of the product include: over- and undertemperature protection for switch and battery; a burst-proof guard and locking switch; an electronic safety clutch as well as a speed stabiliser for use in hard-to-access locations; and a soft start trigger.

Snap-On Tools Aust Pty Ltd
www.snapontools.com.au/industrial

Testing and tagging system

The Megger PAT420 testing and tagging system allows for user-configurable PAT settings and data to be downloaded to USB. This gives greater flexibility and control for multifaceted electrical safety testing projects. Data can also be exported to Excel spreadsheets for further analysis. This portable PAT system comes bundled with a barcode scanner and label printer, and the onboard storage facilitates those who choose not to export to USB.

Features include: tests to AS/NZS 3760; 10 and 25 A earth bond testing; memory storage for up to 10,000 test results; selectable pass/fail limits. TechRentals offers a set-up and download service for this product.

TechRentals

www.techrentals.com.au

Cable test system

The HVA200 cable test system has been added to the HVA series of test sets from b2 electronic. It is suitable for laboratory use or can be fitted as a mobile test laboratory into a van.

The compact device offers VLF (very low frequency) 0.1 Hz standard testing as well as DC output voltage up to 200 kV peak (138 kV rms), allowing the user to perform voltage withstand tests on assets with network voltages as high as 132 kV.

The symmetrical, load-independent true sine wave output voltage wave shape makes repeatable Tan Delta (TD) measurements possible, allowing the global health of the cable insulation to be assessed, while the offline partial discharge (PD) mapping module allows minor insulation defects or jointing errors to be detected and located before they lead to premature cable failure.

The device has no limited operating time and has been tested according to IEEE400. It weighs about 850 kg and has transportation and mounted solutions available for asset owners and contractors interested in bringing this level of testing capability in-house.

As with the rest of the series, the product may optionally include a module for performing highly sensitive cable diagnostics alongside the withstand test.

b2 electronic

www.b2hv.com

HVDC link for North Sea oil field

ABB has won an order worth $155 million from Norway's Statoil to supply systems and equipment to two HVDC converter stations linking the recently discovered Johan Sverdrup offshore field with the onshore grid.

The four platforms that make up the first phase of the development will be entirely powered from shore by the HVDC link supplied by ABB. The first phase of power-from-shore investments will prepare for the future development of the Johan Sverdrup field, as well as other fields located at Utsira High until 2022. Oil production at Johan Sverdrup, located west of Stavanger on the Norwegian continental shelf (NCS), is expected to start in late 2019.

"Using onshore electricity to run these oil platforms will eliminate the need for local gas-turbine power generation, significantly lowering CO_2 emissions as well as operating and maintenance costs. This order underlines ABB's broad offering across the entire oil and gas value chain and reflects our focus on accelerating organic growth by increasing our customer focus," said the president of ABB's Process Automation Division, Peter Terwiesch.

ABB will design, engineer, supply and commission the equipment for two ±80 kV, 100 MW, high-voltage converter stations. One will be located onshore at Haugsneset, where it will turn alternating current (AC) from the grid into high-voltage direct current (DC), which can be transmitted efficiently over 200 km to the second station - which is on one of the oil platforms. There,

the DC current will be converted back into AC and distributed to the rest of the field.

ABB's solution will utilise voltage-sourced converter (VSC) technology, called HVDC Light, to provide flexible, long-distance transmission of electricity. This technology has enabled ABB to win all four HVDC power-from-shore systems that have so far been ordered in the North Sea: Statoil's Troll A, compressor 1 and 2, delivered in 2005; BP's Valhall field, delivered in 2011; Troll A 3 and 4, currently under delivery; and now Johan Sverdrup.

ABB
www.abbaustralia.com.au

Facial recognition analytics platform

Panasonic's FacePro WV-ASF900 is a facial recognition analytics platform that provides face matching and searching, people counting, and age and gender statistics for video surveillance systems.

The platform runs on Microsoft Windows as well as Panasonic's i-PRO management software and its 3 and 6 series network security cameras. Its hybrid architecture reduces server and network overload and is suitable for retail stores, airports, transit/public safety and enterprise applications.

The analytics platform performs verification of a person's face using live video streams or digital images gained from surveillance cameras. It matches these against a database of enrolled faces and produces alerts of matches, reducing the workload of personnel monitoring entrances. Images can be selected from source video or imported via BMP, JPG and PNG files.

The product supports up to 20 face-matching cameras per server, matching 1000 faces/s, taking only 3 s to search for a person from 5 million faces. It also has the ability to set alarm triggers on matched faces.

Analysis capabilities also include counting the number of detected faces and evaluating their age and gender, with the results displayed as a statistical graph on screen.

Panasonic Australia Pty Limited
www.panasonic.com.au
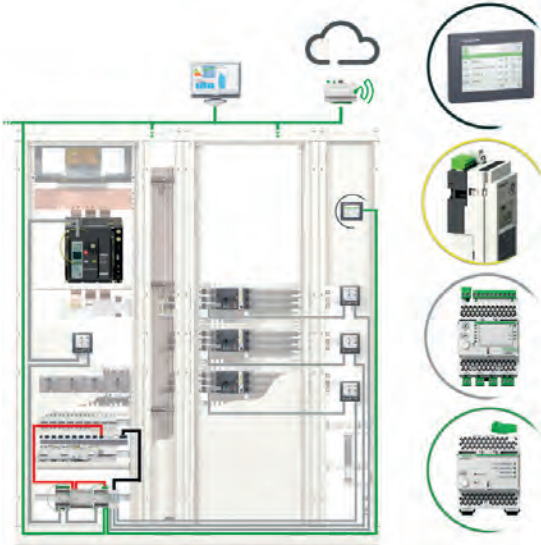
Ethernet connectivity to electrical distribution systems

The Enerlin'X range of smart devices by Schneider Electric is designed to foster connectivity and reliability for efficient energy, network and asset management systems.

The devices have local and remote monitoring capabilities and allow for real-time information and structured data from electrical systems to be used to make informed decisions.

The range addresses the growing need for facilities to have detailed visibility and insights to comply with green standards, by keeping a close eye on their energy consumption and operating costs.

The devices also extend Ethernet communication across the entire electrical distribution system from air circuit breakers to miniature circuit breakers. They can be used as a part of scalable architecture from small commercial buildings to complex data centres, or large residential or commercial complexes such as hospitals.

The product range is designed to be plug-and-play, simple to install, and easy to configure and maintain, allowing users to specify, install and commission projects which will reduce total material costs, allow faster delivery of results and increase profitability.

Schneider Electric Industry Business
www.schneider-electric.com

MAKING THE RIGHT CHOICE FOR LOW RESISTANCE

Tony Wills - Technical support group

Low resistance measurements have many and diverse applications, from checking the condition of circuit breaker contacts to verifying the integrity of welded joints. Low resistance test sets are, however, available in an almost bewildering range of types. This article offers some useful advice on choosing the right test set for the application in hand.

Low resistance measurements are generally considered to be those that involve resistance values of less than 1Ω. There are many reasons why such low values cannot be reliably measured with an ordinary ohmmeter - the resolution will almost certainly be too low to provide accurate results; the resistance of the test piece may well be swamped by the resistance of the test leads; and the results will be distorted by the tiny emfs generated at the junctions of dissimilar metals in the test object.

To overcome these problems, special-purpose low resistance ohmmeters have been introduced. There are many types and sizes, but most share certain features. These include the use of four-terminal connections, where the current to the test object is delivered by one set of cables, and the potential difference across the test object is measured with another set, an arrangement that eliminates the effect of test lead resistance.

Most types of low resistance also have facilities for bipolar testing, which means, in effect, that two tests are performed with the polarity of the test current reversed between them. The readings are averaged to produce a result that is unaffected by thermal and contact voltages that may be present in the test object. Another feature that is common to low resistance test sets is that their test currents are much higher than those of ordinary ohmmeters - currents from 10 A up to as much as 600 A are in common use. These high currents are required because

rents as high as 220 A. This device incorporates an ultracapacitor that has a capacity of several farads. The benefits of such a small and convenient instrument are clear - it can be used in areas where using a conventional instrument would be problematic, such as at the top of a ladder. They are suitable for many applications, such as the testing of circuit breaker contacts, busbar joints and high-current connections, but are they the complete answer for every application? The answer is no. One thing that ultracapacitor-based instruments cannot do is to maintain the test current for more than a few seconds.

Often this does not matter, but some applications require pro-longed testing, either because of the nature of the test or because that is what the applicable test standards specify. An example is checking joints between the rails in railway systems, where low resistance is essential because of the very high traction currents drawn by electric trains. In this application, extended tests are always carried out with high currents.

In other applications, it may be useful for the application of the test current to be prolonged so that it heats the object under test. This is sometimes the case with busbar systems, where testing is best performed with the busbars heated to their normal operating temperature. It may also be useful to monitor how the resistance of the test object changes over a period of hours, in which case an instrument with continuous current capability is clearly essential.

For these types of applications, conventional test sets are needed, but even then the latest instruments are lighter and more compact than their predecessors. The 200 A test sets are now available that weigh no more than 15 kg, making them relatively easy to handle although, admittedly, not at the top of a ladder.

The best of these instruments allow the test current to be adjusted to match the application, as the highest current is not always the most appropriate choice. Sometimes, it may be desirable to not heat the test object unnecessarily, in which case a relatively modest test current will need to be used. Also, it may be useful to explore the behaviour of the test object with low currents as a preliminary to proceeding to higher current tests.

Another key feature in the best instruments is the availability of multiple testing modes. Continuous mode, as the name suggests, is ideal for users who need to monitor the resistance of the test object over a period of time, while with normal mode, after the test has been initiated, the current ramps up to the preset value, remains steady for a short time - typically two seconds - and then ramps down again to zero. This is well suited to everyday testing.

Some testers additionally offer a useful and time-saving auto-matic mode. With this, after setting the desired test current, the user connects only the current leads and then presses the instru-ment's 'test' button. The test doesn't actually start, however, until the potential leads are connected and it stops as soon as they are disconnected.

This mode is invaluable when testing multiple joints in a busbar as the current leads can be connected to the ends of the busbar and left in place, while the user applies the potential leads across each joint in turn. The instrument automatically carries out a test on each joint and records the results in its internal memory.

As we have seen, there is no single low resistance ohmmeter that is the ideal solution for every application, although many are very versatile. Hopefully, the guidance given in this article will help potential users to pick the instrument that's best suited to their needs.

Megger Limited
www.megger.com

several types of test objects behave differently with high and low test currents.

An example is the main contacts in a large circuit breaker. With a low test current, these sometimes show a comparatively high resistance, usually because of minor contamination, which can lead to the circuit breaker being judged as not fit for service. If, however, the contact resistance is measured at a higher current, comparable with the normal operating current of the breaker, the contamination will often break down and the contact resistance will be shown to be perfectly acceptable.

Having examined the features they share, let us now look at how various types of modern low resistance test set differ. Traditionally, because of the high currents they need to deliver, these instruments have been large and comparatively heavy, but this has changed in the last couple of years with the introduction of new products.

The Megger MOM2 micro-ohmmeter is a small, light, handheld instrument that, despite its diminutive design, can deliver test cur-

Trunk cables

MTP Trunk Multicore Cable Assemblies from Warren & Brown Technologies facilitate rapid deployment for high-density backbone cabling in data centres and other high-fibre environments, reducing network installation or reconfiguration time and costs with its plug-and-play technology.

The range includes OM3, OM4 and OS 1/2 fibre grades, which are used to interconnect cassettes, panels or MTP fanouts. They are offered in fibre types in standard 12-, 24- or 48-core versions using a compact and rugged microcable structure.

The cables are designed to optimise cableway use and improve airflow, and have a low insertion loss average of 0.10 dB. The products are compliant with TIA/EIA and ISO/IEC standards.

Warren & Brown Technologies
www.warrenandbrown.com.au

Digital video recorder

AHD (analog high definition) CCTV gives high-definition 720P images at a fraction of the cost of equivalent systems.

NVIEW from Ness Corporation includes a range of 4, 8 and 16 ch internet-ready DVRs designed for easy installation and ease of use to suit tradies and consumers alike. In fact, the device is so easy to connect and set up that the user does not need to configure routers or play with IP settings at all. Auto networking technology means the user just plugs in, scans the QR code with a smartphone and views online.

The AHD DVR features H.264 compression, full 720p real-time multichannel playback, dual video outputs HD 720p and VGA, auto-networking for easy internet connection: no IP address, router mapping or port forwarding required, dual streaming for highest resolution on the local DVR and fast smooth video for remote viewing.

The 104-599 analog HD kit includes a 4 ch AHD DVR with 1 TB hard drive, 4 x AHD ball cameras with IR Illumination and all cables and connectors.

Ness Corporation Pty Ltd
www.ness.com.au

RFID safety sensor

Utilising wear-free RFID technology, the RSS16 safety sensor by Schmersal is designed to overcome the limitations of electromechanical devices.

The product shares its dimensions with the AZ16 electromechanical safety switch. With the addition of Schmersal's RFID technology, it gives users the option of three levels of protection against defeat.

The basic version will accept any actuator of the RSS family. Users can teach an actuator to work with the one device, and teaching can be repeated any number of times with a delay time between teaching cycles. The third and highest level of tamper resistance will only accept the actuator presented at the very first power-up of the device.

Additional benefits include the possibility to approach the device from three sides, providing a high level of flexibility when integrating into the surrounding construction. The safety sensor can be used as a magnetic door stop and latch up to 60 N, allowing the designer to forego the use of a separate stop and latching device. Users can connect up to 31 devices in series monitored by a single safety module all while maintaining CAT4 or PLe.

The product can be used in existing AZ16 applications with the ability to offer increased tamper protection but still keep to a 1:1 replacement.

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

Compact power source transfer switch

The Eaton ATS30 Power Source Transfer Switch is designed to provide power supply redundancy for single connection equipment.

The 30 A-rated unit enables power from two independent sources to be supplied to IT equipment, which have only one input power supply, effectively connecting the critical equipment to a redundant power supply. The ATS then controls the redundancy of this electrical power supply. If the primary source fails, it seamlessly transfers to the secondary source automatically and instantaneously.

Measuring only 1U high, the unit can be installed easily within a server rack. LEDs indicate the status of the sources and the Eaton ATS, which also provides network connectivity as standard. This allows users to access, configure and manage units from remote locations.

Eaton Industries Pty Ltd
www.eatonelectric.com.au

Surveillance product bundle

Hills is offering a security system surveillance bundle with Genetec and Panasonic 8-, 16- and 24-channel kits.

The kits include the Panasonic WV-SW155, a wide-viewing HD vandal-resistant dome camera; and the Genetec SV-32 Network Security Appliance, a turnkey system to deploy a unified or standalone video surveillance and access control system.

It also includes a 22″ LG monitor; 8-24 port switches; and a keyboard and mouse.

Hills Industries Pty Ltd
www.hills.com.au

SECURITY EXHIBITION & CONFERENCE 2015

The Security Exhibition & Conference will be held at the Melbourne Convention & Exhibition Centre from 15-17 July.

The 2015 event is expected to be the biggest yet, connecting more than 4500 attendees with 140 leading suppliers in the security industry, including Central Security Distribution, Gallagher, Hills, Pelco by Schneider, Salto and Honeywell.

Security 2015 Event Manager Alanna Phillips said the event would be a three-day showcase of the latest business security solutions, live demonstrations and practical education seminars.

"Security presents a yearly opportunity to connect with the best in the industry while discovering and experiencing the latest products and innovations to hit the Australian marketplace relevant to access control, surveillance, fire and safety, biometrics and IP networking," Phillips said.

"The 2015 event will also provide attendees with the one-off chance to relive the past 30 years of the security industry as part of our 30th-year commemorative corner, where we will be showcasing security products, solutions, companies and advertising from days gone by.

"We know the industry is keen to make the 30th year at Security one to remember and we're looking forward to not only taking a trip down memory lane but celebrating the evolution of security technology and solutions."

The event includes a two-day ASIAL conference for security end users featuring experts including Jason Brown of Thales Australia & New Zealand and US Global Security Advisor and Futurist Mark Goodman, and a half-day executive briefing on crisis communication by international expert Bruce Blythe of Crisis Management International. It will feature a free seminar series over the event's three days based on current key trends offering practical advice for installers and integrators.

Pocket-sized thermal camera

The FLIR C2 is a full-featured, pocket-sized thermal camera designed to help professionals see hidden heat patterns that can reveal sources of energy loss, signs of structural defects or plumbing issues. With its compact, sleek design, the device fits comfortably into any pocket, so it can be kept handy while the user carries other tools and equipment. The product has a simple-to-use touch screen with auto orientation and is built tough in a rugged casing.

The unit is powered by FLIR's Lepton micro thermal detector, which captures and displays subtle thermal patterns and small temperature differences using 4800 pixels of resolution. The wide-angle, fixed-focus lens is suitable for viewing and analysing large areas. It has a built-in work light and flash to help illuminate poorly lit areas.

Featuring FLIR's MSX real-time image enhancement, the camera creates thermal images with enhanced clarity and readability. MSX automatically embosses edge detail captured by an on-board visible camera onto the thermal image. Numbers, letters, textures and other features become recognisable without compromising the thermal image. The extra illumination of the work light also helps ensure that a brighter visible photo is captured along with the thermal image.

With quick point-and-shoot operation, the product stores radiometric thermal and visible JPEG images with the push of a button. The images can later be downloaded with FLIR Tools - free software that allows users to adjust thermal image levels, isolate and add temperature measurements, change colour palettes and create reports.

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

Safety switches and why you need them

Malcolm Richards, CEO

Almost a year since the Home Insulation Scheme Royal Commission, questions are being asked about how long it will take for our collective governments to take action to mandate the installation of safety switches.

In May 2014, I took to the stand in Brisbane, alongside more than 50 witnesses, to give evidence in front of Commissioner Ian Hanger QC during the HIP Royal Commission.

I told the commission that as electricians, we were horrified to hear that foil products had been laid over old wiring as part of the scheme. I described that worried sparkies began calling us at MEA headquarters within a month of the rollout - voicing genuine concern after seeing safety switches being tripped when foil insulation was stapled into the wiring. There had been a number of near misses, and many of you who had been privy to the goings-on had raised the alarm, long before the first death.

My testimony formed part of an overwhelming body of evidence - more than 120 interviews and upwards of 70,000 documents tendered to the commission. Given the large volume of material, Ian Hanger needed an extra two months to produce his report. It was handed down at the end of August 2014. The report was filled with criticism, citing a litany of errors and outlining seven significant failings in the design and implementation of the program.

The truth at the heart of each finding was - that safety switches may have saved the lives of each of the three young men electrocuted. As part of his findings, Commissioner Hanger recommended, absolutely and unequivocally, that governments Australia-wide adopt each one of the 16 recommendations regarding safety switches that MEA made in our Switch Thinking report.

Since the botched scheme, Queensland has made some progress. However, it has been slow, and woefully inadequate. Commissioner Hanger called for every recommendation outlined in MEA's Switch Thinking Report to be actioned, and yet absolutely nothing has been done in every other state to extend these protections to every Australian.

The current regulatory landscape varies widely from state to state and is one in which the same level of safety at home is still not available to all Australians. Take-up rates still vary widely from state to state. As many as 40% of our nation's homes have no safety switches installed, and most other homes do not have complete safety switch protection.

18-year-old Jayden Zappelli died in 2013 while helping another electrician install a chandelier in a house in Western Australia. This certainly was not an isolated incident - our data has shown that around 15 people are unintentionally electrocuted each year in Australia where a safety switch could have saved lives. Around 20 times that number are hospitalised with serious injuries due to electric shocks.

So let us not wait for yet another death before we do something. We are working behind the scenes to effect change, but our policymakers also need to hear from you. We are calling on every electrician who is concerned about the lack of action to mandate the installation of life-saving RCCBs or RCDs to add their voice - write to local members, take to social media and raise the issue with every customer. Let us band together and call for uniform action on this important issue.

Master Electricians Australia
www.masterelectricians.com.au

Patch panel

The Warren and Brown Technologies CAT6 24 port RJ45 patch panel provides an efficient means for interconnecting copper cabling.

A LAN cable is connected at the rear of the panel by a standard punch-down tool, while at the front of the panel 24 x RJ45 ports provide connectivity for CAT6 patch cords. In addition, the front patch panel features a record and label card for port numbering and identification.

The panel has a voltage rating of 125 VAC RMS and current rating of 1.5 A. It has a contact resistance of 100 mΩ (max) and insulation resistance of 1000 MΩ (min) at 500 VDC.

Other features include: a simple termination via standard punch-down tool; a 19″ rack mount; termination for a 22-26 AWG cable; mounting hardware; and T568A or B wiring.

The product also conforms to TIA/EIA 568-B.2 standards for CAT6 and Class E network performance.

Warren & Brown Technologies
www.warrenandbrown.com.au

Transformer insulation moisture analyser

The OMICRON DIRANA is said to provide accurate and reliable condition assessment of insulation in power transformers, paper-mass insulated cables, bushings and instrument transformers (CTs/PTs). It is available to rent from TechRentals.

The unit utilises dielectric frequency response (DFR) in combination with software analysis to determine the percentage of moisture in paper insulation, as well as oil conductivity and an individually corrected tan delta value at a 20°C reference temperature.

Features include: time and frequency domain method combined; significantly reduced testing time; compensation for aged oil-paper insulations; unit provided with laptop pre-loaded with all software.

TechRentals
www.techrentals.com.au

Switchmode power supply units

The PROeco, PROmax and PRO-H have been added to Weidmuller's range of switchmode power supply units.

The PROeco comes in single- and three-phase units with 12, 24 or 48 V. Suitable for use in field cabinets, flat distributor boxes or compact series machines, the device provides up to 93% efficiency, and minimal no-load losses ensure low energy consumption and long service life. The power packs also work from -25 to +70°C and have an MTBF exceeding 500,000 h. An integrated status relay for error detection allows for remote monitoring.

The PROmax, designed for light process applications and mechanical, plant and marine engineering, include single- and two-/three-phase models with output voltages of 5 to 48 VDC. The product features MTBF exceeding 500,000 h and a temperature range of -25 to +70°C. The unit delivers continuous power up to 120% at temperatures up to +45°C, while high output peaks up to 300% ensure safe operation. The product complies with surge protection category III and SEMI F47, and can be fitted side by side on a DIN rail to save space.

The PRO-H is suitable for special applications in power stations, and chemical, pharmaceutical and process industries. The single- and two-phase models provide an MTBF - up to 1.8 million h - for long service life. Withstanding temperatures from -25 to +70°C, the units are also shock and vibration proof. With ATEX and C1D2 approvals, they are suitable for use in explosive risk zones and also contain status alarms for remote observation.

Weidmuller Pty Ltd

www.weidmuller.com.au

SAFETY PRECAUTIONS FOR HV OIL-INSULATED COMBINED-FUSE SWITCHES

EnergySafety has issued additional safety precautions for the type of high-voltage (HV) switches involved in the explosion at the Morley Galleria Shopping Centre in Perth.

EnergySafety's first order pertained to only Long & Crawford Manchester switchgear. The organisation has now extended the order to all HV oil-insulated combined-fuse switches.

The director of EnergySafety, Ken Bowron, said, "While the investigation is not complete, it appears that there has been a short-circuit fault in the switch tank following the rupture and disintegration of a HV fuse within the unit.

"In light of the recent findings, I have formed the opinion that further precautions must be undertaken with this type of equipment.

"I have decided to extend the order to all equipment with similar design - not just the Long & Crawford switch-fuse units.

"In addition to banning the opening of the lid, I have now also banned the commencement of any electrical work on this type of equipment, including operation of the switching or earthing mechanisms if a HV fuse has operated," Bowron said.

"EnergySafety's investigation is progressing but is not yet complete. If we identify anything which we believe industry and owners of similar installations need to be made aware of, we will update them without delay," Bowron said.

WARNING ON FAKE HIGH-RISK WORK LICENCES

WorkSafe WA has issued a warning to check high-risk work licences after being alerted to altered and created copies of the documents.

"We've recently been made aware that some high-risk work licences are being electronically scanned and altered to include additional classes of high-risk work, and the altered copies then sent as email attachments to prospective employers," said WorkSafe WA Commissioner Lex McCulloch.

"High-risk work licences are only issued to workers who have been appropriately trained and have the skills to perform high-risk work safely and competently."

These licences apply to anyone engaged in work considered to be 'high risk', including scaffolding, dogging and rigging work and the operation of cranes, hoists, pressure equipment and forklifts.

"Our advice to employers or anyone in control of a workplace is to satisfy yourself that anyone you are thinking of employing for high-risk work has the experience they claim to have.

"Always sight the original high-risk work licence card - don't be satisfied with an emailed or texted scan or photo of the licence.

"Anyone who has concerns about a high-risk work licence can verify the details using the WorkSafe licence and registration search located on the Department of Commerce website.

"Finally, it's important to note that the cases of fraud in relation to high-risk work licences we have discovered have been referred to WA Police."

VENDOR FINANCE AVAILABLE FOR POWERSTAR VOLTAGE OPTIMISATION SYSTEMS

An Asia-Pacific alliance has announced it will provide vendor finance to organisations for Powerstar's electrical energy products.

Powerstar, a provider of voltage optimisation (VO) systems, is a founding member of the Smart Power Alliance with Ultima Capital Partners, which was formed to enhance cooperation between users, regulators, suppliers and researchers for the adoption of energy-efficient solutions.

The finance also extends to the company's latest energy storage solution, Powerstar Virtue.

Sam Czyczelis, Powerstar's group sales manager Asia Pacific, said the arrangement solves problems including bank constraints and head office limits on capital expenditure.

"There are no upfront costs and the power savings gained are greater than the financing," Czyczelis said.

"Powerstar VO systems have a 50-year lifespan, so the cumulative whole-of-life net savings can be in the millions of dollars."

Czyczelis said organisations can side-step funding restrictions and covenants by structuring the acquisition through a lease or rental arrangement, as they are not borrowing the money.

"In many cases, the only required security is over the equipment, which will be a big help for businesses," Czyczelis added.

The VO systems match the incoming electricity supply to the needs of onsite equipment and return any excess energy back to the grid. Powerstar products offer a 100% guarantee on power cost savings, reduce electricity consumption by around 12-15% per annum and cut carbon emissions.

"How could organisations not be attracted to a 'self-funding' energy-saving device that doesn't cost them upfront to purchase or install, has a low payback period and produces an immediate positive cash flow?" Czyczelis asked.

"Importantly, it also helps them reduce their carbon emissions, enhancing their corporate social responsibility and green credentials."

The new structured finance offering would typically be over a five-year period, with the Powerstar unit fully funded at market-competitive rates via a lease or rental arrangement. The annual cost savings are expected to exceed finance costs, giving the end user an ongoing positive cash flow from installation.

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CURRENT AND FUTURE TRENDS IN AUTOMATION

Eduardo Yudowski, Category Manager - Wiring Devices and Automation Systems

The rise in adoption of automation technologies presents significant opportunities for the electrical industry. However, with varying levels of customer understanding, it's challenging to determine how to capture a piece of this rapidly growing market.

The home automation market is set to reach almost $1 billion by 2017, according to research conducted by Telsyte. Over a million Australian households are considering a home automation system and 115,000 are looking to adopt one in the next two years. These estimates are based on the growth of integrated systems, DIY devices, security systems and services in new and existing homes, reflecting a fragmented market, varied definitions of home automation and the ambiguous nature of consumer demand.

Automation means different things to different people. To the electrical industry and some end users, automation is a completely tailored suite of products and systems that drive the main electronic functions of the home, from entry and lighting control, to home cinema systems, blinds and energy management. To entry-level consumers, automation may simply mean having an automatic garage door or sensor lighting, ie, home automation in its most basic form. To Gen Y, it may mean the ability to monitor energy use and control lights using an app.

What lies ahead?

Until now, home automation has been event-driven, where you press a button to trigger an outcome. Many existing home automation configurations comprise a collection of stand-alone components, each operating independently. Some components require professional installation, while others are DIY. For example, lighting may be controlled by a wired system supported by a mobile app, and DIY security cameras may be managed via a web-based platform.

The rise of the Internet of Things will see home automation systems seamlessly connect all components and control them from a central system that can be adapted to suit the demands and design of the home. These smart systems will learn residents' liv-

© Paylessimages/Dollar Photo Club

users can create a 'recipe' that will automatically save pictures posted on Instagram to Dropbox. In 2012, IF entered the IoT by linking to devices, allowing users to control electrical functions in the home via an internet connection using 'recipes'. For example, users can set up a recipe that automatically switches lights on when the sun goes down.

Leveraging opportunities

With a number of industries vying for a slice of the home automation market share, it is vital that businesses in the electrical industry work together to secure its position in the rapidly growing market.

The electrical industry will play a significant role in the uptake of different technologies as it supplies the infrastructure that supports automation solutions. When Wi-Fi was introduced, telcos owned the market and the electrical industry expanded as sales for data networks went through the roof. The NBN and new related technologies will continue to underpin infrastructure development for the foreseeable future.

The electrical industry's key to succeeding in this market - for contractors, manufacturers and distributors - is providing the end users with safe, affordable, intuitive and easy-to-use home automation solutions.

As a manufacturer, HPM Legrand is committed to being at the forefront of technology to deliver innovative and easy-to-install home automation solutions. Legrand is part of the ZigBee alliance and its range of wireless products, such as movement sensors and Arteor switches, work with the ZigBee protocol to provide wireless alternatives where it's difficult to run-in new cabling. The ZigBee alliance is the only open global wireless standard to provide the foundation for the Internet of Things by enabling simple and smart objects to work together, improving comfort and efficiency in everyday life.

For contractors, the conversation with customers is shifting. End users have an insatiable appetite for connectivity and expect contractors to advise them on affordable and safe electrical solutions that will keep them connected - in and out of the home. This is an opportunity for contractors to position themselves as trusted advisors, assisting customers to rethink electrical design and adding value by helping to create futureproofed homes. This can result in greater opportunities to upsell.

The Legrand and HPM Rethink Electrical program is designed to meet evolving customer demands by assisting end users with planning and provides contractors with resources to support these new conversations. Contractors and end users can access www.rethinkelectrical.com.au and various other tools with their clients and use it to keep abreast of emerging trends.

By engaging customers in conversations about their home of the future, contractors can help to shape consumer understanding of home automation and leverage the opportunities this rapidly growing category offers.

HPM Legrand
www.hpmlegrand.com.au

ing patterns and automate responses accordingly. Telsyte predicts that this is merely two years away, with a significant opportunity to unify the large installed base of disparately connected devices under a master control system.

The world of wireless

The growth of internet connectivity and Wi-Fi-enabled devices will drive the uptake of home automation solutions. In 2014, 92% of Australians used the internet and mobile data downloads grew by 97%. With this level of connectivity, there is an opportunity for automation in almost every aspect of daily life. Software giants have created home automation platforms, and apps such as IF by IFTTT (If This Then That). IF allows users to automate everyday activities by setting up simple 'recipes' influenced by web-based triggers and has about 20 million interactions a day. For example,

Energy storage solution

Powerstar Virtue is an enery storage solution that can turn large power users into a virtual power station. Large users, whether commercial, industrial, retail, educational or government, negotiate power contracts that comprise a mix of peak and off-peak tariffs. Powerstar Virtue works with the patented Powerstar VO technology and harnesses the excess voltage supplied from the grid that the VO technology would normally return to the grid to generate savings. While Powerstar VO can generate average savings of 12-15% a year, Powerstar Virtue takes this a step further. The system stores the excess and deploys it at times when the cost of power is at peak tariff, thereby producing even greater savings than using voltage optimisation alone.

By directing this excess power to storage when the cost of power is priced at the low tariff, there is sufficient stored power to go off the grid completely for two hours or reduce kilowatt usage to 50% 'new' power for four hours when the high tariff kicks in or during the maximum demand period. The new technology can be integrated with on-site renewable energy generation such as solar and wind, to combine the energy saved from the VO system with that generated from the renewable energy source.

As a result, users can save by switching to the stored supply at any time they wish, as well as ensuring a constant and reliable energy supply. An additional benefit is that the need for inverters on renewable installations is eliminated, which can reduce the cost and therefore improve the return on investment. In addition, because inverters inherently have power losses, which no longer occur with the new energy storage system, further savings are produced. Sites will also benefit from reduced harmonics, voltage phase balancing, improved power factor and reduced maintenance costs of electrical equipment.

Powerstar

www.powerstar.com.au

LED batten

Thorn's ClipLine LED batten has a lighting output up to 4300 lm with colour temperature of cool white (4000K). It offers a useful life L70 of 30,000 h.

The slim batten is designed for quick and easy installation with the clip bracket system and it allows continuous line possibility for end-to-end installation. It offers colour rendering of 80% and permits a loop connection with flat TPS cable 2.5 mm².

Thorn Lighting Pty Limited

www.thornlighting.com

LED colour shifting downlights

The LEDlux Infinity Mini LED downlights from Beacon Lighting Commercial, designed for residential purposes, include colour shifting technology.

The technology has the flexibility to shift between 3000, 4000 and 5000 K cool and warm white light at the flick of a switch.

The 14 W downlights can emit up to 800 lm of dimmable cool and warm light, and come in both brushed chrome and white finishing with frost diffusers.

The product also comes with a 5-year warranty and is IP44 and IC rated.

Beacon Lighting Commercial

www.beaconlightingcommercial.com.au

Wollongong Council building achieves $200K/year in energy savings

Wollongong City Council's Administration Building has become the first building in Australia to achieve a 5 Star Green Star - Performance rating.

Over the past 10 years, the council has implemented a range of upgrades to improve the sustainability performance of the building. The 13-storey building was first occupied in June 1987 and houses 660 council staff. The council has also replaced ageing equipment to meet modern building compliance standards. In 2014, council began a project to improve the building's operational performance, from a sustainability perspective, using GBCA's Green Star - Performance rating tool. The upgrades and altered practices have resulted in energy-efficiency gains of 55% and water-efficiency gains of 85%, based on the Green Star - Performance rating tool's calculations. Council estimates that the energy-efficiency gains alone in the building are saving $200,000 in electricity costs each year when compared to 2007-2008 consumption.

Wollongong City Lord Mayor Councillor Gordon Bradbery OAM said ensuring the sustainable operation of the administration building is a major step towards achieving environmental, financial and ecological sustainability.

"This is not just about gaining financial sustainability but ensuring that we have an efficient building that will consume less water and electricity, reduce the waste it generates and emissions it releases, and also provide an enjoyable and healthy workplace for our staff.

© iStockphoto.com/Iaroslav Danylchenko

"We have been able to retrofit an ageing building - remember it is coming up to 30 years old - to achieve these significant reductions. This demonstrates that you can gain a 5 Star Green Star rating with an ageing building if you use the right methods and programs. We have shown that this pathway to sustainability could be used by other local governments or government agencies. We have also shown that we can gain a rating comparable to brand spanking new buildings that are purpose-designed to achieve 5 or 6 Star Green Star ratings," said Bradbery.

"The building meets best practice benchmarks for a range of environmental impacts, such as energy and water efficiency, but also for factors that affect human health and productivity, such as material selection and indoor environment quality. The people of Wollongong now have independent proof that their building stacks up against some of the newest green icons around the country - and that they have a community asset that is efficient, productive and healthy," said GBCA Chief Executive Officer Romilly Madew.

Council is now developing a Sustainable Building Strategy that will guide how it improves the operational sustainability of existing buildings, in addition to how new buildings will be designed, constructed and operated. The experience gained in retrofitting the building, along with improving its management practices, will greatly assist council in developing the strategy.

Green Building Council Australia
www.gbca.org.au

Compact LED light

The R. STAHL tubular light fitting Series 6036 is a compact LED-based luminaire for use in Ex zones 1/21 and 2/22.

55 mm in diameter and 122 cm in length, the product is suitable for general or machine lighting purposes. 30 light fittings can ensure an illuminance of about 500 lx while its slim design means it can be simply installed in confined or hard-to-access spaces.

The product can be operated in a wide temperature range from -40 to +60°C (reaching a lifetime of 80,000 h in a +60°C environment). The vibration-proof units are IP66/IP67 protected and are suitable for maritime applications.

R. STAHL Australia Pty Ltd
www.stahl.com.au

Wireless lamp

The Philips Hue Go is a fully portable wireless lamp that can be used in the home or office to enhance a space, enabling people to be connected to, and experience, light in a different way.

Users can operate the lamp with their smart devices or by a control button on the product. The lamp can be plugged into the main or will last up to 3 h in battery mode.

There are five patented dynamic light effects - Cozy Candle, Sunday Coffee, Meditation, Enchanted Forest and Night Adventure - as well as functional warm white light and cool energising daylight for users to choose from.

Another feature of the wireless lamp includes a soft 'light notification' that alerts users to a new email or change in weather. The product also has interaction capabilities with more than 200 third-party apps.

Philips Lighting Pty Ltd
www.philips.com

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John McGuire, Global Industry Director, Aurecon

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Joanna Batstone, VP and Lab Director, IBM Research-Australia + CTO, IBM ANZ

IoT and Industry — perfect match or perfect storm?
Michael Freyny, Executive General Manager - Digital Factory/Process Industries and Drives, Siemens

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INTERVIEW:
DANIEL WALKER, PHILIPS DYNALITE

Mansi Gandhi

From humble beginnings in the theatrical controls industry in 1989, Dynalite, Australia's leading maker of lighting control and building automation systems, has come a long way.

ECD Solutions spoke with Daniel Walker, Global Product Manager, Philips Dynalite, to learn about the current state of the industry and where it's headed in the next few years. **The market for lighting controls has transformed dramatically in the past few years. Where does Australia stand?** The demand for LED luminaires with integrated controls is increasing significantly due to improving LED source performance, regulatory compliance requirements and energy-efficiency concerns. The Australian market is quite mature and is already using the latest technology available for building lighting solutions. These days, it is standard practice to use lighting controls for areas with a particularly cosmetic focus, for example, hospitality and residential projects. For commercial projects and office buildings, lighting controls are becoming mandatory given government energy-efficiency regulations. Furthermore, Australian architects and engineering consultants are experienced and support progressive growth - they expect much higher functionality and quality compared to lighting professionals in other parts of the world. These local market requirements have prompted us to develop systems with the most advanced features and functions. Once these features and functions are developed, they are added to our standard product range - this also enriches our global feature portfolio. That's a truly global benefit.

What are some of the challenges to market growth?
More work needs to be done to increase end users' awareness about what automated lighting control systems can do and the value fully integrated digital lighting control systems and intelligent luminaires bring. For example, the Philips Dynalite suite of solutions is made up of many individual parts and systems that can all communicate with each other over our network - we need to have simple and easy-to-understand examples to help the users understand where the value comes from. But these systems are not one size fits all. The process of specifying and designing effective, smart and LED connected lighting systems starts with gathering customer and business needs, then tailoring a solution that delivers the specific lighting and other requirements.

Where do you see the potential for growth?
Flexible, intelligent and connected lighting systems offer great benefits. The control systems can be of any size or form - they can control a single light fitting or an extensive network of controllable light points. These systems have a broad range of capabilities - they can offer basic illumination and energy-saving functionalities as well as personalised and controllable illumination integrated with a variety of services and in-context information - the opportunities are vast. We'll be redefining the relationship between controls and luminaires, how luminaires are powered and how they are terminated. We'll be creating more intuitive ways for commissioning the solutions to perform useful functions by embedding more intelligence into luminaires - where we can combine multiple methods of distributing light, power and data by using network and wireless communication

> **INSTALLERS WILL BENEFIT FROM GAINING INSIGHTS FROM DIFFERENT PARTIES, KEEPING UP WITH TECHNOLOGICAL ADVANCEMENTS, BECOMING MORE NETWORK LITERATE AND UNDERSTANDING THAT THE ROLE OF DIFFERENT SYSTEM COMPONENTS COME IN BUILDING A USEFUL SOLUTION.**

their clients in an integrated way. My recommendation to them would be to make sure that they investigate the total components required for creating a system solution. There are a lot of systems that require several external supporting components, additional communication protocols, external microprocessing, external power supplies and a mixture of low-level and network interfacing devices. All of these additional components add installation complexities and introduce the potential for installation errors. In order to achieve a project's scope and requirements, and secure more versatile projects, it's important for installers to ensure the different network components are working well together.

Philips Dynalite has over 25 years of market knowledge and experience in developing lighting control solutions. The Dynalite range of products comprises: controllers, into which lighting and other loads are connected; user interfaces, which give the user the power to interact with the system; and integration devices, which are used to connect additional systems so they communicate/perform seamlessly as one. The Philips Dynalite DyNet communications protocol has been used in over 30,000 projects. This includes high-profile installations such as the world's tallest building, Burj Khalifa; China's tallest building, Jin Mao Building; and Crown Casino Melbourne.

Philips Dynalite
www.dynalite-online.com

methods that offer that flexibility. We're embracing the digital lighting revolution - we are transforming and are globally leading in delivering intelligent, connected lighting and automation solutions that deliver targeted, measurable and unique value that goes beyond illumination.

Challenges for controls manufacturers, installers and end users?
Installers: New technologies are redefining standards and it's important for installers to keep abreast with changes. The way lighting controls are installed and the value they offer has changed significantly in the past few years and it will be very different in the not-too-distant future. Installers will benefit from gaining insights from different parties, keeping up with technological advancements, becoming more network literate and understanding that the role of different system components come in building a useful solution.

Controls manufacturers: Flexible technologies make almost anything possible. Solutions need to be relevant and cost-effective, and manufacturers need to deliver real value to customers - this goes beyond illumination. Predicting requirements and delivering solutions has become much more difficult - it requires thorough expertise in all relevant domains and an understanding of how spaces will be used.

End users: To ensure that they don't overcomplicate system requirements. Network control systems are incredibly powerful, but to realise benefits, functionality should be delivered as simply as possible.

Your tips for choosing the right control system?
Installers are of great value in the lighting chain. To capture all benefits of connected lighting, it would be great if teams can be built up to coordinate with commissioning teams, designers and

Daniel has over 14 years of international sales and product marketing experience, all gained while working across a number of roles at Philips Dynalite. During his time at Philips Dynalite, Daniel has managed product innovations that have won multiple international awards and recognitions, including the Reddot Award, Good Design Award, BIC Product Innovation Award, Interior Design magazine (USA) Best of Year Award and Platinum ADWX Award. Based in Mascot, NSW, at the Philips Dynalite office, Daniel is also a member of the Philips Dynalite Executive Management Team. He holds a Master of Marketing from the University of Technology, Sydney.
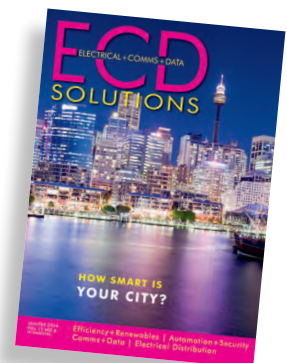
LED floodlight

The Pierlite FLL Flood LED floodlight comes in 100 and 200 W versions and is suitable for general area lighting, security lighting, facades, parks and gardens.

The lights have a LER of 72.5 lm/W and feature high-quality lensed LED chips with a CCT of 4700 K and CRI >70.

The 100 W has a symmetrical optic up to 7200 lm, while the 200 W has up to 14,500 lm. The products come in a black powder-coated, die-cast aluminium body with cooling fins for thermal management and are supplied with a trunnion arm for easy mounting. They also have an integral electronic driver and a windage FLL of 0.027.

The floodlights come with a rated average life of 35,000 h at L70 and are also rated to IP65.

Pierlite Australia Pty Ltd
www.pierlite.com.au

LED garden lights

Vibe's Calais LED outdoor garden lighting range is designed to improve ambience, safety and security in commercial and residential areas.

The lights are sleek in design and have a UV-stabilised polyester powder coating which is resistant to corrosive environments. They contain high-quality LED chips and use high-strength die-casting body and bracket. The lights have a lifespan of 50,000 h.

ANL Lighting
www.anllighting.com.au

CASE STUDY

Timber pallet maker installs 100 kW solar system

© freeimages.com/profile/jdonek

Having adopted a policy against the burning of waste, the large-scale producer of timber pallets for the timber industry has continued to look for new ways to re-use waste products including its pallet-recycling program as part of The National Timber Product Stewardship Group.

To support this initiative, Fisher's Group turned to Yingli Solar's 250 W high-efficiency polycrystalline panels to supply enough solar energy to offset 80% of its power usage throughout the year. Comprising 400 Yingli Solar panels, this system will allow Fisher's Group to reduce its carbon footprint by 150 tonnes a year, while seeing a financial payback within four to five years.

Daman Cole, managing director for Yingli Green Energy in Australia, said, "It is great to see local businesses including Fisher's Group begin to understand the significant role solar can play in reducing costs and sustaining long-term green initiatives. It's hard to come by business investments that provide a guaranteed 20-25% return per year so we're excited to see yet another organisation realise the full business potential of sustainable energy."

Fisher's Group founder and Managing Director Lewis Fisher said, "Fisher's Group have had a longstanding commitment to the very best environmental practices; our passion for sustainability and ethical business underpins everything that we do. We also have a passion for utilising local suppliers whenever we can. Installing a solar power system was the next logical step to reducing our carbon footprint and our businesses' running costs.

"Combined with the reliability and long-term yield of Yingli solar panels, we are convinced that this will prove to be a very wise investment.

"We were very comfortable using Gippsland Solar for this project. Having a trusted local company with local workers, who will be there well into the future to support their system and installation, gave us the ultimate peace of mind into the future. The installation went very smoothly; from adherence to OH&S during the installation, communication with us throughout the project and the professionalism of the installation team, our solar power installation went in without a hitch."

Yingli Solar is a founding member of the Australian Solar Council's Positive Quality Program and the first solar PV manufacturer to receive the Positive Quality certification.

Yingli Green Energy Australia
www.yinglisolar.com

BETTER, SAFER
EMERGENCY LIGHTING

Deakin University researchers have found a cheaper, safer and more reliable way to operate emergency lighting and exit signs.

Researchers from the university's schools of Engineering and Information Technology have teamed up with power solutions provider MPower to create an automated monitoring product that is cheaper to operate and less likely to fail than existing outdated manual models. Deakin School of Engineering researcher Associate Professor Abbas Kouzani said the networked devices could talk to one another.

"If one device goes down, the communication messages are re-routed through neighbouring devices within the network, facilitating automated self-testing and real-time fault detection which improve the reliability and integrity of emergency lighting systems - potentially saving lives when fires, accidents or natural disasters occur," Associate Professor Kouzani said. "Whether it be hospitals, universities, factories, retail centres or offices, the technology has the potential to save organisations thousands of dollars.

"The system offers a low-cost wireless mesh network platform in which node failure and signal interference are managed through the self-healing property of the technology," Associate Professor Kouzani said.

"The wireless system operates at a lower frequency than the standard wireless systems, reducing the chance of interference with mobile and other wireless devices.

"This also allows the signal to have better penetration through barriers such as thick concrete walls and enhances the network's reliability."

Associate Professor Kouzani and Professor Yong Xiang of Deakin's School of IT have been working together to help MPower design the network. The researchers argue the new system will be more reliable and robust than current monitoring methods because it features continual central automated monitoring that detects faults or low batteries as soon as they appear and removes any chance of maintenance shortcuts being taken by individual enterprises.

"We believe this technology can have applications beyond emergency lighting and exit systems, offering advances for everything from home appliances to building automation to smart street lighting," Associate Professor Kouzani said.

The project is one of the first to be funded through the federal government's new Research Connections program, which aims to promote innovation by supporting partnerships between industry and research providers.

MPower Products
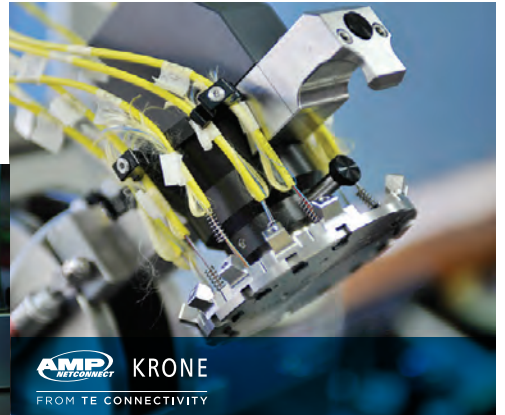*www.mpower.com.au*

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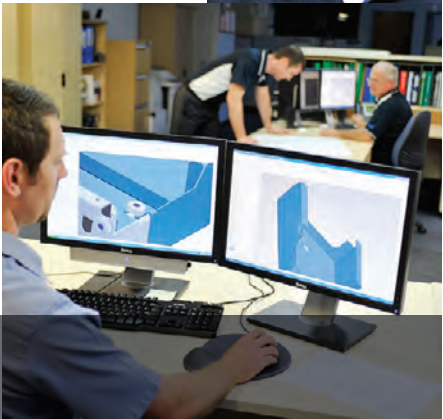
CONNECTING AUSTRALIA & NEW ZEALAND FOR OVER 30 YEARS

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ZONE CABLING
FOR COST SAVINGS

Today's enterprise workspaces are increasingly social and flexible, and are subject to frequent reconfiguration and updating. To determine how structured cabling can best support flexible workplaces, Siemon recently analysed the cost and environmental impact of various structured cabling designs. Below are the findings.

Siemon found that zone cabling deployments provide the optimum balance of performance, flexibility and efficient use of cabling materials in today's enterprise environments. A zone cabling design (or topology) begins with horizontal cables run from patch panels in the telecommunications room (TR) to connections within a zone enclosure (ZE, sometimes referred to as a zone box), which can be mounted under a raised floor, in the ceiling or on the wall. Cables are then run from the outlets or connecting blocks in the zone enclosure to telecommunications outlets in the work area (WA), equipment outlets serving BAS devices or directly to BAS devices. Patch cords are used to connect voice and data equipment to telecommunications outlets and to connect BAS equipment-to-equipment outlets.

The connections in the zone enclosure are made using modular outlets and/or punch down blocks - there is no active equipment in the zone enclosure. When deploying a zone cabling solution, zone enclosures must be positioned in the most densely populated areas of the floor space.

What is zone cabling?

Enabling flexible client workspaces that efficiently accommodate moves, adds and changes (MACs) is a signature element of a zone cabling design. Through analysing a customer's office reconfiguration needs, zone cabling deployments have the potential to provide significant cost savings compared to traditional 'home run' work-area-to-TR cabling. This is because MACs performed

on traditional home run topologies require more cabling materials and more installation time to implement.

Quantifying the cost savings

Siemon designed traditional and zone cabling layouts for a typical one-floor commercial building space, then analysed the capital and operating costs associated with each design. For the purpose of this analysis, the traditional cabling topology scenario provided two outlets to 36 work areas for a total of 72 cables or 'drops' and the zone topology scenario provided two outlets at 36 work areas and 72 connection points in a zone enclosure, plus an additional 24 cables pulled to the zone enclosure to accommodate future expansion.

To establish a baseline, Siemon first calculated the material and installation costs for the category 5e UTP, category 6 UTP, category 6A UTP, category 6A shielded and category 7A shielded traditional (72 drops) and zone (96 drops to the zone enclosure and 72 drops to the work area) cabling designs, and plotted the results shown in Figure 1. Since zone cabling is commonly deployed in the ceiling where air-handling spaces are prevalent, media costs were derived using plenum rated materials where applicable. Not surprisingly, the total cost for the zone cabling design is higher than the cost for the traditional design, because there is additional connectivity in each channel and some precabling between the TR and zone enclosure is included for future connections.
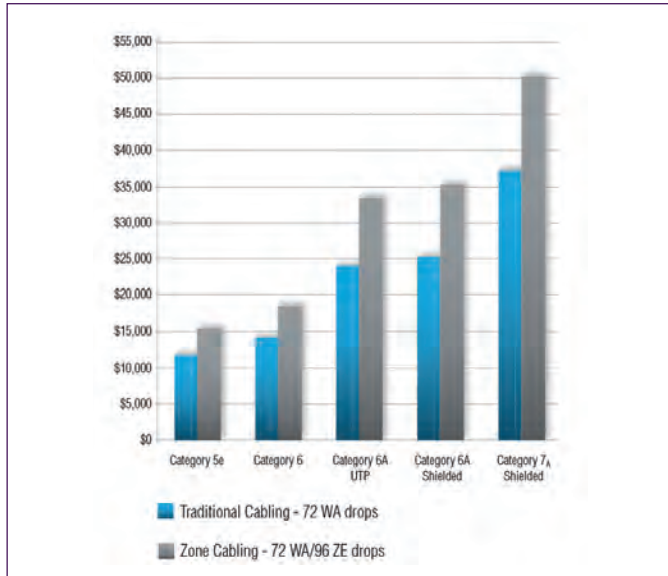
Figure 1: Installation and materials costs (CAPEX) for traditional and zone cabling scenarios.

Category/Topology	$ Saved per move	$ Saved per add	MAC's Until ROI
Any traditional topology	$0	$0	NO ROI
Zone Category 5e	$144	$128	14 Moves & 17 Adds
Zone Category 6	$163	$146	
Zone Category 6A UTP	$265	$249	
Zone Category 6A Shielded	$282	$266	
Zone Category 7A Shielded	$409	$393	

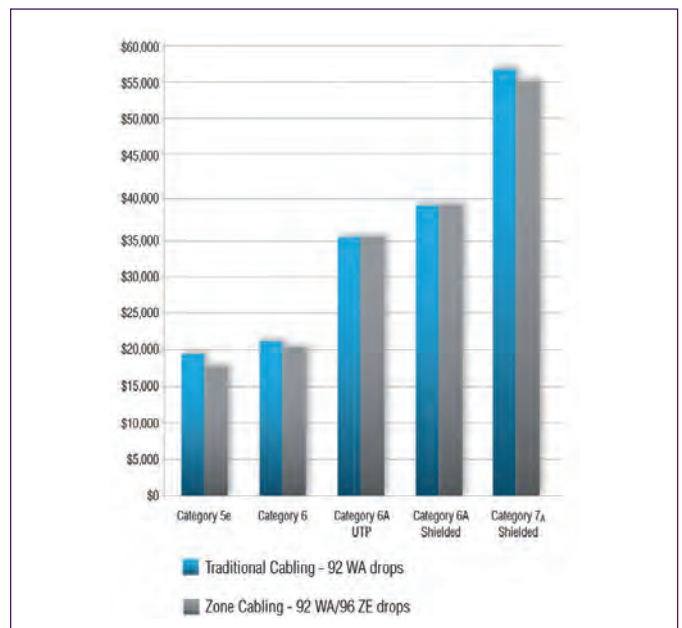Figure 2: Cost of work area MACs and POI for traditional and zone cabling designs.

Figure 3: Combined CAPEX and OPEX costs for traditional and zone cabling scenarios after 16 moves and 20 adds.
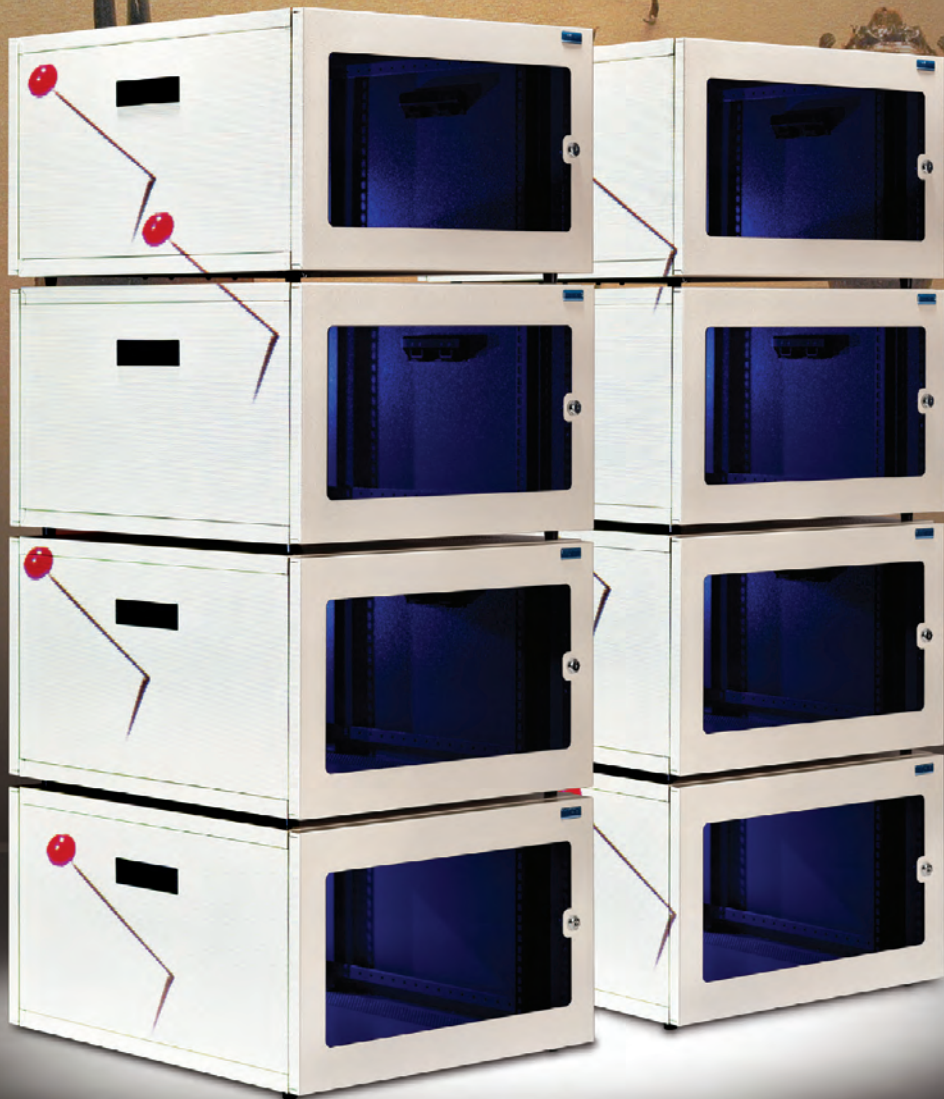
Although additional capital expenditure (CAPEX) is required when zone cabling is initially deployed, a more accurate assessment of the total comparative costs of these solutions must include operating expense (OPEX). MAC work performed on a cabling plant falls into the category of OPEX and it is in this area that the real cost benefits of a zone cabling solution become apparent. For this analysis, a cabling 'add' represents the cost to pull one new cable and a cabling 'move' is the cost to pull one new cable and remove the abandoned cable. The table in Figure 2 depicts Siemon's calculated cost savings per move or add for all of the categories of cabling evaluated and the number of MACs that need to be performed for the combined CAPEX and OPEX cost associated with the traditional cabling design to equal that of the zone cabling design.

This tipping point is often referred to as the time when return on investment (ROI) is achieved for a zone cabling design. Enterprise clients' IT requirements are dynamic and often require rapid floor space reconfiguration. Due to their enhanced ability to support MACs, building owners can realise a significant ROI benefit with their zone cabling systems within two to five years compared to traditional cabling systems. According to the cost analysis, either 14 moves and 17 adds or 16 moves and 20 adds (depending upon cabling type) will realise a full ROI of the additional CAPEX for a zone cabling solution and each MAC above the ROI threshold yields additional OPEX benefits over a traditional cabling design.

Depending on the number of MACs performed, a zone cabling design can pay for itself quickly. Figure 3 shows that the combined CAPEX and OPEX costs for all category zone cabling designs are always lower than for traditional cabling designs after 16 moves and 20 adds are performed, and there is still flexibility to add additional services to the zone cabling design.

Zone cabling ROI

The results of this analysis may be extrapolated and applied to small, medium and large zone cabling installations.

In addition to the obvious cost benefits, deployment of zone cabling provides the following additional benefits:

• Factory pre-terminated and tested trunking cables may be used for expedited installation and reduced labour cost.
• Spare ports in the zone enclosure allow for the rapid addition of new devices and facilitate moves and changes of existing services.

• Pathways are more efficiently utilised throughout the building space.
• Deployment of the structured cabling system is faster and less disruptive.
• New IP devices, such as WAPs, BAS devices, voice/data security devices, audio/video devices, digital signage, etc, are easily integrated into the existing structured cabling system via connections made at the zone enclosure.

Going green

Zone cabling systems are suitable for use in smart and green building designs. Factory pre-terminated trunking cables can be installed for a reduction in labour costs and on-site waste, and the centralised connection location within the zone enclosures allows for more efficient pathway routing throughout the building.

Integrating cabling systems into a zone topology allows customers to further take advantage of cable sharing strategies. Cable sharing supports multiple low-speed, low-pair-count applications operating over one 4-pair cabling system, which results in more efficient cable and pathway utilisation.

Siemon Australia
www.siemon.com.au

Programmable wired and wireless gateway

MultiTech's MultiConnect Conduit programmable gateway allows users to develop, deploy and expand IoT networks.

The product offers an open-development environment and a portfolio of certified cellular technologies for 2G, 3G, 4G-LTE and CDMA.

Users have a broad choice of backhaul options to connect to the internet. Two card slots in the gateway accept MultiConnect mCard modules, allowing for traditional wired technologies such as ethernet and serial cable as well as wireless options such as Semtech's LoRa long-range, low-power technology. A Conduit gateway with a LoRa mCard interface can support duplex communication with thousands of intelligent end points (MultiConnect mDot nodes). Through the gateway, the user can monitor or control sensors and appliances, update firmware and confirm that the asset is fully operational.

The product supports both IBM's Node-RED graphical, drag-and-drop development environment and Linux's open-development environment. Other features include a 400 MHz ARM 9 processor core; 128 Mb of RAM; 256 Mb of flash memory; micro SD memory card slot; and optional 3G and LTE cellular connectivity.

A device management platform, MultiTech DeviceHQ, allows users to deploy and scale pre-developed applications onto their Conduit gateway and connect numerous devices, as well as manage router configurations and device health. The gateway is fully certified and carrier approved globally.

Elecom Electronics Supply
www.elecomes.com

Industrial Modbus gateway

Oring has developed the IDS-M311 Modbus gateway to facilitate integration of serial devices on the edge of industrial networks with the ethernet network.

The IDS-M311 enables communications between the RTU, ASCII and TCP protocols used in factories. Higher management and operating efficiency allows different Modbus equipment with non IP-based interfaces such as DCS, PLC, HMI, electric power load measurement systems and other sensors or measuring devices to communicate and exchange data over ethernet.

The IDS-M311 is a 1-port Modbus gateway, which supports RS232/422/485. In addition to communications between Modbus TCP and Modbus RTU/ASCII, the IDS-M311 is able to support up to 16 TCP masters and 32 requests simultaneously.

With support for up to 31 RTU/ASCII devices, the IDS-M311 can effectively connect a high density of Modbus nodes on the same network. It is a suitable solution to secure serial-to-ethernet data communications in harsh operating industrial environments. It has dual power supplies for redundancy and a light, compact enclosure with DIN rail design.

CrispTech Pty Ltd
www.crisptech.com.au

Fibre inspection scope

The VIS 400D fibre inspection scope measures the acceptability of optical connector end faces, delivering precision and convenience in one easy-to-use, cost-effective package. The scope's features are supported by VeEX test sets, including VePAL UX400, CX300, FX300, MX300 and TX300 series.

The fibre inspection scope provides convenient fibre inspection capabilities for different applications such as checking patch cords and SFPs, checking CFPs before a service test, verifying the workmanship when accepting new cables, fix connectors or pluggable optics.

It can also be connected directly to a PC, laptop, tablet or smartphone via a USB 2.0 connection. This captures high-definition images and has the option of an automated or manual pass/fail result analysis in accordance with IEC 61300-3-35. Its advanced focus system and the PC software voice commands also provide accurate and convenient hands-free use.

Users can quickly analyse critical high-capacity fibre for polish contamination within the four critical zones defined by the IEC standard. Pass/fail analysis can be performed on a Windows-based PC/laptop. It includes LC, SC, 1.25 mm universal and 2.5 mm universal connection tips, a compact carrying case and connector cleaning aids for 500 connectors.

TelecomTest Solutions
www.telecomtest.com.au

DISTANCE OF OPTICAL FIBRE COMMUNICATIONS ALMOST DOUBLED

UCL researchers have demonstrated a new way to process fibre-optic signals that could almost double the distance at which data travels error-free through transatlantic submarine cables, from 3190 to 5890 km.

The scientists improved the transmission distance by undoing the interactions that occur between different optical channels as they travel side by side over an optical cable.

The new method has the potential to reduce the costs of long-distance optical fibre communications, as signals wouldn't need to be electronically boosted on their journey, which is important when the cables are buried underground or at the bottom of the ocean.

As the technique can correct the transmitted data if they are corrupted or distorted on the journey, it could also help to increase the useful capacity of fibres. This is done right at the end of the link, at the receiver, without having to introduce new components within the link itself. Increasing capacity in this way is important as optical fibres carry 99% of all data and demand is rising with increased use of the internet, which can't be matched by the fibres' current capacity, and changing the receivers is far cheaper and easier than re-laying cables.

To cope with this increased demand, more information is being sent using the existing fibre infrastructure with different frequencies of light creating the data signals. The large number of light signals being sent can interact with each other and distort, causing the data to be received with errors.
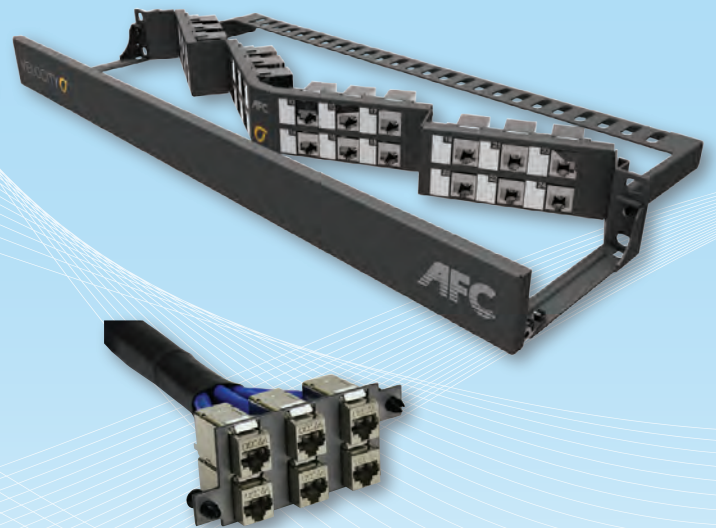
"The challenge is to devise a technique to simultaneously capture a group of optical channels, known as a super-channel, with a single receiver. This allows us to undo the distortion by sending the data channels back on a virtual digital journey at the same time," said Dr Robert Maher (UCL Electronic and Electrical Engineering). The findings of the UCL study, sponsored by the EPSRC, have been published in *Scientific Reports*.

The researchers used a 16 QAM super-channel made of a set of frequencies, which could be coded using amplitude, phase and frequency to create a high-capacity optical signal. The super-channel was then detected using a high-speed super-receiver, and new signal processing techniques developed by the team enabled the reception of all the channels together and without error. The researchers will now test their new method on denser super-channels commonly used in digital cable TV (64 QAM), cable modems (256 QAM) and Ethernet connections (1024 QAM).

"We're excited to report such an important finding that will improve fibre-optic communications. Our method greatly improves the efficiency of transmission of data - almost doubling the transmission distances that can be achieved, with the potential to make significant savings over current state-of-the art commercial systems. One of the biggest global challenges we face is how to maintain communications with demand for the internet booming - overcoming the capacity limits of optical fibre cables is a large part of solving that problem," said study author Professor Polina Bayvel (Electronic & Electrical Engineering), who is Professor of Optical Communications and Networks and director of UNLOC.

CELEBRATING

30
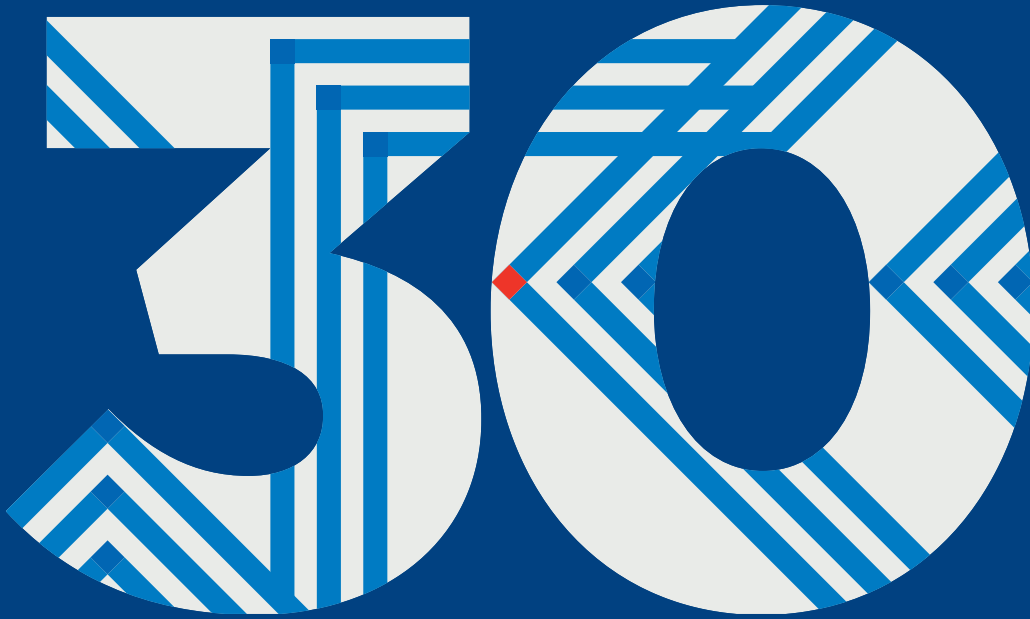
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UNDERSTANDING
HIGH-EFFICIENCY MODE UPSs

Power efficiency is hardly a new concern among data centre operators, but today's constrained budgets and corporate sustainability initiatives have combined to make energy usage minimisation more critical than ever.

For colocation service providers, cloud computing vendors and other operators of multitenant data centres, there is another incentive to decrease energy use: low margins and intense pricing pressures that make cutting costs a competitive necessity.

Companies looking to save money and shrink their environmental impact can dramatically improve power efficiency by deploying high-efficiency mode uninterruptible power supplies (UPSs). As the name implies, under normal conditions a high-efficiency mode UPS operates in a highly efficient energy-saver mode. If power conditions fall outside predetermined limits, however, the UPS automatically and immediately switches to double-conversion mode. Later, when power quality returns to acceptable levels, the UPS automatically transitions back into energy saver mode.

In older high-efficiency mode UPSs, transition times between energy-saver and double-conversion modes were sometimes lengthy enough to jeopardise data centre reliability. These days, UPS products are more sophisticated, capable of completing transfers in two milliseconds or less. As a result, deploying the latest high-efficiency mode UPSs empowers companies to decrease power consumption without weakening reliability.

Calculating high-efficiency mode UPS ROI

The newest double-conversion UPSs are often more than 93% efficient when fully loaded, but may deliver as little as 86 to 89% efficiency at the lighter loads commonly encountered in data centres. High-efficiency mode UPSs, by contrast, are up to 99% efficient when running in energy-saver mode and they maintain high efficiency even at light loads. As the table shows, this small difference quickly adds up to significant savings.

While prices on high-efficiency mode UPSs vary widely, the potential for substantial savings should deliver 100% return on investment within two to three years in most cases.

Possible utility incentives for energy-efficient power systems in the data centre would reduce the capital cost of the UPS and improve the ROI payback period.

Capabilities to look for in a high-efficiency mode UPS

In addition to a transition time of less than two milliseconds between energy-saver and double-conversion modes, and high-efficiency regardless of load, the major capabilities that will help to deliver a higher ROI include:

Robust surge suppression: Some data centre managers question the ability of high-efficiency mode UPSs to suppress the kind of extreme power surges produced by lightning strikes. In truth, well-designed high-efficiency mode UPSs feature the same input and output capacitors that double-conversion models use and are therefore every bit as effective at limiting the impact of voltage spikes.

Base conditions		
Electricity rate		$.0.11 per kW-hr
Critical load		260 kW
Cooling multiplier[1]		0.50
Power calculations		
	Legacy UPS	High-efficiency mode UPS
Efficiency	93%	99%
Critical load	360.0 kW	360.0 kW
UPS losses	25.2 kW	3.6 kW
Cooling	19.6 kW	181.8 kW
Total power[2]	577.8 kW	545.4kW
Annual energy costs[3]	$556,768	$525,547
Annual energy savings		**$31,221**

[1] kW of cooling required per kW of power used or lost
[2] (Critical load) + (UPS losses) + (Cooling)
[3] (Total power) x (electricity rate) x (24 hours) x (365 days)

Efficient electromechanical component utilisation: Well-made high-efficiency mode UPSs utilise electromechanical components in a manner that increases their reliability. For example, they extend the lifespan of their fans by switching them on only during heat-intensive processes such as charging batteries.

Similarly, when operating in energy-saver mode, advanced high-efficiency mode UPSs leave critical mechanical components like contactors in a closed state. This results in two important reliability advantages. First, contactors experience significantly less electrical and thermal stress when closed, so they're less likely to malfunction. Second, a contactor that's already closed is incapable of failing to close during abnormal power conditions, so it's guaranteed to perform as intended when needed most.

Ability to correct load harmonics when in high-efficiency mode: The UPS should be able to utilise its power conversion circuitry to cancel undesirable load harmonics that could appear on the UPS input while operating in high-efficiency mode. This harmonic mitigation prohibits voltage distortion being reflected onto the site electrical system. This may be more desirable in large systems, although it will reduce efficiency slightly.

Fault discrimination: The high-efficiency mode UPS should be capable of supporting the IT load if a fault occurs. Faults upstream of the UPS require a different reaction to those downstream and if the UPS cannot discriminate between these, it may drop the load. Therefore, the UPS must detect the location of the fault and react appropriately to protect the IT load under any fault scenario.

Secure remote operation: It is important for the high-efficiency mode UPS to be capable of automatically switching between double-conversion and high-efficiency modes, even when operators are not present. If power conditions degrade overnight or during the weekend, for example, the UPS will be able to switch to double-conversion mode on its own and switch back again unassisted when power quality improves.

Remote access capabilities: The most advanced high-efficiency mode UPSs come with secure remote access capabilities that allow operators to change modes manually over the internet.

With any new data centre purchase, operators need to know that their funds will result in a quick and significant payback. They also need to know that this rapid ROI won't come at the expense of lower reliability. As the calculations above show, a properly equipped high-efficiency mode UPS pays for itself in as little as two years without reducing availability. As an additional benefit, it also produces substantial environmental benefits.

As a result, organisations eager to cut costs while preserving uptime should carefully consider replacing legacy double-conversion UPS hardware with more modern and efficient high-efficiency mode devices.

Eaton Industries Pty Ltd
www.eatonelectric.com.au

COMMS +
DATA

Captive plug ring

B&R's patented split captive ring design allows easy removal of plugs without the hassle and waste of cutting power cords.

Captive plugs are a mainstay in data rooms and data centres throughout the world. Secure power cables help ensure that equipment does not lose power due to accidental disconnection. Typically, if you have a basic 15 A input lead on a power distribution unit and want a captive plug, you need to remove the lead and place the captive ring onto the cable before rewiring.

B&R's new split captive plug ring solves this problem with a two-piece design that allows the user to remove without cutting leads. The design eliminates expensive rewiring costs as well as adding security to basic extension cords. For 10 and 15 A connections, the captive ring is a plastic component that needs to be put onto the input cable prior to wiring.

The plug ring will screw onto typical IP66 sockets similar to the 56 series. The clear design allows you to see if the plug has a good connection.

B&R Enclosures Pty Ltd

www.brenclosures.com.au

Fusion splicer

The Fujikura FSM-21S from AFC is a fusion splicer suitable for advanced FTTx and LAN applications.

The device expands on Fujikura's line-up of fusion splicers and uses active v-groove alignment technology. It has a high-contrast 12 cm display and weighs 1140 g with the battery.

The product provides technicians with 200 splice and heat cycles, while its compact design ensures it is portable for field use.

The device features a long-life electrode providing 3000 splices and is FUSE-Connect compatible. It also comes with a ruggedised transit case/workstation.

AFC Group Pty Ltd
www.afcgroup.com.au

Multiple input/output channel multiplexer

The EOTec 2000 Multi-Node MX Multiplexer from Ultra Electronics is designed to transmit up to 16 input channels.

The device has unlimited output channels from 2 nodes up to 256 nodes over a pair of fibre-optic cables with input/output module selections that include 4-20 mA, 0-10 VDC and contact closure.

The multiplexer supports multiple nodes, so users can build daisy chain or self-healing ring topologies, which provide fault tolerance and good network reliability.

The base unit connects directly to the fibre-optic cable via small form-factor pluggable (SFP) transceivers and provides visual indicators for power, global alarm and module status as well as the fibre link status.

Input/output configuration is derived via a one-time dip-switch configuration with power supplied through redundant external 24 VDC power supply terminals.

Applications include remote data acquisition, emissions monitoring, data and signal transmission - in lightning-prone locations, hazardous areas, tank gauging and conveyors.

Ethernet Australia
www.ethernetaustralia.com.au

Rack systems

The Altronics 19″ rack systems range is designed for audio, data and communications installations.

The systems are available in three series - freestanding 16 to 42RU, wall-mount swing frame 6 to 18RU and a customised system, which allows the option of wall mounting or freestanding in sizes from 6 to 22RU.

Each model is built from 1.5 mm black powder-coated steel and is supplied with framing, side panels, and front and rear doors (where applicable). All panels are lockable, offering site security from unwanted tampering with equipment.

Each design includes plenty of ventilation to keep equipment running cool at all times. All units are supplied flat pack and are quick to assemble. A full range of accessories such as shelves, hardware and patch panels is also available from Altronics.

Altronic Distributors Pty Ltd
www.altronics.com.au

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ALLIED TELESIS ANNOUNCES NEW WIRELESS DIVISION

Allied Telesis has announced the formation of Allied Telesis Wireless, a division of Allied Telesis Group, following the acquisition of Extricom. The new entity incorporates the former Extricom team and the assets acquired: intellectual property, advanced technologies, product portfolio and its established customer base. Allied Telesis Wireless was created to further enhance the group's existing converged wired and wireless solutions portfolio.

This Extricom product portfolio has been deployed in challenging environments such as large public venues, warehouse/logistics/industrial manufacturing facilities, schools and hospitals. The Extricom Channel Blanket technology will enhance Allied Telesis wireless infrastructure solutions with wire-like reliability, high throughput, seamless mobility, unparalleled noise immunity, and easier installation and maintenance than market alternatives. Complementing the existing Allied Telesis Unified Wireless Controller (UWC) and TQ Series access point portfolio, the Extricom product line will deliver high-performance voice, data, video and location services with uninterrupted roaming in the most challenging high-density environments.

"The formation of Allied Telesis Wireless, and the launch of the Extricom product line, will allow Allied Telesis to offer an unmatched, complete portfolio of wireless and wired LAN solutions to our customers. This important development marks our ongoing commitment to broadening our access portfolio by enhancing it with a strong wireless access offering, solidifying Allied Telesis leadership in the wireline networking infrastructure sector," said Seiichiro Sato, Allied Telesis director of global product marketing.

CHINESE COMPANY JOINS ZIGBEE BOARD TO PROMOTE THE IoT

The ZigBee Alliance, a non-profit association of organisations creating open, global standards that define the Internet of Things (IoT) for use in consumer, commercial and industrial applications, has announced that Wulian is the newest member of its board of directors, joining the alliance at the 'Promoter' level.

Wulian is a networking equipment and solutions provider based in China. The company provides sensors, controls and networking solutions for a number of industries. "Wulian believes that ZigBee standards are the key to the growth of the IoT, and we are eager to play an active role in growth of those standards. This place on the ZigBee Alliance board of directors will allow us to promote the spread of ZigBee's open, global standards around the world," said Jaken ZHU, president and founder of Wulian.

Wulian joins NXP, Comcast Cable, Freescale Semiconductor Inc., Itron Inc., Kroger, Landis+Gyr, Legrand Group, Philips, Schneider Electric, Silicon Labs and Texas Instruments on the ZigBee Alliance board of directors.

"The Wulian Group and ZigBee Alliance members have established a shared view of the vast opportunity in the China market for the IoT. I am pleased that Wulian has committed to join alliance members in upholding ZigBee's open, global standards in China and around the world," said Tobin Richardson, president and CEO of the ZigBee Alliance.

"Their strong endorsement indicates the requirement for open and global standards in the IoT, including support for China's 5-year plan. I join the rest of the members in welcoming their commitment to the smart home and other quickly growing sectors."

© tbagjuiani/Dollar Photo Club

HILLS AND TYCO SIGN DISTRIBUTION DEAL

Hills has signed an agreement with Tyco Security Products (TSP) to distribute a range of access control, video and selected intrusion products in Australia and New Zealand.

"We have successfully built a great relationship with Tyco in New Zealand and this deal is a fantastic opportunity to extend Tyco's product offering into Australia," said Hills Group Managing Director and Chief Executive Officer Ted Pretty.

"Hills will have the right to distribute Tyco's access control products from Software House, CEM and Kantech, video management products from American Dynamics and Exacq, and intrusion products from Visonic."

Tyco Security Products will showcase its feature brands at the Hills Technology Solutions Expo on 11 and 12 March 2015, which will allow Hills' key customers to engage directly with the Tyco team. Hills will replace TSP's existing distribution arrangements on a phased basis. Products are expected to be available from April through Hills' national branch network in line with Hills' usual purchasing practices.

Fibre channel test module

The VeEX UX400 16G test module supports 1, 2, 4, 8, 10 and 16G fibre channel testing. The module can be housed in the UX400 platform for portable, field test applications or it can be mounted into a UX400R 19″ rackmount chassis for R&D lab or production environments where battery operation or display is not required.

When equipped with dual port test option, up to two users can configure and run separate and simultaneous tests at different rates.

The device provides wire-speed traffic generation at commercially available FC rates in a single, multi-rate test module and supports FC-2 BER testing for link integrity measurements. This module also supports latency and buffer-to-buffer credit measurements for SAN installation, commissioning and troubleshooting tasks.

The module supports FC-1 test patterns - CJTPAT, CRPAT, CSPAT and FC-2 test patterns - ITU-T PRBS, 211-1, 215-1, 223-1 and 231-1.

Other features include: terminate and loopback test modes; FC-0, FC-1 and FC-2 Layer testing as well as RFC2544 compliance testing; layer 1 and 2 loopbacks including FC-2 smart loop mode; full line-rate traffic generation/analysis at 1.0625, 2.125, 4.25, 8.5, 10.52 and 14.025 Gbps; frame length configuration up to 2148 bytes; performance metrics such as delay, packet jitter and sequencing; packet capture and decode of error events with selectable triggers; and service disruption measurement.

TelecomTest Solutions

www.telecomtest.com.au

Automatic power transfer switch for network equipment

Data centres require power source redundancy in order to ensure that critical services are always up and running. Many modern devices include internal redundant power supplies with primary and secondary power inlets. However, most legacy devices can only be powered from a single power source. The PTS-4MM20-2R automatic power transfer switch provides redundant AC power switching for single corded devices.

The PTS-4MM20-2R provides two IEC-20 (20 A) power inlets allowing the unit to automatically switch to a secondary, back-up power source in the event that the primary source fails. The device features four IEC-C19 (16 A) power outlets providing constant power to critical infrastructure. The device is the latest addition to the PTC Series which also includes the PTS-4EE15-2F providing four IEC-C13 (10 A) power outlets, the PTS-9CM20-2 providing nine outlets and the PTS-14CM20-2V providing 14 outlets. All models provide fast, reliable asynchronous power switching; LED indicators that show the active power source are easy to install and require minimal rack space.

Automatic transfer switches provide a simple, cost-effective way to add power fallback capabilities and power redundancy to single power inlet computing and network devices.

Interworld Electronics and Computer Industries

www.ieci.com.au

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NYC COUNTERFEIT CABLE CASE

The widespread proliferation of counterfeit and non-compliant cable in the information and communications technologies (ICT) industry is illustrated in the Communications Cable and Connectivity Association's (CCCA) latest case study of a New York City contractor's encounter.

In this case study, the CCCA highlights the counterfeit problem, which is growing due to lack of awareness and the lure of lower prices, in order to inform and warn unsuspecting purchasers.

In the situation outlined in this case, counterfeiters used two out of those three most common counterfeiting tactics. First, the cable legend included an unauthorised counterfeit certification mark from a recognised testing agency, plus the cable was a type that is non-compliant for use as communications cable. The anti-counterfeit section of the CCCA website includes definitions of the three most common tactics.

When Mark Rewers, vice president of operations for BN Systems, Inc, a New York-based contractor, was informed by his customer that they had purchased some low-cost twisted-pair category cable they intended to provide for the project, he wasn't immediately suspicious, as he assumed they had purchased the cable from an industry distributor. That soon changed when it was time to install the cable.

"Our crews showed up to do the prep work and realised that the cable the customer was supplying was not the well-known brand that had been specified for installation and warranty," said Rewers.

"We examined the box and had never heard of the brand before. We couldn't find any specifications or verification of the UL number. After a little more research, we realised that the cable was constructed with copper-clad aluminium [CCA] conductors, which is actually banned in New York City for use as communications cable."

The CCA cable does not comply with the Australian telecommunications standards either and cannot be used as a customer cable.

Rewers informed his customer that the cable they had purchased did not meet code and that they would not receive a warranty. At first the customer was not swayed, convinced that the apparently authentic UL mark meant that the cable was listed.

"Our cable rep found several articles about copper-clad aluminium cable from the CCCA and another online article from a different source indicating that the brand in question was under investigation for UL fraud," said Rewers.

"We provided the information to the customer, and once it reached higher level executives within the company, the customer decided not to use the cable they had purchased.

"They bought the non-compliant cable, couldn't use it and couldn't sell it. They ultimately lost $30,000. Thankfully, we ended up installing the originally specified cable from a reputable manufacturer - everything turned out well and the warranty is in place," said Rewers.

"My word of warning to others is to not accept any substitute unless you are 100% sure it is UL listed. And I personally will no longer let my customers buy their own cable."

The CCCA is a non-profit group of leading cabling manufacturers, distributors and material suppliers, whose anti-counterfeiting efforts include close collaboration with independent testing agencies, US Customs and law enforcement. For more information on the counterfeit issue, visit the CCCA website at www.cccassoc.org.

Communications Cable and Connectivity Association
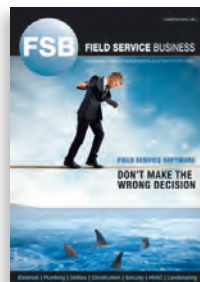*www.cccassoc.org/*

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STANDARDS

NEW CONNECTIVITY STANDARD

The HDBaseT Alliance, the cross-industry group tasked with promoting and advancing HDBaseT standard, and The Institute of Electrical and Electronics Engineers (IEEE) have announced the HDBaseT standard has been approved by the IEEE Standards Association (IEEE-SA) Standards Board for adoption as part of the organisation's standard portfolio.

HDBaseT is a connectivity standard for whole-home and commercial distribution of uncompressed HD multimedia content. It is a technology for long-distance ultrahigh-definition distribution of digital media, with hundreds of HDBaseT-certified products currently commercialised. It will complement IEEE-SA's portfolio of market-proven communications and technology standards. The HDBaseT standard will become IEEE 1911 standard, once the adoption process is complete.

HDBaseT enables all-in-one transmission of ultrahigh-definition video through a single 100 m/328 ft Cat6 cable, delivering uncompressed 4K video, audio, USB, ethernet, control signals and up to 100 watts of power. HDBaseT simplifies cabling, enhances ease of use and accelerates deployment of ultrahigh-definition connectivity solutions. The cost-effective LAN infrastructure and power transmission support also help reduce and simplify installation and electrical costs.

"IEEE is dedicated to delivering robust open standards that serve as a catalyst for continued technology and market innovation. IEEE's adoption of the HDBaseT technology through its consensus-driven process will help advance the move to ultrahigh-definition connectivity," said Konstantinos Karachalios, managing director, IEEE-SA.

"This collaboration with the IEEE is a major milestone for HDBaseT and for the Alliance, as the IEEE is one of the leading standards organisations in the world," said Ariel Sobelman, president, HDBaseT Alliance.

"The adoption by IEEE will help enhance HDBaseT's impact and influence in today's connected world. We will be working together to further develop the HDBaseT technology for the benefit of HDBaseT's and IEEE's enormous constituency."

The HDBaseT Alliance will continue to offer its members the HDBaseT branding and certification necessary for commercialisation of the technology.

IEEE Communications Society is the sponsor of IEEE P1911 standards projects.

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