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Informing the electrical industry for **140** years

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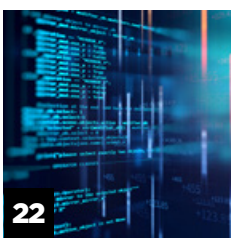

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REGULARS

FEATURES

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EDITOR'S COMMENT

Greetings Reviewers, in case you hadn't noticed ER has had a wee bit of a makeover. To accompany our snazzy new look, we have taken the liberty of conducting a reader's survey to find out exactly what it is (and isn't) you lovely lot want to see within our publications.

Wanting to deliver you the best content possible, we will be gathering up your answers and consequently tweaking our features list to be more in line with what it is you want to see. Also, new for 2020 we will be introducing two brand-new regular features, so if you haven't already, sign up to our newsletter where all will be revealed in the coming weeks.

Last but not least, entries are now open for our ER Excellence Awards 2020. Entry is free via our website and as always, you've got to be in it to win it. Go on, you know you want to.

Claire Fletcher, Editor

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News

ECS Registered Electrician reaches 20,000 milestone

Over 20,000 ECS cardholders have now signed up for ECS Registered Electrician status. Initially launched in October 2017, when BS7671:2008 (the 17th Edition of the Wiring Regulations) were in place, the number of cardholders achieving the recently introduced BS7671:2018 (the 18th Edition) has steadily grown. Now over half of all ECS Registered Electricians hold the 18th Edition qualification, with more upgrading from 17th to 18th each month.

The JIB established ECS Registered Electrician status to recognise those who are not only working at the industry-recognised Level 3 standard, but also have the current edition of the Wiring Regulations.

Registered Electrician cardholders can gain an endorsement for their professionalism and skills, stand out amongst their peers and get a valuable boost to their status and credibility. For electrical contractors, it's an opportunity to demonstrate that their electrical workforce is up-to-date on the latest industry technology developments and is committed to maintaining this level of professionalism.

IET calls for industry input on EV charging amendment

The Institution of Engineering and Technology (IET) is calling on the electrical industry to have its say on Section 722 – Electrical Vehicle Charging Installations – as part of Amendment 1 of the IET Wiring Regulations.

The amendment follows advances in technology enabling a more practical solution for electric vehicle charging installations. The amendment, which is due to publish in early 2020, will be free to view on the IET and BSI websites, and will form part of a consolidated version of BS 7671 following the next major amendment, expected in 2022.

Dan Palmer, associate director of committees at BSI said, "The UK is leading the electric revolution with ambitious plans to deliver cleaner air and a better environment by committing to 50% of new car sales to be ultra-low emission by 2030.

"The built environment and electrical infrastructure is the first step on the journey to making these green plans possible. BS 7671 Requirements for Electrical Installations (the IET Wiring Regulations) has been updated in Section 722 to make the installation of electric charging points quicker, easier and less costly. It will help to make electric charging common-sight on UK streets and fuel the growth of the electric car usage."

CLIMATE RESEARCHERS LAUNCH CARBON TARGET ONLINE TOOL

Researchers are using the latest climate science to help local authorities calculate their carbon budget and cut down on emissions.

Scientists from The University of Manchester and the Tyndall Centre for Climate Change Research have developed and launched an online tool which is now being used by local authorities including Manchester to understand their role in meeting the climate change objectives set by the UN.

The tool allows users to calculate a carbon budget for any UK administrative area larger than local authority scale, and set climate change targets which meet the objectives of the United Nations Paris Agreement on Climate Change.

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EIC OFFERS ADDICTION SUPPORT

The Electrical Industries Charity (EIC) is supporting people in the industry struggling with addiction with its Employee Assistance Programme (EAP), funded by the powerLottery.

Through EAP, the charity is able to help people within the electrical sector who are facing addictions or are living with a co-occurring disorder on their path to recovery by offering support services, including complex case management, financial and practical assistance and counselling.

If you or someone you know is struggling to overcome an addiction and requires support, contact the EIC support team on support@electricalcharity.org or 0800 652 1618.

Engineering sector facing mental health crisis, says study

A new report from EqualEngineers has found that one in five engineers has lost a work colleague to suicide, and over a fifth (22.5%) have considered suicide or self-harm – with men 3.5 times more likely to have done so.

The statistics to come from the Masculinity in Engineering survey, which surveyed over 800 engineers in the UK. One respondent reported that, "Masculinity is a prison and a prize, strictly required of men but still more heavily penalised in women."

Mark McBride-Wright, founder and managing director of EqualEngineers said, "Engineering is a traditionally male, white dominated sector. It can be very lonely, if you feel even a little bit 'different' to the supposed 'norm'.

"The Masculinity in Engineering Report shows that inclusivity in the workplace is a health and safety issue. Not being able to be open about who you are, because of attitudes and lack of diversity around you can lead to mental health issues and decreased wellbeing.

"We need to create a culture where men can be vulnerable and can understand their own diversity story. We do not have this in our male-majority industry, and we need to work to bring down the psychological barriers preventing it."

SELECT welcomes 'no deal' CPR guidance

SELECT has welcomed new advice that confirms how Construction Products Regulation (CPR) could be affected by a 'no deal' Brexit.

The UK government has announced that if the UK leaves the European Union (EU) without a deal on October 31, EU CPR will be retained and a UK-based system will operate, with identical European harmonised standards and UK designated standards.

Notified UK bodies currently operating under CPR will be granted 'approved body' status and listed on a new database. Where such a body has undertaken conformity assessment activity against UK designated standards, the manufacturer must affix a UKCA marking.

Goods affixed with a compliant CE marking on the UK market before exit day will be able to continue to circulate in the UK.

CATHY NEWMAN TO HOST SOE WOMEN IN ENGINEERING EVENT

Channel Four News presenter Cathy Newman is set host an SOE Women in Engineering event. Panellists from across the engineering world will convene at Cathedral View in Victoria on November 14. The panel will discuss the role of schools in promoting positive messages about modern engineering and career opportunities within engineering-related sectors, with a view to break down the barriers preventing entry for young women.


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GOSSAGE

What is in a name?

Just three months after the London Stock Exchange (LSE) had boldly relabelled all oil, gas and coal firms pejoratively as "non-renewables", it has suddenly ditched that entirely accurate label.

Instead the listings are now back to the mainstream, "oil, gas and coal" description, with renewable electricity now reclassified, patronisingly, just as "alternative energy."

The news comes as a blow to many in the green electricity industry, who had cheered the adoption of "non-renewable" labelling, thus emphasising that renewable technologies such as wind and solar should be considered as the future mainstream electricity mix.

Apparently, this reversal came following "feedback from market participants," according to the official statement. It is well-known that the LSE has long been bidding to win the listing of Saudi Aramco ahead of its Initial Public Offering (IPO). This is reckoned to be the largest such deal yet this century.

My guess is that the "market participants" offering this "feedback" were largely drawn from those finance houses salivating at the prospect of making a killing with this fossil fuel launch. The last thing that they wanted to see was any hint that the days of such fuels are now numbered.

Let's hear it for wind power

Just as Extinction Rebellion were marching through Central London, decrying the lack of action to combat climate change, something quietly momentous was happening in the wonderful world of electricity.

In the latest round of auctions for UK wind power contracts, the operators of planned windfarms on the Dogger Bank in the North Sea agreed to build five gigawatts of capacity costing just £39.65 per megawatt hour.

Why is that so exciting? Because it represents a 30% fall in wind power prices in just two years. And a mere quarter of the price demanded by wind companies earlier in the decade. Crucially it is also lower than the current wholesale price of electricity (around £44 per MWh) – which means that such turbines should no longer require any subsidy at all.

Scale, engineering progress, human ingenuity and investor confidence have between them driven costs down, Britain is emerging as the world leader in installing this vital renewable electricity source. And, the market share for electricity produced by offshore wind is set shortly to become 25%. Definitely something to shout about.

Loathsome is as loathsome does

Andrea Leadsom is the new(ish) Business Secretary. Which means that, amongst other things, she oversees energy policy in the UK under Al "Boris" Johnson. For a few months when David Cameron was Prime Minister, she was the junior energy minister in charge. One consistent line she has taken is to be strenuously in favour of gas and gas-fired power stations.

As Business Secretary, she has just taken the most unusual step of overturning a ruling from the government-appointed Planning Inspectorate. Mrs Loathsome (as Private Eye unkindly call her) has approved four new gas-fired turbines at the Drax power station in Yorkshire.

The Planning Inspectorate had taken Mrs L at her word when she had earlier maintained that the UK economy would contain net zero carbon emissions by 2050, and had vetoed Drax's proposals on climate grounds. Her decision to totally ignore her own Inspectorate suggests the government is not serious in her pledge, as the plant is estimated to be producing as much as 75% of all the permissible CO2 projected for the electricity sector by that point.

But Mrs Loathsome has form in trying to face two ways. When a junior minister for energy, she made headlines by writing a blog on the government website in 2014, arguing that massive amounts of gas fracking was essential because of the continuing increase in demand for natural gas in Britain. Somehow or other she omitted to notice that gas sales had fallen by almost one-third over the previous decade,and demand remains low today.

Yet another politician who seems to believe that, if she closes her eyes to the facts for long enough, the facts will miraculously align with her prejudices. But they won't, Mrs L. They won't.

Putting your own house in order

More than 1,000 United Nations employees have called for the global body to reduce its carbon footprint, including through curbs on their own diplomatic perks like business class flights and travel handouts, plus cutting back on the amount of wasteful heating and/or air conditioning in their own buildings.

Reformers say in the letter addressed to Secretary-General António Guterres that, in addition to hosting high profile climate change summits, the UN needs more radical change to get its own house in order.

The letter was organised by a group called Young UN, an internal network committed to ensuring the organisation embodies the principles for which it stands. The UN emitted 1.86 Mt CO2e in 2017, its own data shows. That equates to a carbon footprint larger than several of its member states, including Malta and Liberia.

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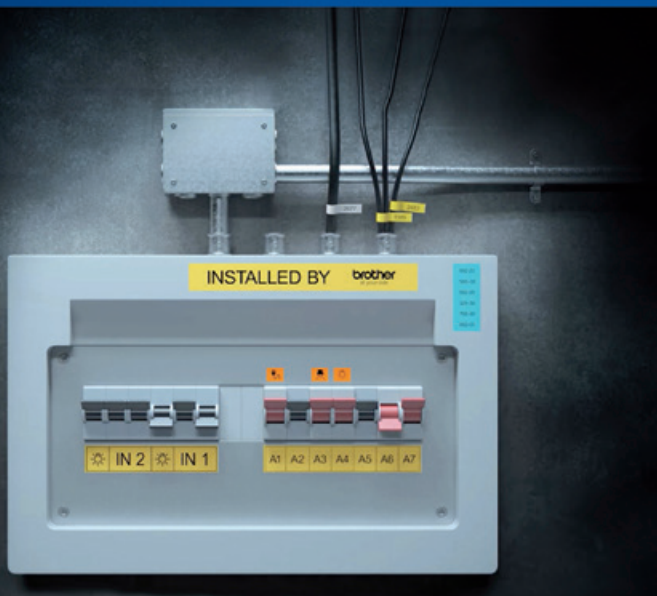

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The great outdoors

Smart lighting is perceived as a feature of the indoor experience, but now it's set to break new ground outdoors. **Martin Allcock,** CP Electronics' OEM sales manager, looks at how new technology is helping create the smart cities of tomorrow.

We are currently living in an age of 'smart' technology. Our TVs are connected to the internet; ovens, washing machines, dishwashers can all be controlled through Wi-Fi now, and smartphones are fast becoming the controls to everything. All this technology gives us greater command and better connectivity between the things in our lives, as well as helping reduce costs through increased efficiencies.

With such advantages, smart technologies have applications well beyond just the home. There's increasing chatter around the notion of the 'smart city network', using sensors and connected systems to monitor everything from air pollution and noise through to traffic control.

Unsurprisingly, lighting has been identified as an important strand of the smart technology trend with sensors enabling buildings to respond to human presence, helping save money while also ensuring comfort and safety.

Taking the indoors outdoors

Used to illuminate everything from parks, pathways and building perimeters to retail parks and warehouse bays, lighting offers a sense of security as well as acting as a deterrent to criminal activity.

However, as this lighting is typically left on during hours of darkness – even when nobody is around – the energy costs can be significant. It's little wonder therefore that those under financial pressures – including local authorities and retailers – are looking to make savings without compromising security.

Indeed, in April 2019, Hampshire County Council made the move to switch lights off on certain residential streets for three hours a night, between 1am and 4am, equating to £230,000 of energy cost savings per year.

Yet, by turning lights off on some streets and not others, it brings about security risks. Crime rates could potentially go up in the areas where lights have been switched off, and arguably, residents won't feel as comfortable or as confident as before.

Smart outdoor lighting provides a timely solution, with recent advances meaning that outdoor lighting can be deployed more effectively and efficiently than before.

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Connecting to multiple benefits

As with indoor lighting solutions, outdoor solutions rely on clever controls including passive infrared sensors (PIRs) which can be added to luminaires. These detect movement and light up only when people are nearby.

They can be programmed to switch off, or to dim down when not needed. They can also be connected to each other and work in relay, using motion detection to detect movement and lighting up the luminaires in front of, above and behind the person, for comfort and safety reasons. Unlike conventional streetlights which can only be set to come on at specific times, digital sensors will react to light at dusk and dawn, making them more precise and efficient.

Importantly, information can be gathered and shared via building management systems to improve knowledge and performance. For the public, this means higher levels of safety and comfort. For owners, it means reduced energy costs and improved data gathering to drive further efficiencies in maintenance.

While in basic terms the principles of outdoor lighting are similar to indoor systems, there are key differences – not least in the harsher outside environment, with dust and damp being key considerations. The new breed of smart lighting technology is addressing these issues with many sensors rated as IP66 and IK08, guaranteeing class-leading protection against impact and the ingress of water and dust.

Of course, one of the most critical considerations for the owners and managers of outdoor lighting, whether it is the local authorities or private building owners and investors, is the return on investment. To this end, the solutions being specified and invested in need to be future-proofed, and not a passing trend, and the lighting industry has been working hard to meet this demand.

"Solutions being specified and invested in need to be future-proofed, and not a passing trend, and the lighting industry has been working hard to meet this demand"

A new 'plug and play' standard

One of the world's most respected manufacturers, Signify – formerly Philips Lighting – has established a new industry standard for outdoor lighting control. Designed to pave the way to a smart city network, the SR driver accommodates technologies, components and gateways from SR partners such as CP Electronics, thereby increasing choice, minimising risk and ensuring a genuinely scalable approach for specifiers.

In the words of Dervan Alleyne, Signify's OEM commercial director for the UK and Ireland, "If you're using SR today, you're future proofing for where the industry is heading, such as multiple sensing and the demand for data."

At the heart of each system lies an SR certified driver, such as Philips' own Xitanium digital SR LED driver. This is a version of DALI (Digital Addressable Lighting Interface), the widely accepted standard for the lighting industry. This driver essentially powers each sensor in its network, eliminating the need for a wired supply for each one.

The choice of sensor will be driven by the exact nature of the application and the desired benefits. For example, specifiers will need to consider whether the outdoor lighting or street lights operate as standalone units, or if they work together. Another factor is whether dimming is a requirement, or if they simply need to trigger when certain levels of light have been achieved.

Other key matters are the height of the luminaire, the radius of detection, and the previously mentioned resistance to environmental factors.

Thanks to the growing interest in smart cities, a wide range of externally rated sensors are already available, all compatible with SR drivers, each offering a range of performance parameters. It's certain that innovation will continue to drive advances, giving investors and installers a wealth of choice.

Switching it up for smart cities

The fact is, the smart city is virtually here, and sensors will literally light the way forward. The key, as with all projects, is to ensure that when switching to new solutions, they deliver the benefits required at optimum cost in the area specified.

Lighting up the outdoors will require a unique approach each time, depending on the street or building in question. This will come down to factors such as footfall, costs, the needs of the people, whether it is a high-crime area, environmental issues, and budgets.

However, with the SR platform and a steadily increasing range of technologies, there is a solution that should fit most, if not all needs, that will take us into the next generation of connectivity.

BEG to light up LuxLive with luminous occupancy sensors

BEG Lighting Controls is inviting electrical specifiers to visit the team at LuxLive (stand I4) at the ExCel on November 13-14 for demonstrations of its new ceiling occupancy sensors, which includes LED orientation lights for the first time.

The BEG Luxomat PD2-LED gives engineers the opportunity to offer end-users a product that switches lighting and provides illumination all within a single housing.

The LED orientation lighting is designed as an illuminated ring around the lens of the sensor. After the main light is automatically switched off, the orientation light can be activated for an adjustable time or permanently.

If the light is switched on in a dark room, the occupant's eyes have to suddenly adjust to the light. However, the BEG Luxomat PD2 makes it a much more pleasant environment if the orientation light is already active within the room. The LEDs in the PD2 provide the end-user with the comfort of soft lighting and save energy.

The occupancy sensor has a range of 10m and is available with a variety of options which allow it to adapt to its surroundings in addition to the integrated daylight control. All parameters can be set to suit individual requirements and can be accessed via compatible smartphones through the BEG remote control app.

The range of the BEG Luxomat PD2 series can be extended by connecting to additional slave devices. By combining orientation lighting with automatic lighting control, the end-user enjoys convenience, comfort and energy savings.

BEG sales director for UK and Ireland, Paul Jones says, "We are proud to be having a much bigger presence at this year's LuxLive show and are looking forward to meeting with electrical contractors and showing them some of our latest products, including the PD2 range.

"This product gives us the chance to offer electrical contractors a product with two functions in one and for any size of project. It is ideal for businesses, schools, hospitals, hotels and many more establishments which want a practical lighting solution as well as energy savings.

"The PD2 not only switches lighting but also provides light itself. It is really flexible and provides two ways to activate the main light. It is either activated when motion is detected (full automatic mode) or activation via a wall switch when entering the room (semi-automatic mode).

"BEG continues to push the limits of outstanding lighting system design and the Luxomat PD2 is a further example of how we're continuing to place the lighting needs of the end-user at the heart of everything it does."

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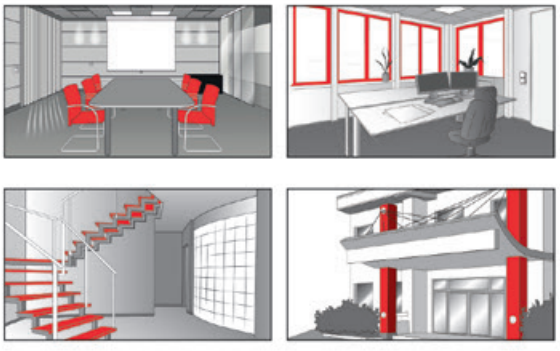

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Shaking up the LED industry

LEDs represent a great opportunity for electrical installers, but we've barely scratched the surface of what the technology can achieve. **Graham Lewis,** sales director at the recently rebranded Red Arrow Electrical Distribution, explains why it's time for a lighting industry shake-up.

"If I'd asked my customers what they wanted, they would have said faster horses." So said Henry Ford – apparently – after he introduced the Ford Model T and revolutionised the transport industry. The quote may be overused (and its origins dubious) but it makes a salient point about innovation: that the best innovators don't just respond to market needs. They offer a way to do things differently.

Yet when it comes to LED, it can sometimes feel as though the lighting industry is presenting customers with 'faster horses', rather than the exciting, innovative technology – with vast potential – that LED really is.

We have come a long way since LEDs first became widely available. Those harsh, bright white downlights of the early noughties have given way to a range of colour, tone and fitting options that have made LED more versatile for domestic and commercial premises. Yet we've barely scratched the surface of what's possible with LED, and that needs to change for the electrical industry to really enjoy the full potential of LED.

Faster horses, same old carriage

Up until now, the lighting industry has been using LEDs as a direct replacement for traditional lighting, like tungsten and halogen. Take an LED GU10: you can remove a traditional GU10 from its fitting and quickly replace it with an LED version. On the surface, it's a cost-efficient way to install a low-energy alternative and save your clients money on energy bills. But it's not really compatible with existing technology – such as TRIAC dimmers – and it's causing complications.

Returning to Ford's adage, we're essentially strapping faster horses to an old carriage. Yes, the horses might have incredible power, but the lumbering old wagon they're attached to can't cope with it. It's slowing them down, and it's making the horses look bad. What people see is something lauded as a brilliant innovation, failing to deliver what was promised – and it makes them frustrated and mistrustful.

Educating on opportunities

In the lighting industry, many electricians have embraced LED out of necessity, not opportunity, and felt let down by the results. While LED has been pushed as the ultimate ecological and economical lighting source, those aforementioned compatibility and performance issues have damaged the technology's reputation.

There are too many stories of LEDs not lasting as long as expected, drawing more power than promised, or causing site call-backs due to flicker. Understandably, this has made installers and consumers alike reluctant to invest more money than necessary in LED – but as with any technology, investment and return often go hand in hand.

As an industry, not enough has been done to educate installers and end-users on exactly what to expect from the type of LEDs they purchase and how performance might be affected by the quality of the components or external factors, such as legacy light fittings. By setting out to change this and make information readily available and easy to understand, we're aiming to revolutionise the LED market and spur greater innovation in the future – but we have a long road ahead.

Understanding the opportunities – and limits – of LED

The smartphone industry has done a great job of illustrating the benefits of their products to their users. They upsell year after year and are effectively at a point where people don't question why they should spend an extra £300 on the latest device. They just know that it will be better. Those brands have created desirability around a functional product based on innovation and trust.

With LED, we're nowhere near this point. Price points are still predominantly the biggest decision-making factor, because we haven't educated installers on what other factors to base their choices on. In turn, they can't educate their clients – and it's costing them opportunities.

While LED has been pushed as the ultimate ecological and economical lighting source, compatibility and performance issues have damaged the technology's reputation

This is especially true in the commercial market. Business owners or facilities managers know that LEDs have a longer life span, will save them money on energy bills and are in many instances required to meet building regulations. Yet the initial outlay is often seen as expensive, even when installing mid to low-range LEDs. In a difficult climate for businesses, persuading a decision-maker to make even more of an investment is always going to be tough.

However, those same businesses are frequently shocked to find that their initial LED spend doesn't last as long as they thought it would. This is why, as part of our rebranding as Red Arrow Electrical Distri-

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bution, we're making vital performance information readily available. To make an educated decision on LED, people need to understand differentiation between makes and models: is it right for that environment? Will the warranty cover the hours per day it will be in use? Is it compatible?

Armed with this knowledge, installers will be able to offer better advice, and their clients will get a better return on their LED investment. It will improve trust and create excitement around LED – and that's without considering the lesser known benefits of the technology.

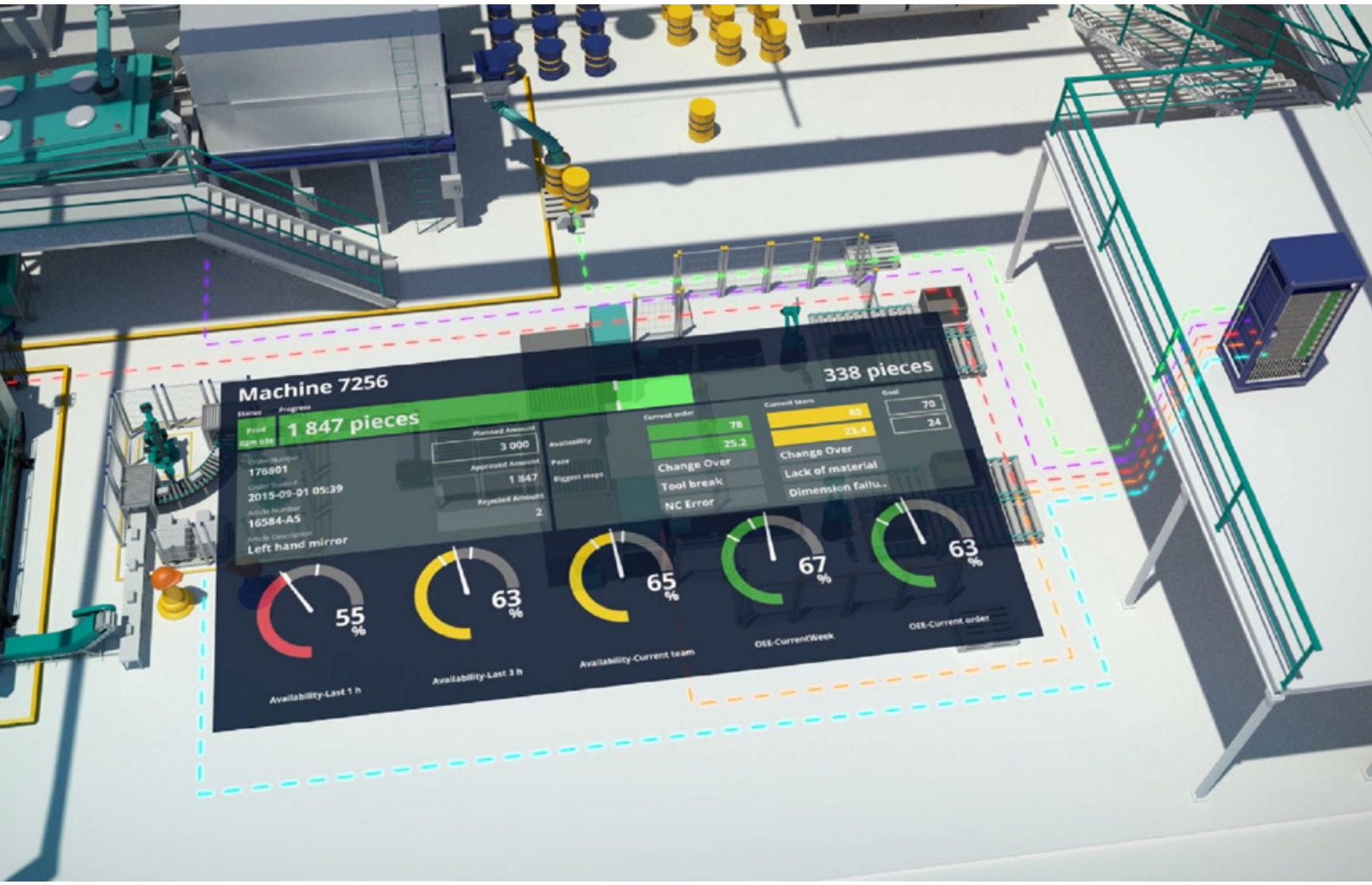
Seeing the bigger picture

An increasing amount of research is being made into the importance of lighting quality, and what it means for our health, productivity and safety. Poor quality lighting – in particular flicker and dim output – can cause eye strain, poor concentration, headaches and even unsafe working practices. In an industrial environment, where awareness and precision are crucial, bad lighting can be downright dangerous. On the other side of this, good quality lighting can improve workforce wellbeing, increase performance and result in better quality manufacturing.

As an industry – from manufacturers like Red Arrow, to the installer and everyone else in between – we need to get better at prioritising LED education, and sharing that knowledge with clients to increase demand in quality LED. Not only will it create opportunities for electrical installers, but it will pave the way for the next phase of LED evolution.

Good quality lighting can improve workforce wellbeing, increase performance and result in better quality manufacturing

It's high time we scrapped our 'faster horse' mentality to see what LED technology is really capable of.



Challenges of a smarter future

We're all familiar with smart phones, smart homes – we even have smart kettles – but when it comes to control, what happens when we get 'smart' on an industrial level? As the buzz surrounding the smart factory continues to snowball, what exactly is it that makes them so dang clever? **Gavin Stoppel,** product manager, digital solutions at Harting Ltd is here to tell us more.

What exactly makes a factory 'smart'?

A factory is made smart when engineers gain the ability to easily identify where pain points are in the facility. For example, if they can understand and predict when machines are going to fail, they can implement predictive maintenance.

Many facilities already have automated processes in place, such as existing control systems and PLCs, but they might not have access to all the valuable data these systems produce. To understand the difference between a smart factory and a regular factory, we need to look at the differences between Industry 3.0 and Industry 4.0.

Industry 3.0 delivered the advent of computers and robotics, connecting you to your environment. Industry 4.0 takes this development a step further, allowing you to see what happens, understand what happens and be prepared for it when it happens.

Has there been a particular catalyst for the rise in smart factories?

In part, the rise of smart factories can be linked to the rise of, and increased access to, 'Big Data'. Previously, insights from this level of complex information were restricted to large corporations with big budgets, but recent advancements mean this technology has become more and more affordable.

From a production viewpoint, customer demands for flexible processes and smaller batch production means manufacturers needed the flexibility to change processes quickly. Utilising Industry 4.0 practices in

your factory gives you the ability to produce customised products using mass production processes, opening up new markets and ventures for your business.

So, how do they work?

The advent of edge computing devices, which are compact, robust, small and low cost, gives you data processing at the field level. Because they use an open source environment, this provides easy connectivity to standard communication methods. In other words, you have the flexibility to choose the method that works for you, whether that's via a database or the cloud.

What makes a successful smart factory, or moreover, what can doom one to fail?

Using unsuitable solutions is one of the main reasons for failure. For example, using Wi-Fi in an environment which is not conducive to wireless data transfer. This could be due to the size of the environment or the presence of lots of steel and concrete, which can inhibit wireless signals. Therefore, it's important to carefully consider which solutions suit your business.

In order to meet future demands, what is your run of the mill factory lacking?

Essentially, traditional manufacturing needs the functionality to gather and analyse production data via an intelligent management system. Each machine in the plant generates its own data which in turn needs to be stored and analysed. This data then needs to be seamlessly communicated along the production process, from the shop floor to the management system. By implementing intelligent devices, factories can monitor and control the whole process remotely.

For the uninitiated, how would you go about creating one of these facilities?

The best approach is to appoint a member of your team as a 'digital champion', someone to manage the project who understands the processes, but is willing to think outside the box and not be phased by teething problems or issues, as these can often provide great insights. Start small and decide what it is you wish to achieve and what solution will provide the greatest ROI for your business. For example, could flexible production open up new markets for you, or would predictive maintenance for your machines save you from costly downtime issues?

You also need a clear idea of what you're trying to achieve beforehand, rather than collecting data for the sake of it. Get a pilot project up and running which can be expanded and added to as you get used to the technologies. In terms of technology, each factory or manufacturer is different and there's no one-size-fits-all solution, but there are individual solutions which can be replicated and scaled up or down as required. Ultimately, careful research and discussion with technology suppliers is essential to ensure you get the correct solution for your business.

How cost effective is a smart factory? Is it easier to build one from the ground up, or retrofit an existing non-smart facility?

It can be extremely cost effective if you use the above approach; if it is managed carefully and the processes are put in place in a clear and structured way with a well-defined strategy. However, it is much easier to build a smart factory from the ground up, as modern infrastructure is now incorporating digitalisation as a standard. Existing legacy machinery can be difficult to incorporate as part of a smart factory, hence the need for a clear strategy that incorporates a gateway infrastructure and meets growing digitalisation needs.

Is the prospect of a smart factory accessible to everyone? How easy is it to do? Do companies like yourselves offer advice as well as equipment?

Yes, scalable projects and inexpensive equipment opens this service up to everyone. For example, our first step would always be to visit the site in question in order to accurately assess your needs into the feasibility of embracing digitalisation at that facility. We have many years of expertise in this area and will only recommend solutions that work for you. In addition, we have integration partners who can guide you through the whole implementation process from installation at the field level to integration into the MES ELP and cloud environment.

To understand the difference between a smart factory and a regular factory, we need to look at the differences between Industry 3.0 and Industry 4.0

In your opinion, are factories/companies that shun the upgrade taking a risk with their business?

That's certainly a possibility. In response to changing markets, companies are embracing digitalisation, making them leaner and more efficient, which enables them to decrease operational expenditure (OPEX) and increase overall equipment efficiencies (OEE). This in turn allows them to improve throughput times, optimise resources and reduce machine downtimes, essentially making them more competitive in the marketplace. As a result, businesses which don't embrace digitisation could find themselves being left behind.

Finally, what do you think the future looks like for the manufacturing process?

Bluetooth Low Energy (LE) is an incredibly exciting area of development and more and more manufacturers of wireless sensors are starting to embrace this technology. Currently, engineers are developing more cost-effective smart sensor solutions, which brings condition monitoring into the Industrial Internet of Things environment.

For example, this new technology allows temperature and humidity levels to be closely monitored remotely, which has applications for a wide range of industries, such as temperature-critical logistics. Within manufacturing, I think the next steps will be the ability to measure shock and vibration levels on portable machinery and remote diagnostics of wear and tear.

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Automating ambition

Graeme Ross, UK and EMEA sales director at Resource Data Management, explores how utilising PLC software could help to achieve the UK's ambitious net-zero targets.

With net-zero greenhouse gas emission targets passed into law by the government in June this year, the UK is one of the first economies to set a specific, legally-binding target to help slow down global warming. Described as ambitious by many, changes will most likely need to be made across all sectors to ensure the UK is carbon neutral by 2050.

According to a UN report, buildings accounted for 40% of energy-related CO2 emissions in 2017. Decreasing the energy consumption of buildings represents a huge opportunity to contribute to the net-zero target for organisations across many sectors. Whether it's office buildings, hotels, schools, retail stores or restaurants, any type of building and the associated organisation have the potential to become more energy efficient, cut costs and decrease CO2 emissions, staying ahead of any legislative changes.

PLC software: Managing building controls

One way to increase the energy efficiency of buildings is to implement or update existing programmable logic control (PLC) software to optimise building management systems (BMS).

PLC software is used to control equipment in a facility. This includes heating, ventilation, air conditioning, refrigeration (HVACR), lighting and any other assets connected through the Internet of Things (IoT). The logic applied when programming the software can be as simple or complex as required.

Increasing the sustainability of buildings

PLC software is highly flexible and can be programmed to not only meet any facility's needs, but to go beyond that and turn buildings into strategic assets. Automation of processes saves manual labour time and

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removes human error. Thereby, it carries out tasks, often those that are repetitive and time-consuming, freeing up time for staff.

According to a study conducted by British Gas, 46% of business energy was consumed outside of regular working hours, between 6pm and 8am. Implementing or updating the logic of existing PLC software can lower unnecessary consumption. Control strategies can be written which ensure all equipment that is not needed, such as lights, heating or air conditioning, will be automatically switched off at a certain time.

Alternatively, depending on the organisation's needs, it can, for example, be switched off when the burglar alarm is activated, indicating that the last person has left the building. This type of building optimisation will contribute towards decreasing CO2 emissions and save costs at the same time.

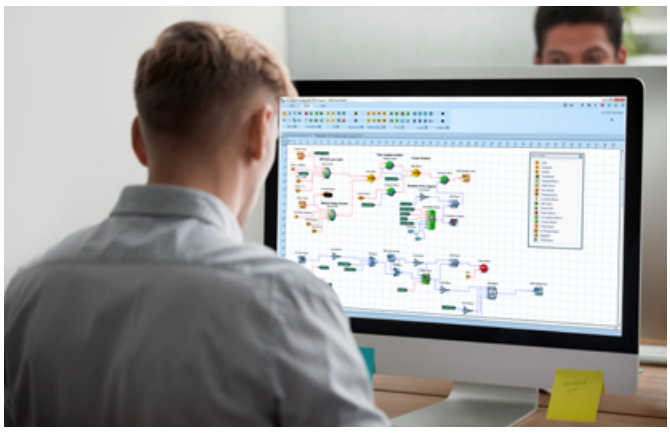
Energy savings with PLC software

Energy savings can be significant for any type and size of organisation: hospitals, small supermarkets and retail chains consisting of hundreds of stores, or a single site, can all benefit from a well-tailored PLC control strategy.

"Decreasing the energy consumption of buildings represents a huge opportunity to contribute to the net-zero target for organisations across many sectors"

After installing new HVAC equipment and introducing PLC software with custom strategy, a Malaysian hospital achieved energy savings of 51% per year. A UK retail chain reduced its energy usage by 34% across an estate of over 400 stores after installing new lighting and control processes that were then written into the PLC system's control strategy.

A small Australian supermarket, operating only one store, achieved a 28% reduction in yearly electricity consumption after refitting the store and introducing a PLC strategy to optimise the management of assets.



Customisation achieves the greatest benefits

Due to the highly flexible nature of PLC software, individual strategies can be written that take unique aspects of the organisation into account. A holiday park with over 500 individual lodges spread out across a wide estate, optimised its energy consumption further by tying the controls of each lodge to the central booking system. When the system indicates that a lodge is unoccupied, the power is automatically turned off.

Using this PLC strategy, the business does not rely on the guests to shut off the heating and lights at the end of their stay, which had been a common problem. Furthermore, cleaning staff are now able to turn the power on when needed, simply sending a signal with their tablet when cleaning is in progress. The power is automatically turned off again after they have marked the work as complete.

Staying ahead of change

Optimising PLC strategies to make use of their full potential to optimise BMS is a cost-effective option for organisations to decrease energy consumption and reduce carbon emissions, working towards the UK's net-zero target. Where PLC software is already in place, organisations can implement updates if needed and thereby stay ahead of any potential legislative changes yet to come.

Cable that can handle the heat

Calls have been made recently by a number of influential industry bodies to make the installation of sprinklers mandatory in public buildings following a number of tragedies. **Graham Turner** of AEI Cables explains why the quality of cabling providing power for these systems is critical.

Sprinkler systems are a very simple fire safety device to protect people and property in the event of a fire. When the temperature in a room fitted with a sprinkler reaches 60-70°F, the sprinkler sprays water across the room and suppresses the fire that has caused the rise in temperature.

Providing continuous power to sprinkler systems is a key component of improving fire safety in buildings nationwide and enhanced fire performance cabling plays an essential role.

Buildings such as tower blocks, hospitals, schools, shopping centres, airports and those areas with large numbers of people moving about need cabling which will continue to operate in a fire and provide power for the highest fire protection requirements.

This ensures fire and rescue services can safely evacuate people and that sprinklers will continue to operate in the event of a fire and, importantly, helps to reduce the risks to firefighters during operations.

Cables can be designed for these specific environments and tailor-made solutions are relevant particularly in high risk areas such as intensive care areas of hospitals, care homes or schools.

These solutions require a high level of performance from the components of the building services, including electrical supplies. Installers of cables for these applications should check the guidance provided under BS 8519, which aims to ensure that the level of circuit integrity for life safety and fire-fighting applications are not compromised by other components of the whole electrical distribution system, including cable glands, terminations, joints and cable support systems.

Studies have shown that sprinklers operate on 94% of occasions and when they do, they extinguish or contain the fire in 99% of incidents

BS 8519 gives guidance and recommendations on the selection and installation of power and control cable systems, while making reference to three categories of circuits required to maintain their circuit integrity under defined fire conditions for varying fire survival times of 30 minutes, 60 minutes and 120 minutes.

It also identifies the need for dual redundant electrical supplies run via diverse cable routes, installed within separate fire compartments, and the need to incorporate automatic changeover devices, located within the same fire compartment as the life safety and fire-fighting equipment.

Sprinkler systems rely on continuous power supply using cables of the highest quality, designed and manufactured to the very highest standards and third-party approved by leading organisations nationally and internationally, such as BASEC, LPCB and Lloyds.

The effectiveness of sprinkler systems is well known and calls have been made from numerous influential bodies including the Royal Institute of Chartered Surveyors (RICS), the Royal Institute of British Architects (RIBA) and the Chartered Institute of Building (CIOB) to make the installation of sprinklers mandatory in all residential buildings, hotels, hospitals, schools and care homes taller than 11 metres. The same organisations have also called for sprinklers to be retrofitted where possible.

Ultimately, sprinkler systems provide protection from fire damage and, most importantly, they give people a greater chance of escape if there is a fire. By reducing the damage and severity of a fire, they can also save money, too, and are a benefit for asset owners when considering insurance premiums.

The fire safety measures of any building rely on compartmentation which needs to be in place to stop the spread of fire. This can sometimes restrict the design of the building's internal layout. If sprinklers are fitted, the restrictions can be reduced, so a designer has more creative options within the internal space of the building.

Facts and figures validate why sprinkler systems are a key consideration as the fire safety industry examines strategies to make our buildings safer in the wake of numerous tragedies, including Grenfell.

Studies have shown that sprinklers operate on 94% of occasions and when they do, they extinguish or contain the fire in 99% of incidents. They also reduce fire injuries and fire damage by 80%.

Indeed, the recommendation from the Fire and Rescue Service is that the Government lowers the height threshold at which automatic fire suppression systems (AFSS), such as sprinklers, are required from 30 metres – which equates to 10 storeys – to 18 metres or lower depending on the outcome of the Government's reviews of Approved Document B and other aspects of building safety.

The FRS also wants to see AFSS, such as sprinklers, installed in all new premises where vulnerable people sleep, such as care homes and residential schools.

The Hackitt Review into the Grenfell disaster sets out a series of proposals to make tower blocks safer to live in but stops short of recommending a mandatory requirement for sprinklers to be fitted. With the appropriate other components, sprinkler systems seem to be a crucial step in helping to make our buildings safer.

Not only are these measures proven to be more effective in enhancing building safety, but introducing them provides reassurance to residents and others moving about in these buildings who are becoming increasingly concerned about their safety.

BS 8519 gives guidance and recommendations on the selection and installation of power and control cable systems

Hashtag no filter

Dave Armitage of Schaffner Group discusses the critical role EMI (electromagnetic interference) filtering has to play in electrical energy facilities.

Today, electric utilities are facing an unprecedented challenge. There is, of course, the usual need for reliability, but also there is the increased demand to consider environmental issues and reducing carbon emissions. The reliable delivery of electric power to customers is the most obvious measure of how well a power grid is performing. The power grid cannot be susceptible to factors that can impact the reliability of power delivery.

Some of these factors result from electromagnetic interference (EMI). As defined in ANSI/IEEE Standard C63.14-2009, EMC is 'the capability of electrical and electronic systems, equipment, and devices to operate in their intended electromagnetic environment within a defined margin of safety, and at design levels of performance without suffering or causing unacceptable degradation as a result of electromagnetic interference.'

So, for a device, equipment, or system to be compatible it must continue to operate as intended with any electromagnetic disturbances that may exist in its environment and, in addition, not create additional issues. Increased electromagnetic interference, or EMI, can adversely affect system efficiency and increase downtime by interfering with analogue control signals and industrial communications between devices/systems. So, as inter- and intra-communication networks expand, adequate electromagnetic compatibility or EMC design objectives need to be addressed.

The smart grid has the potential to improve the reliability of power delivery in many ways. But due to its increased complexity and reliance on RF/wireless technologies not previously incorporated into the grid, the smart grid EMC is directly related to electric power quality.

Many interference phenomena or disturbances can be related to power quality (i.e. power line harmonics, voltage surge, etc.) However, other than to recommend good installation and suppression practices, focusing on the immunity requirements needs to be compatible with the level of electrical magnetic disturbances anticipated. Smart grid devices (e.g. microprocessor-based systems, communications devices, plug-in electric vehicle chargers, etc.) can generate electromagnetic emissions that could cause interference to nearby electronic devices.

A growing number of customers are installing solar systems on their homes or businesses. In the United States alone, the installation of these solar systems continues to see a high annual growth rate. The power they're injecting into distribution lines is causing voltage and frequency-control problems that threaten to destabilise the grid. While this is not yet a major problem, it could become one as distributed solar systems proliferate.

Detecting EMI can be difficult and time consuming at the system level as your facility project is completed, therefore, time and trouble can be saved if proper noise mitigation solutions are implemented into the design process.

For utility-scale (megawatt-sized) sources of wind energy, wind farms are established. Wind turbines are mounted on a tower to capture maximum energy. Several electricity providers today use wind farms to supply power to their customers. Simply stated, a wind turbine works the opposite of a fan; instead of using electricity to make wind, wind turbines use wind to make electricity. The energy in the wind turns two or three propeller-like blades around a rotor, the rotor is connected to the main shaft, which spins a generator to create electricity. Controllers in proximity to the generators and rotors can be prone to immunity issues.

The appropriate solution(s) can control the "flow" of electrical energy in and out of devices/systems and the appropriate physical infrastructure solution(s) can manage EMI issues between devices/systems. Control/signal cables placed in control panels can disrupt communications and control functions of an entire automated system and cause the failure of the installation.

Potential sources of EMI

Given the close proximity of sensitive devices to noisy sources, the leading modes of EMI are capacitive and inductive coupling amongst cabling and harnesses. Understanding this helps to examine how best practices and specifying noise mitigating products can improve the situation.

Generally, the noise coupling is unintentional and occurs when current flowing through one wire induces a voltage on a parallel wire. Capacitive coupling is more of a concern in high voltage circuits, while inductive coupling is more of a concern in high current circuits. To reduce or control this coupling, it's typically recommended to keep a distance of three to six inches between high voltage and low voltage conductors that run in parallel to each other. Conductors that run perpendicular to each other are not subjected to the same levels of EMI. 12 inches is a typical distance between encoders.

There is a requirement for EMI filtering in electrical energy facilities or resolver feedback cables, motor or any AC power cable of any length which can, and usually will, act as an antenna. A simple rule of thumb is that the longer a wire is, the better an antenna it becomes.

The power grid cannot be susceptible to factors that can impact the reliability of power delivery

Some common sources of noise can be categorised as follows:

1. Conducted noise from such sources as power line harmonics, surge (from lightning and power system switching transients), and fast transients/bursts (interruption of inductive DC circuits).

2. Radiated noise or signals from known transmitters (AM, FM, and TV broadcast transmitters, communications radios, wireless devices, etc.)

3. High power events such as geomagnetic storms, intentional EM interference (IEMI) from portable transmitters, and EM pulses associated with high altitude nuclear detonation (HEMP).

4. Electrostatic discharge events when a statically charged body (human or inert) comes into contact with a smart grid device.

The main source of noise in solar systems is the inverter, which is an electronic system that converts the direct current (DC) supplied by the photovoltaic (PV) panels into alternating current (AC) that flows on the power grid. The combination of smart inverters and new control methods will be essential to helping utilities transition to the grid of the future, in which vast amounts of wind- and solar-generated electricity will be the norm. This surge of power causes the voltage to spike. If the spike is high enough and lasts long enough, it can damage motors, generators, and distribution equipment.

Requirements

Presently, for most equipment, there is no regulatory mandate that a manufacturer's product meet any immunity specification as immunity is considered a quality issue. Hence immunity considerations are left to the manufacturer and the purchaser to determine how much immunity is needed to work properly and to avoid recalls or in-field repairs. Thus, many electric utilities include specific requirements in their purchase specifications for equipment such as protective relays, power station and substation apparatus, and kilowatt-hour meters (including smart meters).

The smart grid has the potential to improve the reliability of power delivery in many ways

Components affected by EMI

There are many types of components that can be affected by EMI in power generating applications. These include analogue signals, measurement instrumentation, communication networks, and microprocessors.

Encoders rely on low-level signals from rotating machinery and can be especially susceptible to EMI. Symptoms include encoder counts changing with no motor rotation and non-repeatable position moves. Tachometers may show similar symptoms, such as incorrect speed readings and unexpected speed fluctuations. Sources of electrical noise near sensitive analogue signals and measurement instrumentation can often cause symptoms such as unexpected voltage spikes and ripple or jitter causing incorrect or non-repeatable readings.

With communication networks such as Ethernet links, electrical noise symptoms usually include loss of communication or errors in data. And with programmable logic controllers (PLCs) and other microprocessor-based components, symptoms can include not only loss of communications, but also faults or failure in the PLC or processor, unexpectedly triggering, and reporting of incorrect values.

What can we do?

Unfortunately, EMC is typically the last step in a design. When all the other product features have been implemented and the functionality is established, any EMC problems are then solved. At this point, EMC becomes expensive, time-consuming and difficult to handle. Manufacturers should therefore always start thinking about EMC in the early stages of product design. This thought process pertains to the EMI power input filter as well. Designers often forget that an EMI filter can assist not only with conducted emissions, but also in meeting immunity and fast transients requirements along with radiated emissions as well.

A power line or mains EMI filter is placed at the power entry point of the equipment that it is being installed into to prevent EM noise from exiting or entering the equipment. Lightning is a common event that effects local sections of the grid but can strike anywhere. The installation of proper grounding, surge protection, and equipment designed to tolerate moderate levels of electrical surges are all necessary to protect equipment against lightning events.

The design parameters for selecting an appropriate EMI filter include the attenuation or insertion loss, rated current, rated voltage, and regulatory approval requirements are specified by the user. However, there are many other parameters that should be or must be considered to get the most efficiency, reliability, and proper operation from the filter.

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A sinking feeling?

There has been recent speculation as to whether the engineered heat sink has had its day. **Nic Smith,** head of sales and marketing at PSL Assemblies Ltd, takes a closer look into the future of the technology and explores whether there is any weight behind these claims.

A few months ago, I attended an industry conference which included several presentations on the subject of thermal management in power electronics. In my desperate bid to stay up-to-date with the often bewildering advances in technology and power innovations, I do try to attend as many of these lectures as possible – but sadly some of these presentations are, at their very best, somewhat less than entertaining.

Seasoned technical directors and graduate design engineers alike are coerced into preparing a technical presentation, and soon they find themselves in front of an audience, laser pointer in hand, and expected to inform and educate a room containing potential buyers, salespeople and other hitherto industry experts.

As a time-served salesman, I have prepared many similar PowerPoint creations, and over several years I have learned to enjoy my time on stage – trying everything possible to keep the presentation light-hearted and interesting, but at the same time keeping the audience absorbed in the product information with the ultimate aim of winning new clients and selling more product.

At the thermal management conference mentioned earlier, only one of the presentations held my interest for more than a few minutes – in actual fact I was spellbound and bewitched by the subject matter and the speaker's narrative. Indeed, it was the opening line that first arrested my attention – "The engineered heatsink is dead!"

Of course, as a sales manager for a thermal management company which specialises in engineered heatsinks for power electronics, this statement was definitely not what I wanted to hear! The entire lecture also focussed on topics such as reducing footprint, reducing weight, recycling dissipated energy and low carbon initiatives. As much as the opening phrase was somewhat alarming, the University Professor delivering the presentation did eventually confess that a heatsink-free world may indeed never happen – but he insisted that we do need to find ways to reduce our use of aluminium profiles and copper tubing – thus challenging electronic engineers to eliminate large heatsinks and cooling plates from their new designs.

In consumer electronics, for the last few decades, small is best. Except if you are a marketeer in the mobile phone industry – then you can convince your target audience that either small is best or bigger is better – depending on the current trend and your marketing budget.

Indeed, in power electronics, reducing physical size and weight from electric road vehicles and electric trains is essential if we are to improve on energy efficiency. But, it's not always about efficiency – we still have a desire for increased speed (HS2 for example), and there is always a need for more power in the grid. We know that there are simply not enough sources of electrical power in the grid at the moment, and our scientists are desperately trying to build energy-efficient power stations and minimum-emission energy generators before the need for electric vehicles ultimately overtakes the availability of electricity.

When trains are designed to travel faster, equally the traction electronics have to be designed to generate massive increases in power, but in a controlled and energy-efficient manner. Similarly, our hospitals, hotels and commercial buildings are becoming more energy efficient but at the same time needing more power, more efficiency, more reliability.

Batteries are becoming more efficient, but it will be quite some time before genuine miniaturisation of batteries is achieved. Even the most efficient of industrial batteries for high power lasers, electric buses, hybrid and battery-powered trains etc, all generate huge amounts of heat – and we all know that hot electronics are inefficient electronics, and over-heated electronics are extremely dangerous to say the least.

We were asked some years ago to help design a 3,000A static-transfer switch with a brief to minimise the weight and physical footprint. By simply changing the design from a heavy extruded-profile heatsink to a much lighter bonded-fin heatsink we created a much larger surface area to allow for increased heat dissipation.

Shortly afterwards, our client decided that a 6,000A switch was needed, but again without any allowance for a larger footprint or weight heavier than the original 3,000A unit. The challenge was always the heat dissipation – we could manufacture any design of switch, with any size of thyristor, and we had our own innovative clamping solution – but to double the rating of a static transfer switch in the same footprint at first appeared impossible.

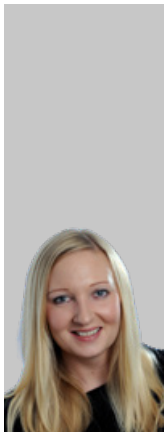
Sometimes, energy efficiency does not require innovative solutions, and that basic physics combined with over 40 years of experience in thermal management can produce an equally effective energy-efficient answer. Although we do not manufacture heat-exchangers, we do use manipulated tubes (heat pipes) in our cooling plate designs and by the use of an appropriate fluid, we can determine the point of evaporation and condensing points that would give us the additional thermal capacity to accommodate the increase in the losses. This simple use of physics sufficiently improved the cooling of the 6,000A unit, and this design continues to be supplied to our client – a global manufacturer of high-quality whole-building UPS systems.

It's not always about efficiency – we still have a desire for increased speed and there is always a need for more power in the grid

As batteries for electric vehicles become more efficient, the desire for battery power inevitably meets with the challenges of weight and footprint. It is ironic that some of the EV industry is actually looking backwards, not forwards, incorporating thin lightweight aluminium cooling plates with pressed-in recesses instead of cooling pipes – somewhat similar to the cooling pipe configuration on the back of old domestic refrigerators.

Our clients are interested in high power, high efficiency and maximum safety – they supply innovative and highly technical equipment for trains, laser and welding machines, electric buses and coaches, and critical back-up power UPS systems. They will continue to design energy efficiency into their power electronic equipment, and they acknowledge the constant limitations on weight and footprint. But, our clients also continue to incorporate heavy-duty engineered heatsinks and liquid-cooled plates into their designs, and we are therefore quite sure (hopefully at least for many more years into the future) that thermal management and engineered heatsinks for power electronics are definitely not dead!

Training doesn't have to be a challenge



Stacey Lucas, commercial and marketing director at Sontay, explains the importance of keeping up-to-date in an ever-changing market and how new courses are making it easier than ever to take part in training.

The building controls industry is a constantly changing landscape, especially with the Internet of Things (IoT) having such a big impact on how products work and interact with each other. With the capabilities of smart devices on the rise, advancing internet connectivity means useful data can be provided from a Business Management System (BMS) to energy and facilities managers over the web to remote PCs, tablets and smartphones, collating large amounts of data.

This fast pace of innovation means installers and electrical engineers need to constantly adapt their skill set and increase their knowledge, whether they are new to the industry or not.

By keeping up-to-date with the latest technology and the products and solutions on offer, installers can help their customers make more informed decisions about how they control their buildings. End-users are

becoming more aware of 'smart' buildings but require a lot of support in understanding what this means and how it can be applied. This can open more business opportunities to installers, but they need to be armed with the expert knowledge to help their customers and this is where training becomes so important.

Training can take many shapes whether it is a CPD course, manufacturer training or hands-on demonstrations. Generally, this is all face-to-face training and there are huge benefits to doing it this way, but new courses are being developed that can be taken digitally.

New, e-learning based training can be beneficial to those engineers or companies who cannot afford to take time out of their busy schedules to attend a full day, or even two days of training. It's not only time that can be saved by undertaking e-learning courses, it can have a financial benefit as there will be no additional travel or hotel expenses. It makes sense from a sustainability perspective as well, less travelling means less impact on your carbon footprint.

Flexibility is key when it comes to training. Participants can take an e-learning course whenever they want – even in the middle of the night if that works best. Students can also take as long as they like to complete it so can learn at their own pace. Evidence from our own e-learning platform has shown that the people who took the course felt they learnt a great amount in a short period of time and believed it was a great alternative to classroom-based learning.

Digital training courses can work for people in all stages of their careers. Whether they are an apprentice starting out in the industry or a seasoned professional who is looking to refresh their skills or expand their knowledge.

This fast pace of innovation means installers and electrical engineers need to constantly adapt their skill set and increase their knowledge

Classroom learning still has its place, particularly for practical learning and the interaction with a teacher and/or other students can help in more complex subjects, but e-learning is a great option for short and easily digested topics.

Associations can provide a wealth of training information and the Building Controls Industry Association (BCIA) is no different, it is a great resource when it comes to training. The courses on offer range in complexity and electrical engineers can choose the courses they feel are most relevant to them.

Maybe it is a *'Fundamentals of HVAC and Building Technology'* course that gives an overview of systems and technologies used in the heating, ventilating and air conditioning industry, or a course toward their advanced technical certificate such as *'Control Functions in Heating Plants'* or *'Control of Ventilation and Air Conditioning'*. In order to increase the accessibility to these courses through the UK, the Sontay Academy became one of the BCIA training partners.

The Sontay Academy is an initiative set up to build on the company's already existing education foundation. Having manufactured building controls for over 40 years, Sontay has worked hard to provide a premium service in the HVAC and climate control industry, training clients and customers for many years with great success.

For those working within the building controls industry, training is absolutely vital. The explosion in IoT technology and smart buildings is changing our industry at a rapid pace, and you need to keep up. With new training courses being developed all the time and e-learning platforms available on which to learn, the opportunity to learn is there waiting.

A learning curve

Electrotechnical has always been a fast-evolving sector, with home automation and smart technology coming onto the scene in recent years. With regulations frequently updated, **Nick Pollard,** product manager at JTL discusses how individuals, employers and the industry as a whole can stay ahead of the curve through continuing professional development (CPD).

You are probably familiar with the 18th Edition IET Wiring Regulations, an essential publication for industry professionals. You may also be aware that they were recently updated in line with European and international standards, as well as new technology and methodology.

Of course, changes in the electrical industry do not stop there. As an industry, we are now facilitating new ways that customers can interact with and equip their homes. Just a couple of decades ago, electricians were installing light management systems which, at the time, were expensive and seen as high-end technology. Fast-forward to the present day and these are now a lot more readily available for consumers and, in turn, in higher demand. There are now systems that can be quickly and easily controlled via smartphones and tablets. With the touch of an app, homeowners can control everything from heating to individual lights and home appliances.

While these advancements give customers a greater level of flexibility and control, they also present the danger of industry professionals being 'left behind'. There is nothing worse than a customer asking about a system or technology that the professional knows nothing or very little about. This is why undertaking CPD makes all the difference.

The purpose of CPD

CPD exists to ensure that employees enhance their skills and abilities once they have formally qualified. It involves ongoing upskilling to ensure that further learning is progressed in a practical and relevant way. CPD allows individuals to regularly focus on important areas of development and reduce any shortfalls in knowledge that they may have.

There are so many ways to get the best possible experience from CPD. It could be through structured learning like training programmes, workshops and seminars and professional exams. Alternatively, many employees benefit from self-directed learning which can involve studying publications written by experts, listening to industry-specific podcasts and following the latest industry news.

Creating a learning culture

According to CPD UK, as more individuals gain similar professional qualifications, CPD becomes more important as a way for employees to remain competitive and separate themselves from the pack, while giving contractors the ability to diversify the services that they offer.

Creating a learning-focused culture that values internal progression has huge benefits for companies. An article by London School of Business and Finance found that CPD helps employees to feel more motivated to succeed, resulting in a more driven workforce and an increase in staff retention.

There is nothing worse than a customer asking about a system or technology that the professional knows nothing or very little about

In addition, CPD gives industry professionals the knowledge and confidence to deal with new technologies coming into the sector. It allows them to offer sustainable alternative ideas to the customer and ensure they make a well-advised purchase decision.

When it comes to employee development or future proofing your business, CPD is certainly an option. It can be thought of as upskilling and keeping up with the requirements of your customers and industry. Regulations are getting tighter and an evidence of attained CPD is a great way to demonstrate knowledge in the areas that may be required.

Compano 100 V2.20 software available

Compano 100 is the universal and easy-to-use solution for all types of basic testing duties in electrical energy systems. Controlled electronic sources allow the user to obtain exactly the desired value and to output signals with variable frequencies and other signal forms, automated ramps, and pure DC. The highly flexible inputs are configurable, for example, as binary inputs for relay testing, AC or DC voltage inputs or current inputs.

The latest software update for Compano 100, 2.20 version is available as a free download in the Omicron customer portal and brings the following new features:

- AUX DC mode for V OUT: The voltage output V OUT can now alternatively be used as a dedicated DC supply for devices.
- Loading and saving configuration profiles on a USB stick: Configuration profiles can now be stored on a USB stick in clear hierarchies in order to transfer them to another Compano 100, for example.

Omicron • 01785 848 100
www.omicronenergy.com

Chauvin Arnoux launches the C.A 8436 Qualistar+

The new C.A 8436 Qualistar+ from Chauvin Arnoux is an all-terrain power quality analyser, ideal for making accurate and reliable measurements in the field. The instrument can be used on all types of low-voltage installations for preventive and corrective maintenance, and also as an aid to fault-finding. Furthermore, it features rugged, watertight construction with an IP67 protection rating which makes it suitable for outdoor as well as indoor applications.

The C.A 8436 Qualistar+ has five voltage inputs and four current inputs, and supports simultaneous recording of all voltage, current and power parameters. Current measurements in the range 100mA to 10,000A are facilitated by the use of MiniFLEX flexible sensors that are easy to install and require no direct connection to the circuits being monitored.

The instrument measures total power, active power, reactive power, power factor and many other key power parameters, as well as providing detailed information about harmonics up to the 50th, total harmonic distortion (THD), flicker, transients and energy usage.

Chauvin Arnoux • 01924 460 494
www.cauk.tv

Ellis helps secure Bahrain's backbone

Cable clamps designed and manufactured by Ellis in North Yorkshire have been used to secure electrical cables in Bahrain that are being laid as part of a $4 billion project to enhance the Middle Eastern kingdom's water and electricity networks.

Aimed at enabling Bahrain to comfortably accommodate its growing population and support its economic progress, the project involves an upgrade of the main backbone transmission network to 400kV, with three main transmission substations being built in Hidd, Umm Al Hassam and Riffa.

Ellis' 2A Aluminium cable clamps and special compression springs were specified through Bahrain-based distributor, Amad Baeed Electrical WLL, by Korean cable specialist, LS Cable & System.

Bahrain's 400kV upgrade will raise the capability and reliability of the kingdom's power network and, importantly, reduce the issues of the high short-circuit levels in various parts of the network to a safe level.

Ellis • 01944 758395
www.ellispatents.co.uk

Scolmore launches dedicated YouTube channel - SGTV

Scolmore's latest venture has seen the launch of a brand-new YouTube channel - SGTV - with the first episode aired on September 19. The aim is to provide the viewing contractor audience with engaging, informative and innovative content that will help keep them up-to-date with the latest products and news, read the opinions of industry experts on issues that impact their working life, and the chance to win some great prizes with regular competitions.

It promises a wealth of valuable information via interviews, tutorials, challenges, unboxings and product overviews, as well as highlighting key industry news, events and dates for the calendar. A teaser video has been launched and features some of the industry's leading talents, with Billy Byrne, Tony Cable, Tim Shaw and Thomas Nagy all making appearances.

Scolmore • 01827 63454
www.scolmore.com

ESP targets professional CCTV sector

ESP has developed a brand-new IP (Internet Protocol) CCTV range designed to offer superior, reliable and straightforward installation solutions for a range of applications, from domestic through to larger and more complex commercial projects.

The range features POE (Power-Over-Ethernet) which enables the camera and power feed to be wired in Cat5e cable up to 100 metres without the need for additional power, which makes installation much more convenient. A single Ethernet cable provides both the power and the HD digital feed, with just one cable per camera and multiple cameras can be installed anywhere on the network that the NVR is connected to.

There are two distinct IP ranges available – the REKOR IP 2 Megapixel range which has been tailored for the domestic market, and the HDView IP 5 Megapixel range which is aimed at larger applications with a wide choice of NVR and camera selection.

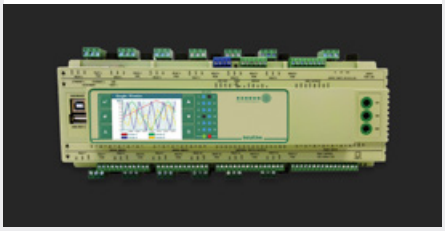
ESP • 01527 515150
www.espuk.com

PLC controllers with license-free software

Designed for use in varying BMS, HVAC and refrigeration applications, Resource Data Management's (RDM's) Intuitive TDB controllers – part of RDM's Intuitive controller range – come with license-free PLC software built-in. Through expansion modules, just one device can control over 600 points. Intuitive Controllers feature a mix of built-in communications, including IP (Internet Protocol), USB, and CAN bus for simple connectivity to your devices and peripherals.

With the ability to communicate upward via BACnet, XML and Webservices, and slave devices via Modbus or BACnet. Giving the option to remotely access, view and alter the settings on your device simply by using a web browser. Both on device and remote display options are available for better control during and after installation. Free-to-download desktop editing software is also available. Backed by RDM's industry-leading five-year warranty, Intuitive Controllers give users peace of mind.

Resource Data Management
0141 810 2828
www.resourcedm.com



Power For Our Generation

There are many ways to store or produce electrical energy but when it comes to guaranteeing standby or emergency electrical power, in terms of cost, flexibility and responsiveness, there's no better option than a generator set from FG Wilson.

Our products range from ready-to-run generator sets to completely bespoke turnkey power systems with remote monitoring, all with lifetime product support from our dealers.

Based in the UK for more than 50 years, we've worked together with a multitude of customers in all environments globally and since 1990 have installed more than 640,000 generator sets around the world, with as much combined power generation capacity as the entire UK power grid.

To find out more, visit us at **www.fgwilson.com**

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