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Electrical Review

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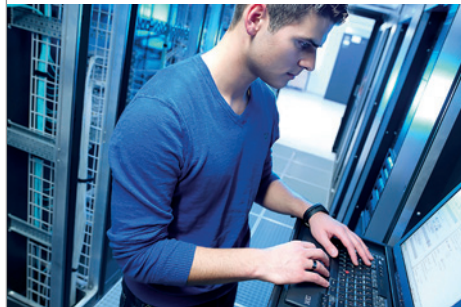
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PRODUCT WATCH

Present in the post

At the time of going to press on this issue of Electrical Review, as an EDF customer myself, I was somewhat surprised to receive a letter from the company announcing my dual tariff would be rising as of this month.

This, two days after it was reported EDF combined improved nuclear and hydro production raised the company's core earnings by €544m, with an additional €469m gained through improved wholesale market conditions.

My first point of concern was I was under the impression I was on a fixed rate tariff, and would hear from them regularly should there be a cheaper way of purchasing energy for my home. It is highly unlikely this is an oversight on my part with reading correspondence from the energy giant so, rest assured, this is something I will be investigating further, and will have no hesitation following up this letter.

While it will not affect me too much, there will obviously be households and families who may struggle to pay the increased rate. Time to get online and find an alternative before 'winter' kicks in?

Acquisition of terminal block business

TE Connectivity (TE) and ABB announce TE has closed its previously announced acquisition of ABB's ENTRELEC terminal block business.

"We are combining two portfolios that will be more competitive under TE's ownership," said Tarak Mehta, president of ABB's Electrification Products division. "This



transaction demonstrates ABB's commitment to active portfolio management, a key element of our Next Level strategy".

The ENTRELEC terminal block business, originally founded in 1920, serves customers in more than 70 countries. The business comprises research and development, with manufacturing sites in France and Poland. By adding the terminal block offering, under the product brand ENTRELEC, TE will offer a complete system for power, signal and data connectivity with special focus on harsh environments.

Keep up to speed with disability access requirements

Bsria will be launching a three day industry course: Disability Access Legislation & Surveys to ensure compliance with the DAA (Disability Access Audit).

The audit is evaluation of a building or service and its accessibility to disabled people.

The course will give delegates an overall understanding of the laws and legislation surrounding DAA. Delegates will undertake a tutored Disabilities Access Audit under the guidance of a course lecturer.

The course will take place at Bsria Bracknell.

Mike Lee, Bsria training manager (pictured), said: "This is another course in BSRIA's 2018 suite of training designed to be a hands-on interactive learning experience, rather than simply 'chalk and talk'."

A practical on site review will cover: barriers to disability including: car parks, access routes and external ramps and stairs, entrances, receptions, toilets and changing facilities. Fixtures, furnishings, equipment and lighting are all on the agenda."

Report confirms large scale of WEEE non-compliance through online marketplace

EucoLight has welcomed OECD report on 'Extended Producer Responsibility (EPR) and the impact of online sales', to which EucoLight members contributed.

Recognition of the online WEEE non-compliance challenge, (free-riding), faced by producer compliance schemes is a first step to addressing the problem. EucoLight endorses the recommendation to define multi seller online platforms as 'producers' of the products that they list from non-registered companies, and that transit through their fulfilment houses.

The report indicates online WEEE non-compliance is hindering the efficiency of WEEE systems, affecting around 5 to 10% of the total OECD Electric and Electronic Equipment (EEE) market. This issue affects especially small devices, such as LED lamps. EucoLight has been promoting policy responses to tackle WEEE non-com-

pliance and is actively facilitating the debate among stakeholders and institutions, and to identify possible solutions.

EucoLight secretary general, Marc Guiraud explained 'WEEE schemes, which aim to make producers responsible for the environmental impact of the products they sell, have been key in increasing recycling and collection rates. When producers selling online avoid their obligations, they impose an unfair burden in the rest of the system and on compliant producers. Non-declared products prevent correct calculation of collection rates, and therefore achievement of the collection targets.

Nigel Harvey, EucoLight vice president and Recolight CEO said "The OECD report confirms the large scale of WEEE non-compliance through online marketplaces and fulfilment houses. There is an urgent need for regulatory change. The VAT system has



been amended to make online fulfilment houses jointly liable for VAT payments for any product they hold in stock in the UK. A similar approach is now needed for WEEE."

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Lack of knowledge around upcoming Halogen ban

Nearly two thirds of UK consumers have not heard of the 'halogen lamp ban'

With the sixth stage of the ErP Regulation (EC) 244/2009 coming into force on 1 September 2018, prohibiting certain inefficient non-directional Halogen lamps on the market, LEDVANCE conducted a consumer study that has revealed a lack of knowledge about the ban in Europe.

64% of UK consumers are unaware, among others, the halogen light bulb can no longer be put into circulation anywhere in the EU from September 2018. And that figure is a further 10% higher if the consumers who have heard about the ban but are unclear about the consequences are included.

Since the autumn of 2009 energy-inefficient lamps have gradually disappeared from the market in accordance with a European directive. The ban mainly covers the popular classic halogen light bulbs that are typically made of glass, emit light all round, have an E27 or E14 screw base and are operated without a transformer. Some non-directional halogen lamps with G4 and GY6.35 plug-in bases are also affected. There will be a certain delay before consumers feel the effects of the change, however, because retailers are allowed to sell their residual stocks. Consumers therefore have sufficient time to upgrade their lighting to modern LED lamps.

All that glitters IS gold..

MP for Huddersfield, Barry Sheerman recently visited CEF's electrical waste site with the aim of educating people in the recycling of such equipment under the WEEE regulations.

His visit came after a group of local children visited the facility to work on the need for young people to understand how, as a society, we manage waste.

A fact I was unaware myself is there is more gold in a tonne of electrical waste than a tonne of raw gold ore - a valuable resource I would think Joe Public should perhaps be more aware of, and the positive implications that arise from this. CEF is the only electrical wholesaler in the country with its own recycling facility, run by Electri-

cal Waste Recycling Group (EWRG).

Sheerman said: "There's also an issue of geographical disparity we must overcome. Some areas are innovative in their waste recycling, while others have a long way to go to catch up.

"I absolutely feel education holds the key to addressing both issues. By encouraging school children and students to visit sites like this one and see the process for themselves, the next generation will be aware not only of the significant environmental impact of their electrical waste, but of its potential value."

An interesting exercise in emphasising the importance of recycling? I would like to think so.

Cleaning up the heating sector

The continued investment in renewable energy and reduced reliance on coal fired power stations means Britain's electric heating is now cleaner than gas central heating, government figures show.

It is the latest milestone in the UK's effort to cut greenhouse gas emissions in line with EU obligations, which includes phasing out unabated coal by 2025.

Earlier this year, Britain went for more than three days without generating electricity from coal, the longest period since the 1880s. National Grid says 2017 was officially the greenest on record, as Britain has halved carbon emissions in the electricity sector since 2012.

However, a report from the Department for Business, Energy & Industrial Strategy



(BEIS) shows the government widely underestimated the contribution of renewable energy in its projections, which means the UK's electricity supply between 2014 and 2017 used far less carbon than predicted.

As a result, since 2017 electric heating has had a lower 'Grid Carbon Factor' than gas central heating for the first time, with the gap set to widen further in 2018 and beyond. The Grid Carbon Factor represents the amount of CO2 equivalent emitted in grams for each kWh of energy generated on the National Grid.

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GOSSAGE

SING LOW, SWEET CHARIOT

Worried the silent progress of electric vehicles may increase accidents amongst unaware pedestrians? You can rest easier. Finland-based energy company Fortum has introduced the Sing-along Shuttle, an emissions-free taxi service that only accepts singing as payment.

The fleet, which consists entirely of electric cars, began operating at the country's Ruisrock Festival in July.

"With Singalong Shuttle we want to show people in a joyful way how comfortable and easy it is to drive an electric car," says Fortum's brand manager Jussi Mälikä. "The silent electric cars make it possible to enjoy singing without background noise and emissions."

Be aware Fortum also operates the largest electric vehicle charging network in the Nordic countries, with over 2,000 stations.

DRAX-TIC MEASURES

As the only public company based exclusively around ownership of a single site power station complex, Drax has been a poster boy for the "no more coal" campaigners. Gradually it has been turning each of its 600 megawatt units from burning coal (boo hiss) into a burner of biomass in the form of wood pellets (hurrah, hurrah). By doing so, it has been the recipient of ginormous subsidies made available by the UK government to "renewable energy" generators.

But, as a plc, Drax is obliged to publish an Annual Report. Its latest issue contains rather a surprising admission. It lists as one of its main strategic risks "biomass acceptability changes." Translated into layman's English, this means that they are warning shareholders the UK government is starting to pay attention to the concerns of much scientific research. Practically all of which has concluded far from being eco-friendly, burning trees for electricity is even worse for greenhouse gas emissions and air quality than burning coal.

The government's own advisory body, the Committee on Climate Change, is just completing its own magisterial report on the joys (or otherwise) of biomass. I am reliably informed it will conclude firmly it is completely inappropriate for further bungs of public money to be on offer to sweeten the balance sheets of biomass champions. As the world's biggest tree burner, such "biomass acceptability changes" do indeed threaten the prosperity of Drax's shareholders.

FLOATING GENERATORS

Clause 140 of the Government's Brexit White Paper makes it clear there can be no certainty the UK will be staying within the integrated European electricity market. Such a departure would have some ludicrous consequences.

For instance, thousands of portable electricity generators would need to be requisitioned at short notice, and placed on barges in the Irish Sea, just so as to help keep the lights on in Northern Ireland. That could involve bringing back equipment from far-flung countries such as Afghanistan – where the UK is still part of NATO-led operations.

The eye-catching scenario is contained in a private government paper outlining various negative consequences of Britain leaving the European Union without any deal. This situation would occur because Northern Ireland has shared a single energy market with the Irish republic for over a decade, one of the consequences of the Good Friday Agreement of 1998. Northern Ireland relies on imports from south of the border because it does not have enough generating capacity itself. Britain is hoping to negotiate a deal to allow that single electricity market on the island of Ireland to continue after Brexit.

But in the event of a totally disruptive rupture with the EU, Whitehall officials fear power providers in the republic might end the provision of electricity because the UK would no longer be part of the integrated European electricity market.

That would mean the government scrambling to get hold of thousands of generators to prevent blackouts in the province. Officials are concerned about the availability of this many generators at short notice – thus the need to commandeer some from the military.

Not quite what Boris Johnson et al had in mind when, during the 2016 Referendum, they were urging us "to take back control".

TRUMP LOSES- OFFICIAL

You will recall how, with his customary overstatement, US President Donald Trump sought to intervene heavily in the US electricity generation market. He directed his administration to "take emergency measures to keep coal and nuclear plants running, in order to protect national security."

So-called threats to "national security" is also Trump's entire justification for launching trade wars with China, Japan, the EU, Canada, Mexico – indeed practically every developed country in the world. Apart obviously from his Alma Mater, Russia.

Many of the coal and nuclear plants have shut in the face of plentiful natural gas, growth in wind and solar power, and stagnant power demand. More closures are expected in coming years. Trump wants to save these ailing plants through subsidies.

However the US power grid is overseen by the Federal Energy Regulatory Commission (FERC). All five members of the Commission – three Republicans, two Democrats – have stated categorically there is absolutely no emergency in the country's electricity markets.

Kevin McIntyre, the chairman of the FERC and one of three fellow Republicans on the five member panel, is adamant there is "no immediate calamity or threat" to power plants operating or serving the needs of consumers. There was "no national security emergency in power markets."

Another Republican, Robert Powellson, argues subsidising coal and nuclear would result in "significant rate increases, without any corresponding reliability, resilience or cyber security benefits." Such intervention threatens "to collapse the wholesale competitive markets that have long been a cornerstone of FERC policy."

Richard Glick, a Democrat on the FERC, said Trump's push to save ageing coal and nuclear plants would "clearly" raise power bills for residents and businesses. "The question is how much?" he said. FERC estimates the country's electricity bills would rise by tens of billions of dollars.

Fortunately for electricity consumers, these regulators constitutionally have the last say. So Trump simply won't get his subsidies for the power sources he just happens to favour. Would that the World Trade Authority had similar powers to stop him destroying world economic growth with his idiotic trade wars too.



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The inaugural 2018 Electrical Review Excellence Awards, in partnership with Riello UPS, took place at London's exclusive Dorchester Hotel on 24 May 2018.

The Electrical Review team were delighted to host the Award winners, shortlisted entrants as well as other industry professionals, many of whom contributed to the projects and achievements highlighted during the Awards evening.

We would like to extend special thanks to the Sponsors, as well as the Judges:

Prof Ian F Bitterlin, Consulting Engineer and Visiting Professor, University of Leeds, also for his role as the host of the Awards evening; Steve Martin, Director of Technical, Electrical Contractors' Association; Steve Hone, CEO and Co-founder, The Data Centre Alliance; Jon Belfield, President, The Building Controls Industry Association (BCIA) and Peter Hunt, Chief Operating Officer, Lighting Industry Association Ltd.

See more pictures and the Awards video at www.electricalreview.co.uk/awards

The Award winners were:

Power

Sponsored by: **Omicron**

WINNER: Noriker Power battery storage facility – Entry by Vertiv

Also shortlisted:

IGA (Istanbul Grand Airport) Project, Entry by Aksa Power Generation
Drayton Manor Solar Farm, Entry by Smith Brothers (Contracting) Ltd.

Fire Safety and Security

Sponsored by:

Electrical Safety First

WINNER: The Queens Hotel, Penzance – Entry by Chubb Fire & Security

Also shortlisted:

The St. Nicholas Building, Entry by The Fire Safety Company Ltd
St Mary's Hospital - Newport, Isle of White, Entry by Drax UK Ltd

Energy Efficiency

Sponsored by: **Schneider Electric**

WINNER: Chertsey Water Treatment Works – Entry by Danfoss Drives

Also shortlisted:

Pets At Home UK Stores, Entry by Luxonic
Gateshead Leisure Centre, Entry by ZG Lighting UK Ltd

Data Centre Design & Build

Sponsored by: **Prism Enclosures**

WINNER: Indectron Shield House data centre – Entry by Sudlows

Also shortlisted:

IT transformation project for Willis Towers Watson, Entry by Keysource
Sheffield Hallam University, Charles Street Data Centre, Entry by Schneider Electric

Lighting

Sponsored by: **Phoenix Forums**

WINNER: Project Beagle, Ingenuity House – Entry by zencontrol ltd

Also shortlisted:

Nottingham City Homes, Entry by TamLite Lighting
Spar, Blakemore Retail, Entry by Luceco plc

Innovation

Sponsored by: **TamLite Lighting**

WINNER: Heathrow Airport, EV charger installation – Entry by R.L. Freemantle Electrical Ltd

Also shortlisted:

Rochester Cathedral, Security intruder alarm system, Entry by Chubb Fire & Security
Kuwait City Science Museum robot, Entry by Approved Electrical Services Ltd

Award sponsors:



Project of the Year

Sponsored by: **Riello UPS**

WINNER: Project Beagle, Ingenuity House
Entry by zencontrol ltd







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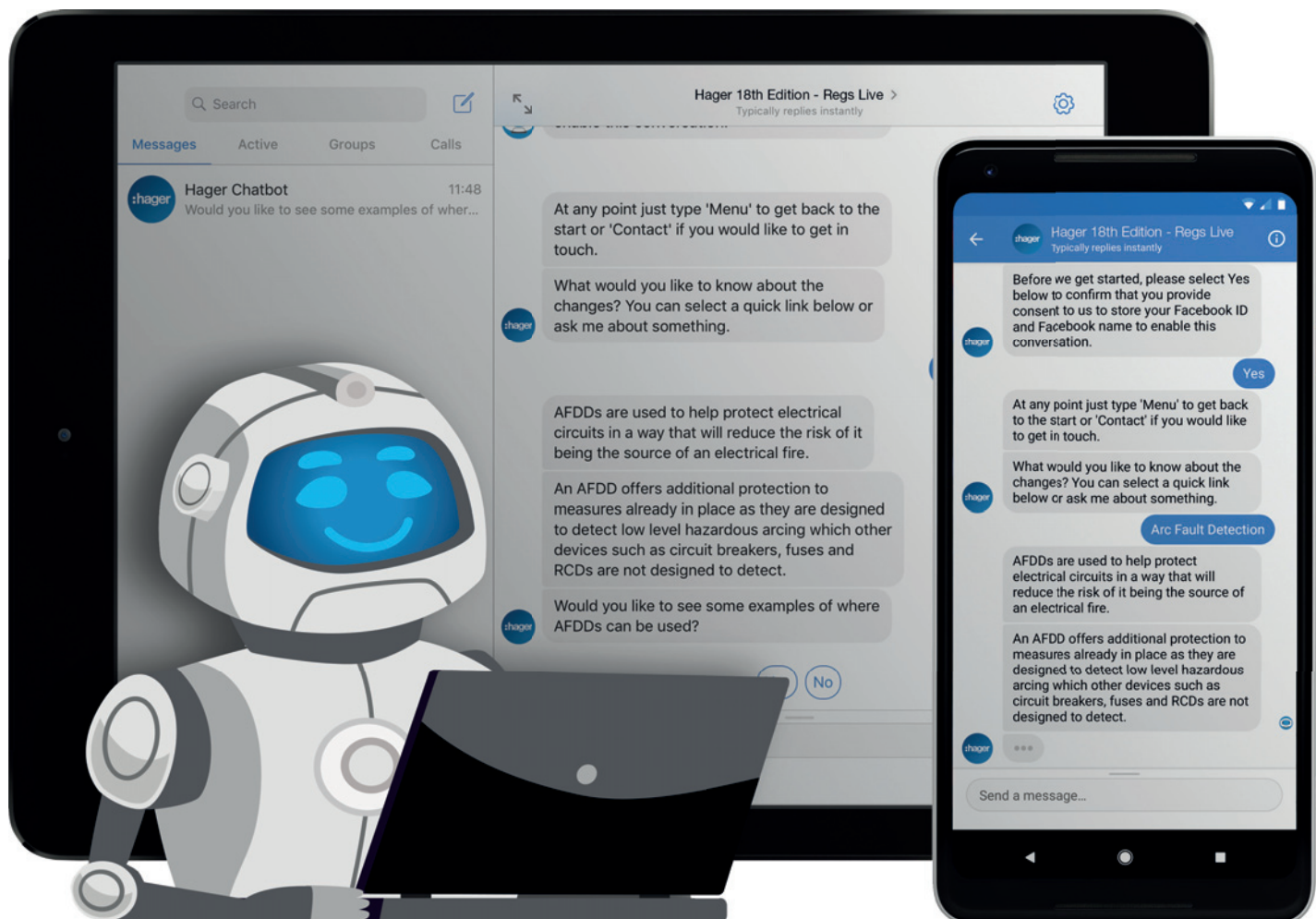
Next year's Electrical Review Excellence Awards will take place on 22 May 2019, once again at The Dorchester Hotel on London's Park Lane

If you would like to be involved as a sponsor or supporter, please contact **Sunny** or **Amanda** on +44 (0) 207 062 2526 or email sunnyn@sjpbusinessmedia.com / amanda@electricalreview.com

The entries will open shortly for the following categories:

- Power** – Product of the Year
- Power** – Project of the Year
- Lighting** – Product of the Year
- Lighting** – Project of the Year
- Fire Safety & Security** – Product of the Year
- Fire Safety & Security** – Project of the Year
- Test & Measurement** – Product of the Year
- Energy Efficient** – Project of the Year
- Innovative** – Project of the Year
- Sustainable** – Project of the Year
- Data Centre Design & Build** – Product of the Year
- Data Centre Design & Build** – Project of the Year
- Data Centre Cloud** – Product of the Year
- Data Centre Cloud** – Project of the Year
- Data Centre Colocation** – Supplier of the Year
- Project of the Year** – Presented by Riello UPS
- Product of the Year** – Presented by Riello UPS

GETTING THE 18TH EDITION MESSAGE OUT



All parts of the electrical industry are affected by the changing regulatory landscape set out in the recently published 18th Edition of the Wiring Regulations.

Both product manufacturers and professional electricians are now in the process of ensuring they are fully compliant; whether it's creating new product specifications or understanding new installation responsibilities once the regulations become mandatory from January 1st 2019.

It is a major milestone for the industry as the 18th Edition looks to further improve current safety standards, provide

clarification around existing regulations, and open the door for new technologies and methods to be incorporated in the future across the industry.

Hager, as a leading product manufacturer, has for some time focussed on ensuring that the industry and electrical contractors are supported through this period of transition, so that by the turn of the year everyone is fully up-to-speed with the new regulatory world.

'REGS LIVE' – SUPPORTING THE INDUSTRY

In order to help this happen, Hager has created an integrated communications

campaign, 'Regs Live' as a unified platform from which to get important 18th Edition-related advice, guidance and recommendations out to the industry.

'Regs Live' offers the industry the means to access the information it needs in a manner that suits the individual.

This includes the availability of in-depth training courses provided by Hager experts which sets out both the significant changes to the regulations and, importantly, how it will practically affect day-to-day installations and electricians' responsibilities.

Following completion of the course, attendees receive a handy bitesize guide to all things 18th Edition which has been

created by Hager's technical team. It provides a quick and accessible overview of what has changed as a result of the 18th Edition, including reference to product changes that become mandatory next year.

'REG THE BOT'

Hager has also utilised other innovative communication tools to engage with electricians.

Early July saw the launch of 'Reg' – Hager's very own 18th Edition chatbot.

Users can access the chatbot using Facebook Messenger, via the Hager Facebook page. Here, the industry-leading initiative provides a primary information source for electricians keen to know more about the 18th Edition changes.

Designed by Hager's experts, users of the chatbot are finding it simple to navigate around the subject matters of interest to

them so they can speedily uncover the right information they require.

The 18th Edition headline changes include the use of arc fault detection devices (AFDD), correct RCD selection, surge protection, overload protection of devices, and the incorporation of devices within enclosures. Each of these are broken down into accessible sections that ensures contractors can find what they are interested in without delay.

Users can ask 'Reg the Bot' any questions they have on the 18th Edition, confident that the answers provided are accurate and helpful in terms of enhancing their current knowledge levels and points them in the right direction about what to do next.

Many hundreds of two-way online conversations have already been held between 'Reg' and the electrical community. And they are highlighting

some of the key areas of interest and concern for electricians.

A prime example is the new onus on contractors to carry out risk assessments to determine whether surge protection devices are needed on future electrical installations. This is a new departure for many contractors and it is important that they get up to speed swiftly before they potentially fall foul of the revised regulations.

For members of the professional electrician community looking to put a question to Hager's Reg chatbot simply visit the Hager 18th Edition Regs Live Facebook page at Facebook.com/HagerRegsLive and hit 'send a message' to begin a conversation.

For more information, please contact Nicola Pittaway at McCann on 0121 713 3744 / nicola.pittaway@mccann.com

Meet Reg.

Tell me about the changes to the wiring regulations

Sure, let me help...



Are you ready for all of the changes coming with the 18th edition of the wiring regulations?

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Reg is Hager's very own 18th Edition expert chatbot. From simple explanations of the key changes to the 18th Edition regulations, to product information and advice, Reg is available 24/7.

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Simply visit the Hager 'Regs Live' Facebook page and just send a message to begin a chat. Easy, convenient and straightforward. Let's get chatting today.

:hager





Wiring regulations wisdom

The 18th and latest Edition of BS 7671 (The IET Wiring Regulations) published on the 2 July 2018. In this article, Sean Passant, Atlas council member and technical manager at DEHN (UK) has assessed the impact of this new edition on the lightning protection and surge protection industry in this special focus for Electrical Review

Structural lightning protection has been with us since the late 19th century in one form or another, but it was only really formalised into a coherent standard with the release of BS 6651 in 1985. The adoption of the IEC standard in 2006 gave the UK the current BS EN 62305 which also contained the first real attempt to include comprehensive co-ordinated surge protection. The awareness of surge protection, its uses and benefits have been something of a 'slow burn' in the UK and even 12 years on from the release of BS EN 62305 surge protection can often be seen as something of a 'dark art'.

One of the key changes in the 18th Edition will be the requirement for surge protection devices (SPDs). This is a real seed change in the industry in the UK with the emphasis moving from a point of view of 'are they really required?' to the new view which is very much 'prove you don't need them!'.

The 17th Edition contained a fairly lengthy and somewhat complicated risk assessment process including "AQ criteria" and "ceramic levels" to establish whether SPDs were required or not. This is no longer included in the 18th Edition. Instead in Section 443 we have some very definitive criteria, which, if appropriate and applicable to your project, completely removes the requirement to carry out a risk assessment.

This section now states:

"Protection against transient over voltages shall be provided where the consequence caused by overvoltage effects:

- (a) results in serious injury to, or loss of, human life, or
- (b) results in interruption of public services and/or damage to cultural heritage,
- (c) results in interruption of commercial or industrial activity, or
- (d) affects a large number of collocated individuals".

That covers an awful lot of structures in the UK without having to resort to a risk assessment. It is also heavily on the side of installing SPDs in the majority of cases. In addition to this, any structure fed via an overhead supply line shall also require an SPD.

Structures not covered by these stringent categories still require a risk assessment to be carried out. Here, the process has been simplified but there is still a fair amount of data that needs to be collected prior to undertaking the assessment. The new amendment offers a route around this process by stating that if the risk assessment is not carried out then SPDs shall be fitted in all cases. It's not envisaged that this risk assessment will be completed by the lightning protection specialist, this is likely to be carried out along with other calculations relating to the LV distribution system.

This may not mean a great deal of change for many of the existing ATLAS accredited designers who were already well aware of ►



Electrical **excellence**

BS 7671:2018 is here!

The 18th Edition of the IET Wiring Regulations has published (2nd July).

With changes encompassing requirements around surge protection, arc fault detection and electric vehicle charging, BS 7671:2018 contains a lot of new and amended information.

Get your copy and the popular On-Site Guide directly from the IET. Buying direct from the co-publisher of BS 7671 guarantees your copies are genuine.

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the requirements for SPDs and the process of determining their use. However, a major change to Section 534 is a raft of measures that spell out the actual deployment of surge protection measures and here the real economic impact is felt. This roll out of SPDs is achieved by following the lightning protection zone concept (LPZ) – a concept directly taken from the current lightning protection standards BS EN 62305: 2012.

Regulation 534.4.1.1 requires SPDs to be installed at the origin of the installation and then further SPDs deeper within the low voltage (LV) distribution or data system to protect from surges generated from induced voltages or frequency oscillations within. Simply put; an SPD is required whenever a cable enters or leaves the internal zone (zone 1) from the external zone (zones 0a or 0b). There is also a requirement for additional SPDs to be installed each time a cable or service crosses an internal zonal boundary. These internal zones are to be determined via consultation with the end client and their associated specialist advisors/contractor.

Which type of SPD is installed at the origin, depends on whether there is a structural lightning protection system (LPS) installed or not. Type 1 SPDs should be installed if there is a fitted LPS and type 2 if there is no fitted LPS. Then the exact position of the service line/cable must be looked at, if there is a fitted LPS. A type 1 device is definitely required if any cable or service line is routed from the outside the zone of protection afforded by the structural LPS (external zone 0a) this would also include any plant or services which have been 'bonded' into the structural lightning protection system. If the external load is within LPZ0b (an area protected by a

structural LPS with air rods or catenary wire system for example) then no direct strike is possible so a type 2 device is acceptable.

Just how well the zonal concept will work in practice remains to be seen; this concept has existed within the lightning protection standards for 12 years but remains widely misunderstood outside of that specialist, niche industry. The requirement for zoning a structure really does need some in-depth input and thought on behalf of the end client and

Data needs be collected prior to the assessment

their specialist contractor, exactly which services and equipment will be critical for the function of their structure and their ongoing business continuity will have to be determined at as early a stage as possible. This conversation will be one that some lightning protection installers have not had previously, it will now become unavoidable.

All the above must be addressed at the design stage, the initial risk assessment, the location of the LPZ zones and the level of LPS required (if any) must be known from the onset so the SPDs can be factored in for the panel builder to allow space in the control or power panels.

The LPZ zones are fundamentally derived from any structural lightning protection requirements and these are driven by the risk assessment process within BS EN 62305. This information will now be required at a very

early stage in the planning and design phase.

Additional care will need to be taken with any structures which are covered by The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) or The Control of Major Accident Hazards Regulations 2015 (COMAH). Lightning and LV overvoltage faults are dangerous sources of ignition in hazardous areas that need to be controlled to prevent explosion, the SPD requirement on such projects will therefore become even more important and the zonal concept even more stringent, as an industry we are going to have to become better informed.

These new regulations will mean that there will have to be a far closer commercial, technical and engineering relationship between the end client, the M&E designer/contractor, the panel manufacturer and the lightning protection specialist. Previously this relationship has been quite limited. It is impossible to imagine that all the requirements of Sections 443 and 534 could be fully understood and met without these parties enjoying a closer and more mutually beneficial relationship going forward. It is a relationship that may have to be driven by the lightning protection specialist.

Clearly there are huge opportunities ahead for the whole industry as the volume of SPDs required will increase dramatically. In addition to this, the consultation required with lightning protection contractors will now include projects where there is no structural LPS, typically projects the industry had no prior input or knowledge of. However, potential commercial benefits need to be countered by ensuring that the end client receives the correct technical solution but this is certainly a large growth area.

Training and continuing personal development (CPD) will be essential to ensure the knowledge base is extended right through the project delivery chain from estimator, to contract manager and site supervisor if the full remit of BS 7671 and BS EN 62305 are to be realised and a project safely and correctly signed off as compliant.

Training courses are already being planned which will be delivered through Atlas (Association of Technical Lightning & Access Specialists). **ER**

BIG IDEA

Will your data centre handle your next big idea?

Animal Logic, the animation, and visual effects studio behind films such as The LEGO Movie, The Matrix, and The Great Gatsby, is benefiting from high-performance computing, all from quickly deployed, prefabricated data centre.

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Life Is On

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Efficient connections for the Ex zone

In environments where there is a high explosion risk (known as Ex zones), connectors must fulfil special safety requirements. Electrical Review spoke to Howard Forryan



The use of such connectors, featuring innovative termination techniques supporting unskilled assembly and flexible hood and housing mating solutions, allows end users and installers more installed site flexibility and keeps costs down through time saving in various hazardous application areas including process automation in the petrochemical, chemical and mining sectors.

CONDITION MONITORING

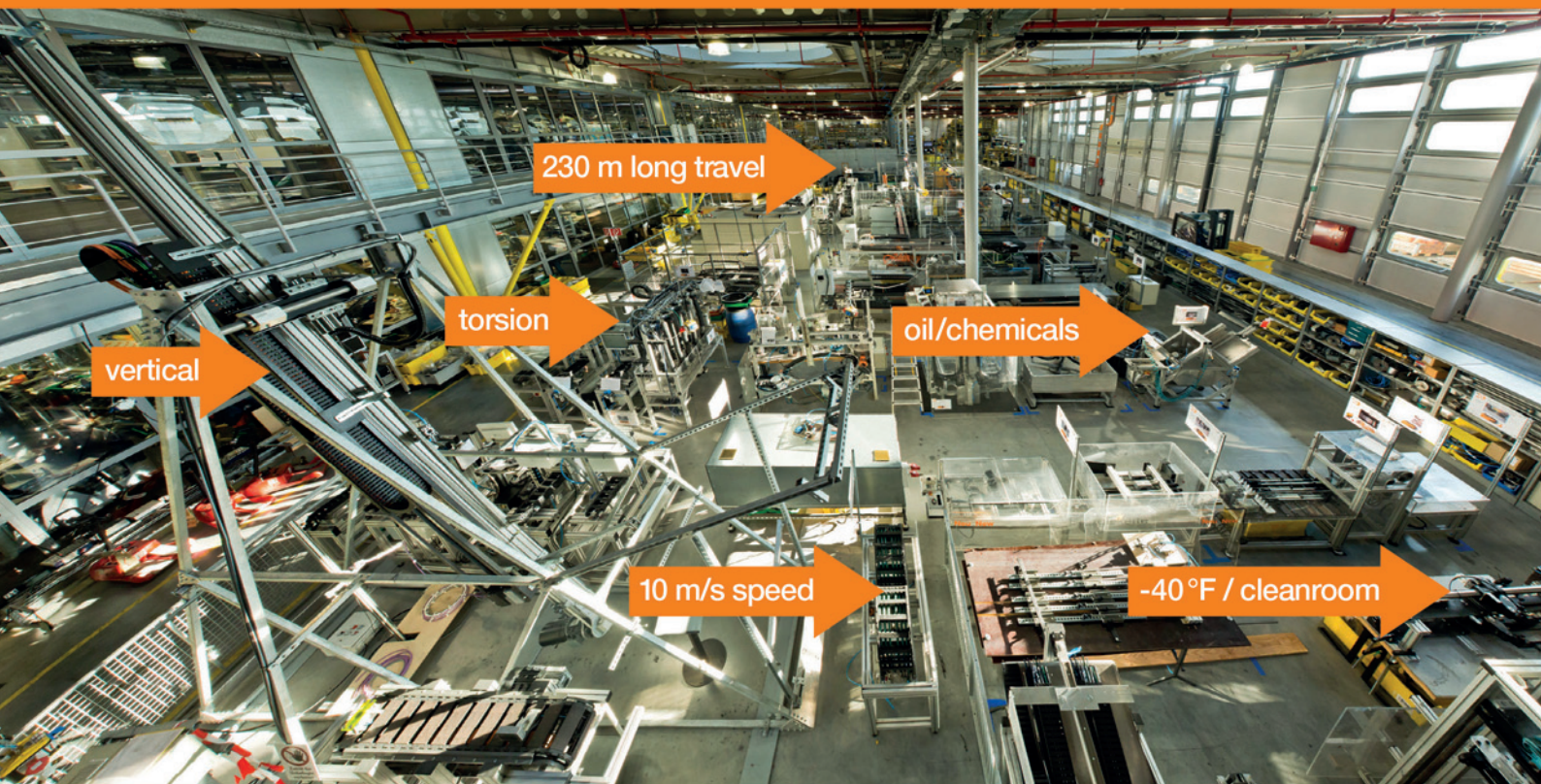
Operators of oil and gas platforms need to continuously monitor their sites' ambient condition status through parameters such as gas concentration levels, differential pressures and temperatures. Mobile explosion-proof detectors and transmitters allow such measurements to be made at various different key locations on the platform and then be re-positioned

as required. The readings from these instruments are switched and recorded via an explosion-proof central controller. These pre-existing detectors and central controller enclosures will typically already have glanded conduit access points. Because of the stringent requirements of explosion-proof equipment, users need to avoid making any modifications to such certified equipment. ►

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In order to save valuable installation time and to maximise location flexibility of such a mobile detection system onto an oil or gas platform installation, Harting offers an explosion-proof connection solution with the compact Han® Ex 4A cable-to-cable connector system, a product that can

●● The replacement of defective loads is complex ●●

be retrofitted without compromising the equipment's Ex certification compliance. Because all detectors are provided with pre-fitted connector cable ends, they are supplied to site fully pre-tested, which ensures fast pluggable installation.

For the links to the central controller

enclosure already located on site, cables can be wired through existing glands and conduits, leaving free ends for cable-to-cable connector termination. Harting provides mating cable-to-cable connector with tool-less quick-lock termination connector inserts, allowing for quick and simple non-specialist wiring on-site installation.

The application of the Han Ex 4A cable-to-cable connector system allows the connection between the controller and the detectors to be made outside the explosion-proof enclosure, hence ensuring there is no modification done to the enclosure and no need for re-certification of equipment.

LIFTING CRANES

Another offshore oil and gas platform related application where connectors offer significant benefits over hard-wiring is on mobile heavy lifting cranes, which may need to be frequently removed and re-installed at different locations. While

the crane platform and operator cabin are installed in the so called 'safe zone', the boom is operating in the hazardous zone, thus making it mandatory to use ATEX approved components. The boom carries a number of different sensors (for detecting angle and load, for example) and a light bar at its tip; near the cabin various connectors are used at a panel where all the sensors are wired up.

Across the general "Ex" sector, the replacement of defective loads such as low-voltage switchgear, generators or pumps is complex: the power has to be switched off before the defective equipment can be uninstalled and replaced. With a hard-wired installation, all cores would have to be screwed or connected individually. Connectors, on the other hand, reduce downtime and support modern and flexible machine configuration through modularisation in hazardous areas. HARTING's Han® Ex series connectors are available in different tool-less contact wiring termination designs, so that no specialist skilled personnel are needed for initial assembly and replacement of components. Similarly, the installers require no special tools, thereby accelerating the switch-out operation while maintaining all safety functions. Crimp termination is also an option for the volume OEM manufacturing producer.

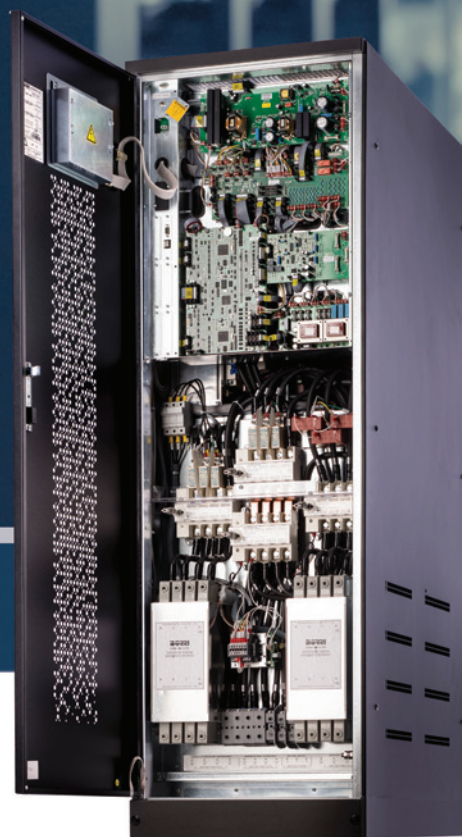
MEETING PROTECTION REQUIREMENTS

Intrinsically safe explosion protection is based on the limitation of the power circulating in intrinsic circuits, permitting electrical devices to be operated safely even in an explosive environment. Han® Ex connectors meet the standards for materials that are permitted to be used in potentially explosive atmospheres (DIN EN 60 079-0). Air clearance and material creepage distances are in accordance with the intrinsically safe circuit requirements for zones 1 and 2. Their blue colour provides easy identification of inherently safe circuits and they ensure protection class IP65 when mated or unmated in conjunction with appropriate lanyard attachable loose covers (plastic for Han® Ex B and powder coated blue zinc die-cast for Han Ex 3A series). **ER**



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The Importance of What's in the Box

ALL UNINTERRUPTIBLE POWER Supply (UPS) systems look much of a muchness. They are black boxes of varying sizes, which all claim to deliver unfailing power protection. UPS purchases are not made based on their aesthetics, it is their performance that gives them their point of difference. Successfully achieving differentiating factors and ultimately superior UPS performance relies heavily on not just forward thinking research and development but also quality fabrication.

One of the longest standing European UPS manufacturers is Borri Spa. As the company approaches its 87th year of manufacturing, the company's CCO, Bessam Moutragi takes a look back at its rich engineering history.

"We have seen the global manufacturing journey go full circle. The turn of the millennium saw a lot of European businesses along with a number of our counterparts move their manufacturing to lower cost parts of the world including China, Taiwan and Turkey. Whilst this has been a successful short term plan towards achieving a better bottom line, it is not something that Borri has ever considered.

"Borri Spa is one of the few remaining, genuine UPS manufacturers in Europe. Whilst many other businesses have moved their manufacturing to more commercially advantageous locations around the world, in order to maintain high quality standards, we have remained steadfast in our core manufacturing principles.

"Over the years Borri Spa has invested heavily its production facilities, which now span over 20,000m². All of our UPS components are designed, developed and engineered in Europe and quality tested in our own manufacturing site in Bibbiena. It is this pedigree that positions Borri UPS in a different class. Not only are we leaders in the field for developing standard issue standalone UPS solutions ranging from 10kVA – 6.4MVA, we are also renowned worldwide for delivering custom built power protection solutions.

"Working in close partnership with our international network of distributing partners, Borri operates across five continents and is able to support its entire customer base onsite. One of our closest

allies is Power Control Ltd in the UK. We partnered with them in 2009 and were drawn to the company's unique business offering. Power Control has been operating in the power protection market for over 23 years and has a very tailored approach to working with its clients. These synergies make this partnership a strong force when it comes to offering bespoke UPS solutions.

"Showcasing this, most recently, we have completed a very specialist project for one of the UK's largest water treatment works. We worked in close conjunction with our core UPS solutions partner, Power Control, to supply, install and commission 18 custom

Power Control's vision for the Borri brand, execution in delivering our technologies to the UK and its unmatched service support has undoubtedly made them the preferred power solutions partner for many businesses in the country

built 100kW IP54 UPS units. Positioned as standalone units, the UPS systems are now providing essential emergency backup power across the entire water treatment site.

"Power Control demonstrated its extensive knowledge of the complex requirements demanded from the multifaceted utilities sector and was expertly placed to provide a future proof power protection strategy and essential technical guidance towards the development of the UPS systems. One of the key prerequisites was for the solution to be IP54 rated (protected from water and dust particles), with a sizeably reduced footprint.

"Rather than issuing a standard IT grade UPS within an IP54 rated box, Borri was

able to design and manufacture an IP54 UPS. The customised solution also needed to be reconfigured to be smaller than the standard Borri 100kW units as space was extremely restricted. The modified units now boast a significantly reduced a footprint and are all front access for easy access and maintenance. The air inlet and outlet fans are also on the front meaning the UPS systems can be pushed right up against a wall, which also contributes to space saving.

"The battery boxes were also customised to provide IP54 with a built in DC isolator and housed in a matching sized front access box. In addition, the bypass switches have also been placed in IP54 enclosures."

Power Control's sales director, Justin Tarrant-Willis commented on the project: "The water treatment works had incredibly strict specifications from the offset. Power Control won the work based on its ability to deliver a custom built Borri UPS solutions and its commitment to delivering the installation within a tight timeframe and within stringent budgets.

"Having worked in partnership with Borri Italy for almost a decade on developing bespoke power protection solutions, Power Control was confident that it would be able to provide a customised UPS systems that could be IP54 rated and significantly reduced in size.

"Borri Italy has an impressive research and



Borri Ingenio Plus 30-160kVA online double conversion UPS systems

development team and we have worked in close collaboration with them on a number of high profile custom installs. Power Control has direct access to the factory and witness testing facility at Borri Italy and can therefore easily deliver a service that is wholly indicative of our manufacturing partner. It is our close working relationship that enables us to provide our clients with tailored solutions, designed to meet their exacting requirements."

Mr Moutragi concluded: "In the last decade we have achieved incredible successes with more efficient, more resilient and more flexible technologies. However, the market place is now flooded with solutions that not only meet the operational demands of business' today but also address the aggressive environmental agenda. It has therefore been critical for Borri to not only maintain its industry leading quality levels for standard issues UPS systems but also develop its skills, knowledge and engineering proficiencies to deliver custom solutions for the ever evolving applications they are required for. Working with Power Control gives us a valuable edge when it comes to understanding the needs of the UK market.

"Having been part of the power protection industry for over 25 years, Power Control Ltd is one of the most influential power specialists in the UK and as such has an unparalleled understanding of environmental considerations, TCO demands and performance demands. Borri is proud to have Power Control as its UK partner and is looking forward to continuing to succeed in delivering high quality, resilient power protection strategies across the country."

ABOUT POWER CONTROL

Power Control has been an elite UK partner for Borri for many years and as such we have an unrivalled high level of engineering involvement and receive invaluable direct manufacturing and technical back-up from Borri. This, coupled with our all-encompassing service and maintenance programmes and high UPS and product spares stock levels, makes Power Control the chosen power solutions provider for so many businesses.



Borri Ingenio Max 200-300kVA online double conversion UPS system

Insight into irritation

Damage to the hands is one of the most common occupational injuries, with skin infections and irritations among the most typical conditions suffered by workers. Speaking with St  phanie Quilliet, strategic product leader EMEA for head and body at Honeywell Industrial Safety, Electrical Review explores the most common sources and causes of skin damage and irritation in the workplace that need to be considered in order to protect a worker's hands effectively. It also looks at the effects of hand skin damage, from physical injuries through to the potential financial consequences, and highlights why protecting a worker's hands should be at the heart of every employer's health and safety strategy



The skin is the largest organ of the human body. It is the soft outer tissue that guards and protects our muscles, bones, ligaments and internal organs. A strong yet also delicate organ, its thickness varies depending on where it is on the body. For example, the skin is at its thinnest under the eyes and around the eyelids, and thickest on the palms of the hands and the soles of the feet (around 4mm thick).

The skin consists essentially of two layers – the epidermis and the dermis. However,

these are separated and joined by a basement membrane and the dermis is itself divided into two areas, the papillary region and the reticular region.

THE EPIDERMIS

The epidermis comprises the outermost layers of the skin. It forms a protective barrier over the surface of the body while retaining water and acting as a barrier against pathogens. It is made up of five further layers, which provide mechanical strength. The epidermis contains no blood

vessels and cells in the deepest layers are nourished by diffusion from blood capillaries, which extend to the upper layers of the dermis.

THE BASEMENT MEMBRANE

The epidermis is separated from the dermis by the basement membrane, which is essentially a thin sheet of fibres that is created through the action of both tissues.

The basement membrane controls the movement of the cells and molecules between the dermis and the epidermis and also acts as a reservoir for the controlled release of growth factors during repair processes.

THE DERMIS

The dermis provides tensile strength and elasticity to the skin through a matrix made up of collagen fibrils, microfibrils and elastic fibres.

The dermis contains the nerve endings responsible for sensing touch and heat. It also contains hair follicles, sweat and sebaceous glands, lymphatic vessels and blood vessels. Structurally, it features two areas – the papillary region and the reticular region. The former provides the dermis with an irregular surface, strengthening the bond between the two layers of skin. The reticular region lies deep in the papillary region and is made of dense, irregular connective tissue, with a high concentration of collagenous, elastic and reticular fibres to give strength, extensibility and elasticity to the dermis.

HAND PROTECTION

Despite its versatility, the skin is also vulnerable. There are three main sources of potential damage, infection and irritation:

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- Mechanical and electrical
- Radiological and environmental
- Chemical

MECHANICAL AND ELECTRICAL SOURCES

Although the skin has great elasticity and strength, it can be easily cut by sharp objects. It can also be bruised by strong forces that it comes into contact with and burnt by excessive ambient heat or cold. These potential dangers are common in many industries and will be discussed in more depth later.

Anyone who works with sharp or pointed tools, products or equipment is at risk of cuts and abrasions. Similarly, anyone working within proximity of unguarded machinery, or in areas where materials or products are transported nearby, can suffer cuts and abrasions.

Burns can be caused by unwanted exposure to hot surfaces and serious burns can be caused by an unearthed electricity supply, arcing systems or electrostatic discharge. They can also be caused by exposure to extreme cold.

These dangers are present in a number of industries and frequently found in engineering, automotive, construction, oil and gas, aerospace, logistics, maintenance, food and beverage and manufacturing environments.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The most effective and reliable way to prevent skin problems in the workplace is to develop processes to avoid contact with harmful substances or objects that can cause cuts or bruises. When this is not possible, personal protective equipment (PPE), such as safety gloves, can play a key role in protecting a worker's hands.

However, what is sometimes not realised is, unless carefully selected, the gloves themselves can actually be a cause skin irritation or damage.

For example, a worker can suffer a hand injury if they are allergic to the glove's material or if there are broken glass fibres in mechanical protection gloves. With this in mind, gloves should always be selected based on the specific task at hand. Similarly, gloves can get old and lose their protective ability and so should be regularly inspected,



COMMON ALLERGENS

Five of the most common allergens that can cause allergic contact dermatitis are:

1. Cosmetic ingredients, such as preservatives, fragrances, hair dye and nail varnish hardeners
2. Metals such as nickel and cobalt
3. Rubber, including latex
4. Textiles, particularly any dyes or resins
5. Strong adhesives and especially epoxy resin adhesives

and then discarded and replaced if needed, to prevent damage resulting from insufficient protection.

A WIDESPREAD ALLERGEN

Epoxy resin formulations are used across a wide variety of industries. They find use as coatings and adhesives and are widely used in composites engineering in carbon fibre and fiberglass structures, especially in the aerospace sector.

They are also used in the electronics industry in motors, generators, transformers, switchgear and insulators, as they have excellent insulating properties. In the US alone, the epoxy market is currently worth more than \$22 billion.

The primary risk associated with epoxy use is often related to the hardener component and not the epoxy resin itself. Amine hardeners are particularly corrosive but may also be toxic or even carcinogenic.

Liquid epoxy resins, in their uncured state, are mostly classed as irritant to the eyes and skin.

One particular risk is sensitisation and this risk has been shown to be more pronounced in epoxy resins containing low molecular weight epoxy diluents.

Exposure to epoxy resins over time can also produce an allergic reaction, in the form of allergic contact dermatitis as outlined above.

FINANCIAL COSTS TO EMPLOYERS

When employees are injured, they often have to take time off work. And, if the injury is work-related, the employer must continue to pay the worker's wages, as well as any insurance contributions. A worker's absence also has to be covered by other workers and re-training costs may well be incurred as a result. In addition, further administration-related costs can be suffered. Workplace injuries and new cases of work-related ill health cost British employers £2.9bn in the financial year 2016.

In serious cases, skin damage or irritation may result in litigation, the costs of which have to be borne by the company if it is proven that reasonable protection was not provided.

Finally, there is the significant cost of damage to a company's reputation, especially if the accident receives extensive publicity.

THE ROLE OF PPE

As previously mentioned, the first line of defense should always be to try and avoid contact with materials and substances that cause skin injuries or diseases. Additionally, employers are legally required to provide workers with appropriate health and safety training, which is vital to raise awareness of hand-related risks. However, whenever a task that can put a worker's hands at risk cannot be avoided, an employer's duty of care towards their employees includes providing the correct PPE for the tasks at hand.

Having identified the substances to be handled, all other risks involved in the tasks should then be identified, for example cut or puncture risks during use. In this instance, a glove that provides both chemical and mechanical protection should be considered.

There are a wide variety of industries in which a worker's hands are at risk from skin irritants and conditions that deserve particular attention from employers. Whilst some may be more obvious or more serious than others, in all cases, they should be managed carefully. **ER**

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The Airport Operations Facility installation seen here comprised of: 1 x 22kW raptor charger; 3 x 50kW rapid chargers; 3 x 7kW 32A SPN chargers.

WHAT'S NEXT FOR FREEMANTLE? We'll continue to innovate and provide our clients with the very best solutions. Knowing airports as we do we've just created a bespoke airport charger that meets all airport relates compliance issues, "out of the box". We are bringing the same thought processes and solutions to non-airport environments too. Now, we're busy developing new battery storage and power management systems. These will fit with our charger and installation developments as well as complementing our tremendously versatile EV Charging back-office reporting and management systems – exciting times!

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Industry insight: UPS

A Q&A with John McGee, managing director at critical infrastructure specialists, Durata UK. John talks all things UPS; from selecting the right system to proper maintenance, future proofing your facility and current industry trends.

In a world where we are so heavily reliant on 'always on' technology, what are the risks to business in the event of a power failure, or if the UPS system in place isn't up to scratch?

It depends very much on the nature of your organisation and the importance of IT to its operations. How long can you afford to be without vital IT, data and applications?

For example, if you're a hospital, can you afford to lose any samples, or results of medical tests because of a sudden power outage? Even if you are careful about backups, how critical might a delay be to accessing patient information during an

operation, because you had to wait for the power to come back on before restoring data from a recovery site?

Commercial organisations too depend on timely access to data. A transport company, such as an airline, can lose vital business – and suffer significant reputational damage – if its booking system stops working because of a breakdown in power supplies. This has happened!

If your organisation depends on immediate access to data, as most organisations do today, you need to have a properly specified and carefully maintained UPS system appropriate to your needs.

What should be the first step when choosing a system that will ensure a business is kept up and running should a failure occur?

You need to think carefully about what you need to be supported and what you think you will need in the future. If many of your applications have been virtualised and are running from a remote data centre, you might think you only need a small UPS for your remaining in-house IT infrastructure, but think about how your needs may change in the future.

Modular UPS systems are commonplace now, so you can add capacity easily as and when you need it, but it's still a good idea to put in at an early stage, infrastructure such as switch gear, that will allow you to plug in additional UPS capacity without downtime in the future.

Also consider that UPS systems today run at power factors of almost unity, so they are much more efficient. If you install more UPS capacity than you strictly need on day one, you are not affecting your running costs all that much because the UPS can run efficiently even at loads as low as 20% of rated capacity.

If a company knows its requirements and wanted to go for a bespoke solution, what exactly does this encompass that an off the shelf solution doesn't. Do you think it's worth the extra spend?

It's not the products themselves that need to be customised; it's how the system is put together and managed that counts. We see so many bad UPS installations that have been put together by people who are not specialists. The best bespoke solutions are produced by bringing in professional help at the start, to specify what exactly is needed and how the right infrastructure, such as switchgear and bypass panels, can be built in from the outset to ensure smooth running and seamless upgrades as and when they are needed.

Remember that a UPS is a sensitive piece of electronic equipment that needs to be treated with respect. Batteries should be maintained at a constant temperature, but we often see them next to equipment under heavy load which naturally generate a lot of heat. Ideally, we recommend that batteries be kept in a separate room under constant temperature to prolong their operating life.

With regards to choosing the right UPS batteries, is there a solution that is generally common place in the industry at the moment, or does this depend entirely on the needs of the business?

We hear a lot about Lithium-Ion battery technology but haven't seen it take off yet. Li-Ion batteries have a much longer operating life than lead-acid batteries, they are lighter weight and they are more compact, taking up a lot less space for the same runtime. The technology has also seen a high level of investment and advances in recent years largely as a result of non-data centre applications such as electric cars (EVs) and energy storage systems.

However, there is a premium to pay for all this, and since they're a long way from becoming commonplace, they have not yet achieved commodity prices. For all the talk about lead acid (VRLA) batteries, they are highly recyclable with a good service

supply chain, to ensure that products are removed from site and dealt with in the most environmentally considerate way.

First cost is often a major consideration when specifying a UPS, and in this respect VRLAs are the go-to choice. However, for customers who want to take a longer view and consider total cost of ownership (TCO), there is online help such as Schneider Electric's Trade-Off Tools to assist with decision making.

In relation to remote monitoring services, how strongly would you recommend that a company invests in this? What does it entail?

There are some good products available, but the key is to use them in an organised and systematic fashion. IT guys love getting status updates on their phones late at night; it appeals to their nature! But you need to make sure that actions are channelled in the right direction. Is the issue at hand the responsibility of the IT or engineering departments? Is it a facilities management issue? These are the questions you need to address and put in place agreed processes and procedures to ensure that issues are resolved promptly and properly.

●● If your organisation depends on immediate access to data, you need to have a properly specified and carefully maintained UPS system appropriate to your needs ●●

When it comes to maintenance and servicing, how often should this take place and how do you go about choosing the right person for the job?

Research has shown time and again that human error is one of the main causes of data centre downtime – I refer back the aforementioned airline story. Many of these errors occur when unrequired maintenance takes place, or when parts are replaced or installed incorrectly. So as far as I'm concerned, the right people for maintenance and servicing of mission critical systems like UPS, are always either the manufacturer or a properly accredited support organisation.

A lot of companies take on maintenance work that they're not best placed to carry. This is not because they lack skills or knowledge, but because they are not sufficiently familiar with either the specific products they are supporting, or the overall systems design/architecture. Durata doesn't take on maintenance contracts; we prefer to remain vendor neutral and work alongside properly accredited maintenance partners.

How energy efficient can these systems be? With a growing need for sustainable power in the industry is there any scope to utilise renewable energy?

I have heard of initiatives such as the Green Grid's Open Standard for Data Centre Availability (OSDA) which encourages ►

people to use renewable energy, such as locally produced wind or solar power, to generate local energy stores that can be used as a backup in the event of a power failure. It's a good idea but you need to think about the problem holistically.

A diesel generator, the usual backup power source of last resort, may burn fossil fuels but it only comes on when it is

●● Having the infrastructure in place to be able to scale up or down as required will provide the flexibility needed to future proof your system ●●

needed. Whereas, you would need a cooling system to keep a battery store at constant temperature even when it is not being used. You might also need to trickle charge those batteries constantly, so you need to consider how economical, never mind environmentally friendly, the overall system would be.

How can a business ensure a UPS system is future proofed?

That all depends on the business plan. UPSs generally last five years or thereabouts. You need to be able to match your UPS system to your expected business requirements and have the infrastructure in place to scale up or down as required. Modularity can help you do that, as long as you have thought about the essential infrastructure needed to enable maximum flexibility.

Finally, is there anything you've seen currently trending in the industry?

There's a lot of talk about IoT and Edge. We'd like to see it realised more quickly! If all applications migrate to the cloud and are hosted centrally, there will be little need for UPS systems in most business premises; all the vital IT servers would be hosted remotely.

On the other hand, the growth of smaller data centres at the Edge would boost general demand for UPS systems, as critical servers become more widely distributed around the network's edge. That's where we hope to see a lot of business growth in the future. **ER**



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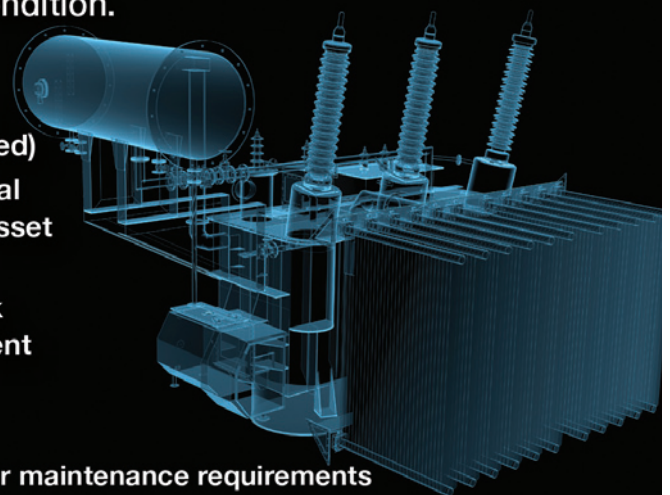
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Leading the charge for Li-ion batteries

More mission-critical settings show an interest in tapping into energy storage but doubts still persist over the practicalities and knock-on effects on resilience. Leo Craig of Riello UPS outlines why the perceived risks are overplayed and more than outweighed by the possible rewards.

According to Centrica's latest 'Resilience Report', energy-related failures can cost an organisation nearly a fifth (17%) of their annual income. Faced with those stark figures, you'd think the case for a more flexible and reliable electricity network would be compelling.

But many mission-critical sites are still reluctant to fully-embrace smart grids and the move towards demand side response (DSR), even though their curiosity is clearly growing. Surveys suggest 77% of mission-critical businesses would be interested in DSR, but only if it doesn't adversely affect its core activity.

And there's the key conundrum for sites that depend on 100% uptime – how do we make DSR a reality for them without compromising on resilience?

One of the ways we in the critical power protection sector can change this risk-averse mindset is by highlighting the many benefits of using an uninterruptible power supply (UPS) not only as a last-resort backup when there's mains disruption, but as a means to generate clean, green, energy.

THE BATTLE BETWEEN 'OLD' & 'NEW' UPS BATTERIES

Of course, this can only happen if a UPS uses lithium-ion (Li-Ion) batteries. Sealed lead acid (SLA) – also known as valve-regulated lead acid (VRLA) – batteries have long been the go-to option for data centre operators and other UPS applications. They're reliable and relatively inexpensive, particularly their initial purchase cost.



property prices, mean the advantage of Li-Ion – i.e. higher power density in a smaller footprint, potentially eliminating the need for a separate battery room – should become increasingly appealing to data centre operators.

Add in the ongoing changes to our electricity supply network, and opportunities offered by moves towards a DSR model, and the benefits of Li-Ion will become compelling.

There's already more than 4 GW of energy stored in UPSs across the UK, enough to power almost 3 million houses. And that's only really scratching the surface of the potential Li-Ion battery storage could provide.

If we can convince sites with back-up power generation, such as data centres, hospitals, and utilities, of the economic and environmental benefits of Li-Ion as a gateway to DSR, it'll be a huge positive for business, for the National Grid, and for the wider public.

●● How do we make DSR a reality for mission-critical sites without compromising on resilience? ●●

THE LOWDOWN ON LI-ION

Riello UPS works closely with leading battery manufacturer GS Yuasa and has partnered on several recent projects using Li-Ion cells.

Peter Stevenson, Senior Technical Coordinator for GS Yuasa Battery Europe, answers some of the most frequently asked questions about this emerging technology.

What are the main differences between lithium-ion and sealed lead-acid batteries?

SLA batteries store charge by the electrochemical conversion of lead-based compounds contained in their positive and negative electrodes, and their reactions with sulphuric acid in a water-based electrolyte. Hydrogen gas is released constantly from the electrolyte, one of the main limiting factors in battery life, and it must be continuously ventilated from battery enclosures to minimise damage.

Li-Ion versions employ a variety of chemical compounds which accept and release lithium-ions during charge and discharge. Their electrolyte is an oily liquid which is stable at twice the voltage of acid electrolytes. It also doesn't generate any gasses. They have much higher energy densities than SLA batteries.

What are the advantages of Li-Ion batteries when it comes to a UPS?

Li-Ion batteries are about 25% of the volume and weight of an equivalent SLA battery, so that's a big benefit in settings where space is limited.

They're far less sensitive to temperature fluctuations, so for example, Li-Ion batteries operating at 30°C will have a longer ►

But they're far from perfect. They only perform at their best in temperature-controlled conditions. They need regular maintenance, and as their impedance increases over time reducing their power capacity, they frequently need replacing.

Li-Ion batteries have been around since the 1970s but only gained commercial success due to the boom in personal electronics such as mobile phones and laptops. It hasn't been straightforward to develop a Li-Ion battery that can safely power large-scale mission-critical facilities, but the technology has advanced sufficiently and is now commercially-viable to start gaining significant traction.

Compared to SLA models, Li-Ion batteries deliver the same power density in less than half the space. They recharge much quicker, have up to 50 times the cycle life, and can operate effectively at far higher temperatures. A lead-acid battery would probably need replacing at least two or three times over the lifespan of a single lithium-ion version. So over a 10-year period, Li-Ion batteries can have a total cost ownership 10-40% less than an SLA.

A LI-ION POWERED FUTURE?

In our data-driven world, the growing demand for storage and processing capacity, combined with consistently high commercial



Li-ion, the future of UPS?

life than an SLA functioning at 20°C. In many environments this means fresh air cooling systems can be used, rather than expensive air conditioning, which is a significant plus in terms of total cost of ownership.

It's also easier to predict the aging of lithium-ion, reducing the risk of rapid loss in performance that is sometimes seen with SLA.

Finally, Li-Ion batteries typically provide up to 50 times as many deep discharge cycles as SLA. While this isn't hugely significant in a traditional UPS, this could change if the rapid growth of solar and wind generation means a UPS's role evolves from purely providing emergency power into an energy storage system that can generate revenue on a daily basis.

And are there any disadvantages or challenges to overcome?

The main and obvious disadvantage is the initial cost. Even though massive investments in automated manufacturing processes have resulted in significant cost reductions for Li-Ion over the last 20 years, the basic raw materials are still expensive compared with lead-acid.

●● **Li-Ion batteries are about 25% of the volume and weight of an equivalent SLA battery, so that's a big benefit where space is limited** ●●

Recycling is also an issue too. There's still much work required to reproduce the well-developed and cost-effective recycling of lead-acid cells.

Is it safe to use Li-Ion in a UPS? We've all heard of devices like Samsung Galaxy Note 7s bursting into flames.

Li-Ion batteries employ a wide range of chemistries and structures, so they can be optimised for different applications. The batteries used in mission-critical systems use much more robust chemistry and packaging than the ultra-light cells found in hand-held devices.

Can you monitor the condition of Li-Ion batteries?

An advanced battery management system (BMS) is mandatory for high-voltage Li-Ion applications, because each cell must be individually monitored and controlled using electronic circuits to maintain balanced states of charge.

Similar BMS are optional with SLA batteries, and although preferable in large-scale applications, they would incur significant additional capital costs.

Why is the critical power industry reluctant to adopt Li-Ion batteries? Is it simply their risk-adverse nature?

It's more a case of 'seeing is believing'. Examples of success in other industries will hopefully give increased confidence to the power protection sector in the next few years. The deployment of 20 MW grid-connected energy storage systems, which are now fairly commonplace using Li-Ion, should also provide encouragement.

Turning to the electricity supply, are there any other possible solutions apart from DSR and pumping power back into the grid?

It's likely we'll need a whole range of technologies to re-configure the renewables-based power infrastructure of the future. Storage methods will be categorised by different timescales of operation, from seconds in frequency response, hourly 'peak shaving', or even days and months of reserve capacity. Batteries, and Li-Ion batteries in particular, will have a key part to play in all these approaches.

ENERGY STORAGE IN ACTION

Riello UPS and GS Yuasa recently teamed up on a pioneering project to create a 'virtual power plant' running on energy generated and stored in lithium-ion batteries.

Showcasing the untapped potential of Li-Ion, the 40-strong London office of leading demand side response aggregator KiWi Power can operate on electricity from the site's UPS batteries instead of always relying on mains supply.

The ground-breaking scheme sees GS Yuasa batteries used alongside a 20 kVA Riello UPS Multi Sentry uninterruptible power supply, which was programmed with three unique commands:

- 'Discharge' mode: the office's load is removed from the mains supply and supported by the battery
- 'Hold' mode: the load is supplied from the mains with the battery remaining in a state of charge
- 'Charge' mode: the load is supplied from mains while the battery is recharged at a programmable rate

If there are any issues at all with the mains supply, the system immediately switches to normal UPS mode and supports the critical load.

The appropriate operating mode is determined by an innovative microgrid storage management system developed by energy consultants Swanbarton, which collates information on the National Grid status, battery state, local load, and aggregated load conditions. **ER**

Keeping your data in the black

Simon Bearne, commercial director at Next Generation Data outlines why 'black testing' is the only real certainty when it comes to ensuring your UPS system can handle the pressures of an outage.

A data centre that provides robust and continuously available power is amongst the most important selection criteria. However, finding one that ticks all the right boxes is often easier said than done, especially in increasingly power-strapped metro areas.

Power outages are generally caused by a loss of power in the distribution network. This could be triggered by a range of factors, from construction workers accidentally cutting through cables, to power equipment failure, adverse weather conditions, or human error.

Having an N+1 redundancy infrastructure in place is therefore critical to mitigating outages due to equipment failure. Simply put, N+1 means there is more equipment deployed than needed and so allows for single component failure.

●● Hoping for the best in the event of real-life loss of mains power simply isn't an option ●●

The 'N' stands for the number of components necessary to run your system and the '+1' means there is additional capacity should a single component fail. A handful of facilities go further. NGD for example has more than double the equipment needed to supply contracted power to customers, split into two power trains on either side of the building, each of which is N+1. Both are completely separated with no common points of failure.

Physical location is also a key consideration. If possible, don't use or locate a data centre near or on a flood plain. Furthermore, choose a site where power delivery from the utilities will not be impaired. With this in mind, know how the power actually routes between the data centre and through the electricity distribution network. This is often overlooked but is critical. In some cases, the cable routing can be somewhat messy.

But even with these precautions, a facility still isn't necessarily 100% 'outage proof'. All data centre equipment has an inherent possibility of failure. Studies show that a proportion of failures are caused by human mis-management of functioning equipment. This puts a huge emphasis on engineers being well trained, and critically, having the confidence and experience in knowing when to intervene and when to allow the automated systems to do their job. They must also be skilled in performing concurrent maintenance and minimising the time during which systems are running with limited resilience.

TESTING

Far greater emphasis should be placed on engineers reacting quickly when a component failure occurs, rather than assuming that inbuilt resilience will solve all problems. This demands high quality training for engineering staff, predictive diagnostics, watertight support contracts and sufficient on-site spares.


When it comes to data centre critical power infrastructure, regular full-scale 'black testing' is the only way to be sure the systems will function correctly in the event of a real problem. Hoping for the best in the event of real-life loss of mains power simply isn't an option.

However, not all data centres do this regularly. Some will have procedures to test their installations but rely on simulating total loss of incoming power. But this isn't completely fool proof as the generators remain on standby and the equipment in front of the UPS systems stays on. This means that the cooling system and the lighting remain functioning during testing.

Absolute proof comes with black testing. Every six months NGD isolates incoming mains grid power and for up to sixteen seconds the UPS takes the full load while the emergency backup generators kick-in. Clearly, it's done under strictly controlled conditions where power is only cut to one side of a 2N+2 infrastructure.

Uptime check list:

- Ensure N+1 redundancy at a minimum, but ideally 2N+x redundancy of critical systems to support separacy, testing and concurrent access.
- Streamlining MTTF will deliver significant returns on backup systems availability and reliability, and overall facilities uptime performance.
- Utilise predictive diagnostics, ensure fit for purpose support contracts, and hold appropriate spares stock on-site.
- Regularly Black Test UPS and generator backup systems rather than wait for a real-life loss of mains power.
- Continuous training and regular practice will ensure staff are clear on spotting incipient problems and responding to real time problems– what to do, and when/when not to intervene.

No data centre is immune to an outage, and a 'wait and see' approach to disaster recovery is never the answer if maximum uptime is to be achieved. Simulating an outage in the form of black testing will not only give you the peace of mind your UPS system is up to the job, but won't cause any potentially disastrous disruptions to your systems either. 

How high density affects racks

Andreas Rüsseler, CMO at R&M, discusses implementing high-density into your infrastructure, the benefits and why it doesn't have to be a headache.



As a result of consolidation, automation, and efficiency enhancements, data centres need to focus on higher performance network architectures and infrastructure consolidation.

Infrastructure needs to be more reliable, flexible, scalable, energy-efficient and powerful. What's more, the rapid growth in the volume of data being stored and managed in data centres means the largest possible port density needs to be realised in the smallest possible space.

High-density solutions play a key role in achieving this. Consolidating POP servers in a single rack unit leaves more space for switches and routers. Software Defined Network (SDN) architectures can be planned more sensibly, and high density makes it possible to free up space for additional racks and switches.

You could start off with, for instance, a single rack unit and grow as required, for example all the way up to a 45U rack. Current high-density fibre solutions for data centres generally offer up to 72 LC duplex ports per rack unit. A preconfigured cabinet with connectivity built into the cabinet's structure, can offer 188 10gb or 96 40gb connections and MPO connectivity without taking up valuable rack space; and importantly, all internal cabling is configured in the factory.

CHALLENGES FOR RACKS

In racks, HD connectivity can introduce all kinds of challenges. When developing a high-density solution, a variety of factors need to be taken into account. Obviously, a 19-inch rack space has an inherent size limitation, so familiar products need to be examined in order to 'shrink' them and, in that way, obtain ►

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more connections.

One approach is by removing the conventional retainer from LC Duplex patch cords. Manufacturers need to overcome the limitations of traditional latching mechanisms on copper and fibre connectors with patch cords designed specifically for high-density environments.

High-density patch panels and patch cables can save rack space and improve airflow, supporting consistent operating temperatures and reducing downtime risk. However, increased density also means racks can become significantly heavier. It is important to realise that HD racks and patch cables can overload existing rack systems, placing considerable strain on rack equipment and cabling.

In many cases 'standard' racks and enclosures won't be able to support the increased bulk. HD sub-racks and patch panels that are fully populated with cable systems and patch cords may well bend 'regular' racks out of shape, and place potentially damaging strain on 19-inch equipment and cabling. It is worth investing in 19-inch racks that are specified for the increased weight of higher density solutions. Of course, it also makes sense to check whether the supporting floor can cope before HD-ready racks and cabinets are installed.

KEEPING COOL

When dealing with high density of more than 100 ports per rack unit, it's essential to keep temperatures down. A clutter-free in-rack environment with high-density cabling helps avoid this. Using small diameter patch cords also helps. When these are bundled together carefully, the volume of cable inside the cabinet is reduced, optimising heat removal and reducing the amount of energy required for cooling.

Good cable management also contributes to alleviating temperature buildup, as does ensuring there are no obstructions near air vents in racks and equipment. For longer cabling links, larger conductor cross-sections and/or shielded cables should be used, as these are more resistant to temperature increases. Using modules and plugs with insulation displacement technology is also advisable. This creates stable connections between cables and connecting contacts that are similar to soldering joints.

Virtualisation is making it possible to converge disparate locations into one big data centre, with all functions running smoothly for individual users, regardless of where hardware is located. In theory, the location of servers isn't always relevant, providing there's enough bandwidth and low latency. This enables another promising approach: ensuring heat doesn't simply dissipate, but is put to



good use. By moving server racks further apart and placing them in different buildings, heat can be applied usefully. Racks can be used to warm workplaces, public structures and homes.

MONITORING AND MANAGEMENT

Today's 'standard' high-density fibre solutions for data centres offer up to 72 LC duplex ports per rack unit, but this can be very difficult to manage. Increased density can result in unmanageable cabling, severely hindering fault finding, cable tracking and moves, adds and changes.

It's worth researching solutions designed with the next generation of high-density in mind. This should include dedicated

“ A clutter-free in-rack environment with high-density cabling helps keep temperatures down ”

racks, patch panels and connectors, as well as an integrated hardware and software system that automatically detects when cords are inserted or removed. The entire infrastructure should be represented in a consistent, up to date database, offering precise, real-time information on the current state.

Introducing high-density racks offers an opportunity to diminish footprint. Freed up space can be used to accommodate new equipment or future expansion. Although high-density infrastructure implementation is often seen as an enormous challenge, with the correct planning and tools it really doesn't need to be. **ER**

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Need for speed: Future-proofing a data centre

We live in a data intensive world, and the need for speed is more prevalent than ever. Andreas Sila, market manager of data centres at Huber+Suhner, discusses the demands this places on infrastructure, and how operators can utilise a fibre management system to future-proof their facility and reduce latency.



As 5G emerges and the trials and tests begin, networks are preparing to manage a huge increase in demand for communication. While it's still a work in progress, we're anticipating huge data transfer speeds, with a trial in Sweden demonstrating 5G capabilities of 50 times faster than the current maximum speeds achievable on 4G.

When you couple this with the Internet of Things, an entity that has become the frontier for digital transformation and technology innovation, companies have a huge task on their hands. Much of the data that will be transferred to these devices for smart industries and business will be held in the cloud, and

it's crucial for business processes that the data flows quickly from the end-user to the data centre with no interruption.

This puts an obscene amount of pressure on operators to deliver the technology that the world will need to operate in these super-fast speeds. With an abundance of connected applications that are data intensive and time sensitive, low latency is crucial to ensure the effectiveness of connected devices.

Our world is becoming increasingly built on data and the need to be digital. While some organisations may have the capacity and costs to be able to consistently invest and adapt to the newest technologies as and when they come to market, some ►

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require a more permanent, future-proof solution. Organisations of the 21st century are looking to eliminate the need for infrastructure to be ripped out and replaced every five years, previously a very expensive and disruptive endeavour.

Along with the increased pressure to cater for speeds and latency, if the promise of 5G is going to be successfully rolled out, time-to-market is crucial. But with new technologies and requirements, how does a data centre cope with unpredictable change? A pay-as-you-grow scalability.

PAY-AS-YOU-GROW

Operators should start at the beginning, with an all-in-one fibre management system tailored to data centre applications. Fibre-rich environments demand maximum density in a limited economical footprint. Quick installations as well as moves, adds and changes are important in order to have the ability to handle future growth. Flexibility is key, and a complete solution – where all types of connectivity must be able to be integrated – is non-negotiable.

As users work to identify the needs of today, and quickly and efficiently upgrade when the additional capacity for growth is demanded, a pay-as-you-grow scalability offering is key. Deciding on the size of your data centre can be challenging.

●● How do you know how far into the future your data centre can operate, when technology is changing and transforming at such a rapid pace? ●●

How do you know how far into the future your data centre can operate, when technology is changing and transforming at such a rapid pace?

By incorporating pay-as-you-grow, you're eradicating idle capacity and ensuring you have the sufficient capacity when it's crucial. This way, you aren't penalised by paying for more than you need at any one point. However, that's only the first step to an all-encompassing data centre.

CLOSER TO THE EDGE

Offering ultra-low latency to wired and wireless applications is edge computing, which 451 Research defines as, 'the distribution of compute and storage capabilities to the edge of the network near the point of data generation and data use' is taking the spotlight as the trend of the future data centre. With distribution close to the point of data generation, the edge capacity places the data as close as possible to the source of the consumer.

Edge computing works in parallel with micro data centres, which provide additional resources at points in the network as and when needed. Micro data centres are a vital aspect to pay-as-you-



grow infrastructure, as the lower capacity of micro data centres means that while they aren't large enough to be described as data centres, they are an immediate option to support applications when they need to take on this extra workload.

INTEGRATE THE CO AND DC

By going one step further and integrating the Central Office (CO) and Data Centre (DC), you can ensure future growth will be well managed. An ever-increasing expansion in fibre capacity has culminated in large Central Offices, where next-generation optical distribution racks and fibre containment systems are used to manage optical fibres.

Typically, for telecom networks, an interconnect method is used. However, in order to maintain maximum flexibility as the network expands, a cross-connect method that connects separate units of the facility within the data centre to reduce latency is a viable alternative.

With fibre-rich environments demanding maximum density within a limited footprint, implementing a cross-connect method makes it easier to support and route throughout the facility. It also means the moves, adds and changes that are critical to adapting to change are done at this centralised point, as opposed to throughout the building.

By selecting a dense side access fibre management system which can be used as a cross-connect, it leads to a highly secure environment. All of the connections are in one location, meaning that there are fewer reasons to interact with the active equipment in the facility, resulting in less human intervention and error.

Edge computing can also be added into a centralised data centre as well as micro data centres, signifying the importance of the method for advanced latency.

With the future requiring such a short time-to-market turn around, selecting a fibre management system with trays that can be installed and removed in seconds is crucial. Along with the flexibility to be installed in a variety of positions – against a wall, as an end cap of a row or back to back in a row, effectively doubling the density - data centres need to remain flexible and ready for anything.

As we head towards the future, we must also consider the past. By utilising a data centre fibre management system, with a combination of utilising a pay-as-you-grow infrastructure and edge computing to centralise and simplify the process, a data centre can continuously adapt to reflect demands. **ER**



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Be positive about negative energy

Jon Belfield, president of the Building Controls Industry Association (BCIA) explores why building controls are integral to successfully achieving energy efficiency in today's commercial buildings



solutions offering clear and actionable intelligence about your building data to pinpoint energy wastage, cost of maintenance, while also increasing the comfort of occupants...

As a result, savvy building owners, managers and landlords are taking this in hand to ensure their buildings are benefiting from innovative and smart controls that are well engineered to enhance energy efficiency. Of course, this is a win-win scenario as not only will energy consumption be lowered, but consequently overall running costs will be reduced too...

Indeed, there is a growing demand for effective building controls with a new Q1 record set this year of £654.8 million for the total controls and BEMS market in the UK. This represents a 0.3% increase in comparison to Q1 one year ago and highlights

Each building presents its own challenges

the impact that building controls are having in today's modern commercial buildings.

However, each building will present its own unique challenges so, the building controls industry needs to evolve alongside technological developments and think smart to future-proof the performance buildings.

Building controls are an excellent way of ensuring efficiency in a building, but they are only effective if the engineers operating them have the skills and expertise to extract the optimum performance. If not, opportunities to increase efficiency will continually be missed.... this is where training is so critical.

To help tackle growing energy efficiency concerns, amongst other environmental challenges; the BCIA offers a wide selection of training courses to help those new or experienced within the industry to develop a thorough understanding of addressing energy efficiency via effective controls.

With skilled and knowledgeable engineers at our disposal, we are well positioned to share this message and offer professional guidance to help building owners, managers and landlords tackle energy efficiency head on and achieve the required savings.

These are great opportunities for the building controls sector so, let's continue to jointly embrace this and remain one step ahead of the game to help meet these efficiency targets, whatever the motive. By making the reduction of energy consumption a top priority, it will go a long way in ensuring a strong, sustainable and professional future and the power achieve this is in your hands... **ER**

The topic of energy consumption in today's commercial buildings is a big deal – and something which is prevalent across all sectors of the UK. It is simply not good enough to just 'think' about doing something to reduce energy usage in a building or place it to the back of your mind for a rainy day...it's imperative to take pro-active measures as soon as possible.

But why the rush? Government legislation and standards have a strong and targeted focus to substantially reduce energy consumption in commercial buildings, a good example being the Minimum Energy Efficiency Standard (MEES) which came into force in April 2018. The commercial pressure and motivation is now very high for landlords who need to improve their Energy Performance Certificate (EPC) rating to "E" or higher to be able to let out buildings...

You may or may not be directly impacted by the MEES legislation, but it sets the bar and doesn't mean that collectively we should not be concerned about energy usage in buildings. We can all play a role in reducing carbon emissions to greatly help the environment and no matter how small the changes or the impact, they all add up to reducing energy consumption – this is our shared responsibility.

It's important to remember that energy reduction is much easier to address when action is taken to continuously monitor, manage and control energy usage and iron issues out, rather than turning a blind eye and letting energy consumption take control of you...

There are many effective building control and energy monitoring solutions on the market to help achieve this which help to paint a full picture of actual energy consumption so that targeted improvements and savings can be made.

There has also been a surge in the use of data analytics; some

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PORTFOLIO REDUCES EMI

Allegro MicroSystems Europe has announced the A8660, ARG81880, and ARG81801, the latest additions to its Regulators Portfolio. These devices reduce EMI through switching frequency dithering and allow system noise management through external clock synchronisation.

These devices are AEC-Q100 Automotive Qualified, designed to operate over a wide input voltage range to withstand automotive stop/start, cold crank, and load dump conditions, and are also capable of switching at 2.2 MHz for reduction in component size and cost.

Comprehensive safety and protection features enable robust designs and simplify component qualification. The devices cover a wide output current range (from sub 1 A to 10 A), provide tightly regulated supply rails across temperatures, and are targeted at automotive and industrial applications



Allegro MicroSystems Europe
+33 (0) 450 518 035
www.allegromicro.com

INCREASED CAPABILITY ALL ROUND

Increased capability all round. That is the simplest way to describe the Powerstar VM160 panel board from Crabtree, one of the leading brands at Electrium.

Designed and manufactured in the UK, this latest generation of Powerstar panel boards offers high standards of protection and control, plus a host of other market-leading, user-friendly features.

Competitive? Definitely. In more ways than you might imagine too. For example, this is one of only two panel boards on the market capable of offering a true Form 4b Type 6 group mounted solution. So, now specifiers and installers have a real choice.



Electrium • 01543 455010
www.electrium.co.uk

DATACENTRES IRELAND 2018

DataCentres Ireland, 20 - 21 November 2018, RDS, Dublin continues to attract the support of leading national and international associations and government bodies.

It has been announced DataCentres Ireland has secured the support of The Green Grid, IDA Ireland and the Irish Wind Energy Association, and BICSI, all of whom are actively supporting the event and participating in the programme.

This is in addition to the continued support of Host in Ireland, Data Centres Alliance and techUK amongst others – and the list continues to grow.

This is great news for attendees and DataCentres Ireland as it re-enforces the quality of the conference programme as well as giving new channels to promote the event both nationally and internationally thus secure more attendees.



DataCentres Ireland • 01892 518877
www.datacentres-ireland.com

HOME SECURITY DEVELOPMENT

With remote-controlled security operating systems becoming ever more popular, the latest tech development in home security is the ERA DoorCam Smart Home WiFi Video Doorbell. Using a Smartphone app, DoorCam allows householders to view callers and talk to them in real time, whether they're home or not, offering not only convenience, but thanks to a motion detector which alerts householders when someone has arrived, added security and peace of mind.

With ease of operation in mind, once DoorCam is wired in, the householder can simply plug in the WiFi chime which comes as standard, connecting up to four more chimes in the home, all as part of the package. This means a chime will sound in the house - with adjustable sound, volume and light function, eliminating the need to carry a Smartphone around.

Cloud-based peace of mind – free for 12 months.



ERA • 01922 490000
www.eraeverywhere.com

NEW ADDITIONS TO WI-FI CCTV RANGE

Having launched its first HDView Wi-Fi two-camera CCTV kit a year ago, ESP added further products to the range in September 2017, in the form of four-camera kits as well as black bullet camera options. In its latest move to complete the product offer aimed at the domestic market, ESP has expanded the range to include a new 8-channel NVR with four cameras kit, as well as wireless Dome cameras in a choice of black and white.

Designed for the domestic market and developed in response to the increasing demand from customers for Wi-Fi solutions, the new systems have ease of installation and superior quality HD image capture among their key attributes. With the cameras in the kit already pre-paired to the NVR this will further assist with a quick install.



ESP • 01527 515150
www.espuk.com

IMPROVED SECURITY OF DATA TRANSMISSION

Harting has designed the Han Gigabit Module for the industry's most demanding transmission category Cat. 7A, which is suitable for 10 GB Ethernet.

The module allows transmission at an operating frequency of up to 1000 MHz. As a result, signal integrity has significantly improved, while immunity to interference has increased compared to the standard Cat. 6A.

Cat. 7A cables consist of four individually shielded pairs of wires which are surrounded by a common screen. Harting is therefore the first manufacturer to offer a modular industry connector for data transmission as per this standard.

The currently available Han Gigabit module is already suitable for high data transmission rates, meeting category 6A for transmission frequencies up to 500 MHz while also being 10 GB ethernet compliant.



Harting • 01604 827500
www.harting.com

HEART OF THE SYSTEM

The heart of the Salto systems is its XS4 access control platform. This combines electronic door components, peripherals and software, providing tailor-made wire-free networked access control solutions for a wide range of markets. Everything fits together, everything works. Most recently, Salto has continued to add new technologies to this to provide for the markets increasing use of mobile, cloud and smart home solutions.

The Danalock residential smart locks replace the traditional home door key with an electronic system that allows you to use your smart phone to control your door. You can give keyless entry to family, friends, housekeepers and others without worrying about lost or copied keys. Easy to install and manage, Danalock lays the foundation for a truly smart home when it comes to security.

Meet product experts and discover their range of solutions on their stand at this year's Building Tech Live, part of UK Construction Week 9-11 October 2018 at the NEC.



Salto Systems • 01926 811979
www.buildingtechlive.co.uk

LET IT FLOW

Since it introduced its first Flow Connector in 2007, Scolmore has continually developed the category to offer a comprehensive range of products that offer simple connectivity and control across a broad spectrum of lighting project requirements.

With the emphasis now on flexibility and ease of installation, many building design projects are focussing on products and services that can adapt to changing legislation, energy efficiency and the ever changing needs of the client.

Scolmore's Flow Connector range makes the wiring of a lighting circuit easy, using a combination of connectors, hubs and management boxes. design of the Flow Connector products prevents the possibility of incorrect polarity connection, which is a problem with other similar products that are making their way into the market.



Scolmore • 01827 63454
www.scolmore.com

MAKE MAJOR ENERGY COST SAVINGS

The High Performance+ Back-Lit panel from Integral LED provides 3500 Lumens at only 23W, running at a market-leading efficiency of 152lm/W. A large office installation could save you thousands of pounds per year on electricity costs compared to fluorescent units or less efficient LED panels.

The panel also features a TP(a) rated polycarbonate diffuser that delivers a uniform cool white light across the whole of its surface, without the hotspots or yellowing associated with lower grade edge-lit panels.

Integral LED offer a handy cost-savings calculator on our website, so you can see for yourself how much you could be saving each year from your energy bills.

Meet product experts and discover LED panels at this year's Energy 2018, part of UK Construction Week 9-11 October 2018 at the NEC.



Integral LED • 0208 4518700
www.energylive.co.uk

A BASE FOR EVERY SEASON

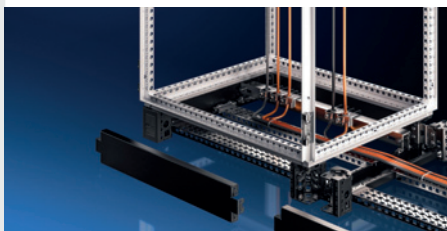
Rittal's new base/plinth system for enclosures and IT racks means it can now offer customers and end-users an unprecedented number of functions and options.

The latest innovation combines all benefits of the existing TS and Flex-Block base/plinth systems in one solution, plus much more besides. For example, engineers can install VX25 enclosure accessories, while the base/plinth can also be used as an intelligent cable chamber.

All this comes with reduced assembly time, lower costs and greater safety.

The new base/plinth system VX25 from Rittal is designed for the new large enclosure system, as well as being fully compatible with Rittal's existing enclosure solutions, the TS, TS IT, SE, CM, PC, IW, TP and TE ranges.

The new system combines all the functions and benefits of the Flex-Block and TS base/plinths, which it will soon replace.



Rittal • 01709 704000
www.rittal.co.uk

TAKING INDUSTRY STANDARDS TO A NEW LEVEL

A 10-to-40kVA Uninterruptible Power Supply (UPS) from Schneider Electric, the Easy UPS 3S offers robust electrical specifications and compact design, and is easy to install, easy to use, and easy to service – making business continuity easy for small and medium businesses.

The Easy UPS 3S is a combination of an optimised footprint design and advanced product features, protecting critical equipment in many environments from damage due to power outages, surges and spikes.

With a wide input voltage window and strong overload protection, all in a compact and lightweight footprint, this unit delivers up to 96% efficiency in double conversion mode and up to 99% efficiency in energy-saving ECO Mode, taking the industry standards for the 10-to-40kVA UPS to a new level.



Schneider Electric
www.schneider-electric.com

INTRUDER ALERT

Threat Monitor from SolarWinds is an automated tool designed to reduce the complexity of threat detection for IT operations teams as well as for MSPs and MSSPs (managed security service providers).

Threat Monitor can detect suspicious activity and malware by aggregating asset data, security events, host intrusion detection, network intrusion detection, and correlating that data with continuously updated threat intelligence, identifying the danger signals amidst all the innocent noise of a normal network.

SolarWinds believes that this will ultimately help customers respond quickly and make faster, better decisions while using fewer resources. The unified platform - which includes automated threat hunting, active response to security incidents, and audit-ready reports, is designed to be an easy-to-use first step in helping organisations improve their security posture more easily and affordably.



SolarWinds • +353 21 5002900
www.solarwinds.com

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