



# Electrical Review

Informing the electrical industry for **140** years

June 2019

Volume 253 | No 6

[www.electricalreview.co.uk](http://www.electricalreview.co.uk)



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## Electric Vehicles – Leading the charge

Danny Winn from Schneider Electric advises what to consider when choosing an EV charging solution



### Renewable Energy

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Subscription rates:  
UK £221 per year, Overseas £262

Electrical Review is a controlled circulation monthly magazine available free to selected personnel at the publisher's discretion. If you wish to apply for regular free copies then please visit: [www.electricalreview.co.uk/register](http://www.electricalreview.co.uk/register)

Electrical Review is published by



2nd floor, 52-54 Gracechurch Street  
London EC3V 0EH  
020 7933 8999

Any article in this journal represents the opinions of the author. This does not necessarily reflect the views of Electrical Review or its publisher – SJP Business Media  
ISSN 0013-4384 – All editorial contents © SJP Business Media



Average net circulation  
Jan-Dec 2016 6,162



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## NICEIC and SELECT jointly support Protection of Title

SELECT and the NICEIC have issued a joint statement supporting new regulations to help consumers and competent qualified electricians.

The long-running campaign for recognition of electricians as a profession has been endorsed by Kevan Parker, managing director of NICEIC and Alan Wilson, managing director of SELECT.

The joint statement said that new regulations such as Protection of Title will provide an important step forward in protecting the safety of those who use electricians, as it will give assurance that the business undertaking any work is assessed as competent and only uses electricians who are suitably qualified and competent.

Furthermore, it will enhance the profession itself as it will ensure only those who can prove that they have appropriate qualifications and experience are accorded the respect that is due to such an important and safety critical profession.

Parker said, "Both NICEIC and SELECT are committed to improving consumer safety and protection. We look forward to working with those across the industry and others with an interest in this important area of safety to deliver what is best for consumers without adding additional burden to businesses and individuals in the industry."

## Funding boost for recycling of waste electrical

An additional £3.3 million, generated by the use of the WEEE Directive Compliance Fee in 2018, will be spent on projects supporting higher levels of reuse and recycling of waste electrical and electronic waste, the Joint Trade Association (JTA) has confirmed.

The WEEE Compliance Fee was established as a means for producer compliance schemes to discharge some of their obligations on behalf of producers of electronic equipment as an alternative to directly collecting WEEE. The JTA's proposal for the 2018 Compliance Fee was chosen by the Secretary of State for Environment Michael Gove earlier this year, following a competitive selection process.

Negotiations in England, Northern Ireland,

Scotland and Wales remain underway on how best to support local projects. Local authority groups and the Reuse Network have been working with the WEEE Fund to develop the best approach for working with local authorities and reuse operators.

Susanne Baker, chair of the JTA, and head of techUK's environment and compliance programme said, "Our focus will continue to be on spending the fund carefully on projects that can deliver genuine and lasting improvements to the system, with the buy-in and support from the community of local authorities, businesses and civic society groups that manage and deal with these products at the end of life."

## Glasgow to be UK's first 'net zero' city, pledges ScottishPower

ScottishPower, along with Glasgow City Council, has revealed a bold new vision to transform Glasgow into the UK's first 'net zero' city.

With Scotland having set itself a target of net zero carbon emissions by 2045, the two organisations will start work on a range of programmes to ensure the country's largest city reaches this target first.

Glasgow has already established the first Low Emission Zone outside of London, while the UK's biggest onshore wind farm, Whitelee, which is owned by ScottishPower, is on the outskirts of the city.

The focus will now turn to other parts of Glasgow's economy that can be decarbonised, such as transport and heating, as well as continued investment in the electricity grid to support the increasingly low carbon city.

Speaking at the All Energy Conference, ScottishPower chief executive, Keith Anderson, said, "Scotland has rightly put itself at the top of the race to become net zero quicker than other places round the world. To succeed, our biggest city has to be the most ambitious and progressive in removing carbon emissions.

"We have a large supply of renewable energy on our doorstep and one of only two Low Emission Zones in action across the UK. Now, we need to invest in the technologies and programmes that transform the rest of Glasgow's economy and make us net zero before anyone else.

"It is our hope that this declaration kick starts a race to zero with other ambitious cities, like Edinburgh, because then we will all be winners. The prize is the future of our country and our planet."





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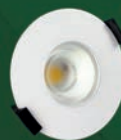
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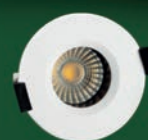
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## Industry levy set to rise to meet demand for training

A new strategy to help steer engineering construction companies through a critical time for the industry has been launched by government skills body, the ECITB.

The strategy identifies the need to replace an ageing workforce and harness technological change as critical challenges for the engineering construction industry up to 2022 and beyond. Over the three-year life of the strategy, £600 billion-worth of infrastructure projects across the UK will get underway and are set to complete, creating huge demand for skilled employees and for relevant skills training.

The ECITB, which is funded by a levy on industry and supports training courses through a system of funding grants, has spent the past six months consulting with employers and listening to their skills needs both now and in the future. The new three-year strategy pledges to meet current skills needs, committing 70% of expenditure to support current training and 30% to ensure industry has the skills it needs for tomorrow, pledging to invest in technology and innovation as well as recruiting new entrants.

Lynda Armstrong, chair of the ECITB, said, "The engineering construction industry is at a critical juncture. While profit margins are tight in many sectors, we are seeing signs of recovery. But with major new infrastructure projects underway and scheduled for the future, it is crucial industry has the skilled people it needs.

"Unless we prepare for the future by embracing new technology and recruiting new starters to replace our ageing workforce, UK plc will struggle to deliver these projects safely and efficiently.

"Levy rates dropped temporarily at the last review in 2016, however the fall in levy income combined with the continued demand for training means that we face a shortfall of £6 million. To support productivity and demand for training, we know we must restore the levy to its former level.

"I am confident our proposals will help employers meet their current and future skills needs and look forward to engaging with levy payers over the coming months."

## UK faces EV charging maintenance challenge, says Bureau Veritas

With sales of electric vehicles only increasing, the rapid rise in the number of charging points being installed presents a 'clear maintenance challenge' for businesses, says Bureau Veritas.

To accommodate the rising numbers of low-polluting vehicles expected to hit the roads in coming years, it's estimated the UK will need at least 100,000 EV charging points – a significant increase on the 16,500 currently available.

As a rising number of hotels, office car parks and supermarkets are currently being upgraded with this infrastructure, many businesses should consider a long-term maintenance framework to ensure their longevity, said Michael Kenyon,

technical manager at Bureau Veritas.

"Given the growing numbers of people now buying electric vehicles, it's great to see more and more EV charging points being installed, as charging infrastructure is vital to facilitate the UK's transition to sustainable travel," said Kenyon.

"However, while these charging points will come with an initial warranty, they also present a clear maintenance challenge that many businesses may not have yet considered. For instance, not to be overlooked is the fact that they will need maintaining in the coming years, including regular testing and inspection to ensure performance and electrical safety."



## Electrical professionals not comfortable with smart tech, says poll

A poll carried out by online wholesaler ElectricalDirect, has found that despite the growing popularity of smart home products, many tradespeople are unprepared for the increasing customer demand.

The poll, which was conducted in the lead up to Smart Home Week (20- 26 May), found that 82% of tradespeople have never undertaken any form of training in smart home technology. This figure remains largely unchanged following results from the same poll in 2018.

Research has shown that 40% of UK homeowners now own at least one smart home product, a rise of 13% compared to this time last year. However, despite contin-

ued growth, the number of tradespeople improving their knowledge and skills in this area remains disproportionately low.

Wayne Lysaght-Mason, managing director of ElectricalDirect, said, "We're living in the age of rapid technological development, and it's easy to see why people are investing in smart technology to bring comfort, convenience and added security to their homes. However, with a huge range of smart devices available, and new products being developed all the time, it is important that electrical professionals do their research and make a conscious effort to stay up-to-date on the latest news and trends surrounding smart home technology."



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# GOSSAGE

## All gas and gaiters

I am willing to bet that, up until a few weeks ago, few if any of my devoted readers were aware that the UK government has an official Commissioner for Shale Gas. And even fewer will have known that this important post was created last autumn, let alone that it was filled for just over six months by a woman called Natascha Engel.

But then Ms Engel decided to cease being the Commissioner – thereby saving the public purse some £500 per day. She announced to the world she was quitting because she was appalled at the safety restrictions imposed upon companies that wanted to frack for gas. Not that they were too lax, but that they were affecting the profitability of drilling.

These restrictions, against earthquakes, were precisely the ones that our government had agreed with all of the companies anxious to frack for gas. But no matter, their effect has been to render any drilling subject to spasmodic pauses, as the companies have regularly exceeded the agreed limits.

All along Ms Engel sided with the companies. Ministers quoted back at her the agreements signed by Ineos, Cuadrilla et al., and refused to alter the restrictions. So, Ms Engel resigned, amidst that wave of publicity. Her indignation at the government knew no bounds. She even wrote in *The Times* that, “It became clear to me that fracking was the only way to reduce our carbon emissions at any sort of scale.”

Such hyperbole may sound great when addressing the heads of fracking companies. But it truly doesn't stand up to one moment's serious scrutiny. Should it ever work in Europe – and experiences in Poland suggest otherwise – fracking will produce natural gas. Which in turn is responsible for emissions of two of the most serious greenhouse gases, carbon dioxide and methane. Hence the push by the Committee on Climate Change to stop installing gas into new homes.

I wondered quite why Ms Engel was spouting such nonsense. Then I heard Sir Jim Ratcliffe producing very similar arguments. Who is Sir Jim? Why, he is Britain's richest man, and head of the company with the largest capitalisation involved with fracking, Ineos.

Indeed, it was he who, prior to her appointment as Commissioner for Shale Gas, employed Natascha Engel as a political consultant and advisor. And I am sure he will now be anxious to benefit from her many skills again – at probably more than the £500 per day the government was offering her.

## You want how much?

German utility RWE – owner of Npower in Britain – wants 10 times more compensation to close its ageing German lignite plants than they are worth, according to the Institute for Energy Economics and Financial Analysis.

Ostensibly, if market price is the benchmark for compensating the early closure of coal assets, then recent deals indicate that Germany's coal and lignite power plants and mines have very low value, and therefore ‘make a mockery’ of compensation claims by Germany's biggest utility under the country's pending coal phaseout plan.

RWE says it wants to be compensated for the premature closure of its coal plants in line with the most generous pay outs of the past. A public position that ignores the darkening outlook for coal mining and generation, and which pits the company against genuinely affected mining communities for precious taxpayer funds. Good luck with that.

## Not coins of the realm

The increasing use of Bitcoin and other cryptocurrencies threatens a catastrophic escalation of climate change, a new study is warning. Scientists say the amount of electricity involved in ‘mining’ the cryptocurrency could boost global temperatures by more than two degrees by 2033.

A team at the University of Hawaii Manoa has analysed the power efficiency of computers used in the administration of Bitcoin, estimating that the activity was responsible for the production of 69 million metric tonnes of carbon dioxide in 2017. They calculate that if Bitcoin is taken up at similar rates to other new technologies, it is likely to raise global temperatures by two degrees within 22 years at a conservative estimate, or in a worst-case scenario within 16 years.

Katie Taladay, who co-authored the study, published in the *Nature Climate Change*, said, “Currently, the emissions from transportation, housing and food are considered the main contributors to ongoing climate change. This research illustrates that Bitcoin should be added to this list.”

Bitcoin purchases create encrypted transactions that are recorded and processed by a group of individuals referred to as ‘miners.’ They group each Bitcoin transaction executed during a given timeframe into a block, which is then added to an online chain, a form of public ledger.

Effectively, the study reveals that electricity demands for the mining verification process are very high indeed.

“We cannot predict the future of Bitcoin, but if implemented at a rate even close to the slowest pace at which other technologies have been incorporated, it will spell very bad news for climate change and all the people and species impacted by it,” said professor Camilo Mora, the study's lead author. Quite so.

## Serious miscalculation

Next time you hear some loudmouth claiming that nuclear power is carbon free, just remember that, according to the International Energy Agency, overall emissions from new nuclear are 78 to 178 g-CO<sub>2</sub>/kWh. Nowhere near to zero.



# Getting the eyes?



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# Leading the charge



Danny Winn, EV Director UK, at Schneider Electric, outlines how big businesses can avoid the road to regret when choosing their EV charging solution.

**E**lectric vehicle (EV) sales continue to grow impressively in the UK despite a significant lack of supply. Once we see these supply issues resolved, three-digit growth will likely become the norm over the next few years.

As the switch gathers pace, estates and buildings managers need to consider how they meet demand for charging from employees, visitors and their own fleets.

While EV is still a relatively new market, it is already heavily saturated, with a vast range of hardware and systems capability. This presents a major challenge for managers seeking a provider that will deliver the solution they need today, and that will continue to be fit for purpose as their EV charging infrastructure scales over the next five years.

If businesses want to avoid the road to regret, there are four major criteria they should consider when making that tough choice:

## 1. IS IT SMART AND CONNECTABLE?

The term 'Internet of Things' (IoT) doesn't seem so new anymore. It's essential we ensure our assets are connected and smart, allowing remote control and integration with existing applications.

Traditionally, most EV charging capacity installed in the UK amounts to what the industry considers 'dumb' charging. This system is effective in the short term so long as volumes remain low.

However, the next evolution is a semi-smart system, which works on a master-slave framework, where one charger is smart, and the others rely on the master to be intelligent and connected to the cloud. This is a temporary fix but it has long-term limitations – lose the master and likely lose all your charging capacity.

Consider instead a system where each charger is individually smart and has its own IP address. This ensures it can integrate with your future network standalone, future-proofing your investment while being more reliable.

As your EV charger network expands the value and costs of managing your asset also grows, as does the need to pass on costs to users. Doing these two things effectively at scale without smart charging isn't possible.

## 2. BUSINESS CONTINUITY – DO YOUR HOMEWORK!

You don't have to look far back to find examples of other fast-growing markets to see how quickly the landscape changes. IT is a perfect example of a market that's exploded over the last 30 years, fermenting seismic shifts in the supplier landscape.

The EV charging market has somewhere between 20 and 30 providers at any one time in the UK alone. It's an exciting space with much innovation and huge levels of investment

pouring in, with many businesses accepting a loss-making position in their quest for growth.

As a business, you want to ensure your EV provider will be around to support you for years to come. With the lifespan of a high-quality charger estimated at over 10 years, the business continuity of your partner is critical in ensuring your investment isn't wasted.

## 3. INTEROPERABILITY – IS IT REALLY IMPORTANT?

The UK EV market is dominated by providers that offer a full turnkey solution, which includes hardware, installation, maintenance and the back office management system.

This system connects to the cloud and provides the opportunity to manage an EV charging estate through a single platform – critical when you have chargers spread across a number of large sites. It supports fault management, preventative maintenance and, in most cases, billing for each charging event from the user and payment to the electricity bill payer.







Having all of the elements you need from a single supplier has its benefits: simplicity of managing the project and a single point of responsibility. Yet there are limitations.

As your EV estate grows and diversifies, your choice of chargers could be limited by your back-office system's ability to communicate with other chargers. Many operators run closed protocol software that makes it difficult to integrate third-party hardware with their system, or vice versa.

Our advice is clear – ensure your EV back office system communicates using open protocols and is independent of the hardware manufacturer. This will ensure you can integrate any hardware that communicates over industry standards. It also offers the flexibility to change your back office system if it isn't working for you.

#### 4. DYNAMIC ENERGY MANAGEMENT

A lot is made of the power requirements of EVs, but grid operators are confident they can meet their energy and distribution needs in the short to medium term.

The real challenge is not of generation, but the ability to distribute power through infrastructure that was installed long before EVs were part of the original design consideration.

As organisations start rolling out EV charging at scale, they face the sobering costs of needing to upgrade local infrastructure to support the additional demand. Most large businesses will inevitably need to consider this energy challenge.

Many EV providers offer no solution to this dilemma, while others offer a static energy management system that shares available electricity across the chargers. A static system serves a business' needs so long as the number of EVs needing to charge at any one time is limited.

By contrast, dynamic energy management unlocks the power availability within your infrastructure, enabling a much greater scale of EV deployment before significant investment is required.

An example of this is a recent Schneider Electric project to install 50 x 22kW charge points into an existing underground car park at a flagship site of the UK's largest property managers. Despite the building being less than 15 years old, there was no provision for EV charging.

Schneider Electric's dynamic energy management unlocked existing capacity, without needing a dedicated supply, to support over 1MW of new demand. This avoided the considerable cost of new connections and infrastructure upgrades for the property owner.

While today's demands may be met easily, tomorrow's will need smart and interoperable solutions that connect to your energy management system, to maximise your existing power infrastructure.

Under its EVlink brand, Schneider Electric delivers energy management packages, coupled with truly smart and interoperable EV charging solutions, that ensure unbeatable future-proofing, reliability and efficiency. Schneider Electric's systems are open protocol, enabling freedom of choice on back office management systems and tariffs.

In addition, Schneider ensures its products can communicate via BMS open protocols to allow seamless integration with existing building management systems, further minimising any disruption caused by EV adoption.

To keep up to date, follow Danny Winn, EV Director on LinkedIn or visit [www.se.com/uk](http://www.se.com/uk)





## Planning ahead



Delphine Clement, commercial and industrial building segment leader EMEA, Eaton, explains how the country can prepare for an EV-centric future.

**E**lectric Vehicles (EVs) are no longer a distant dream and we are on the cusp of seeing them being deployed en-masse throughout the UK. Indeed, a recent National Grid Plc report predicts that around 11 million EVs will be on UK roads by 2030 – a decade prior to the government's deadline to ban petrol and diesel vehicles.

The government has correctly identified mobility as one of its key challenges and it is great to hear they are looking to make wholesale changes in order to improve the UK's transport

“ The mass electrification of transport needs the right charging infrastructure ”

sector. Furthermore, the demands of the European Union's standards related to new car fleet CO2 emissions requirements for 2025 and 2030 leave manufacturers no option but to build significant numbers of EVs in the future – for example, from next year Volkswagen will introduce its first all-purpose electric car, the ID Hatch.

The widespread electrification of transportation brings with it a multitude of serious questions about how it can be sustained in the long-term – highlighting the need for a comprehensive and ►



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user-friendly charging infrastructure, while bringing under the spotlight the implications a rapid increase in electricity will have on the UK's overall energy supply. Time is at a premium and these issues cannot be worked out with a silo mentality.

### APPROPRIATE USE OF THE UK'S ELECTRICAL GRID

With 11 million EVs forecast to be on UK roads by 2030, electricity demand will increase. This will have impact on electricity prices, energy generation mix and carbon emissions. The long-term effects of electrification on the grid really depend on both the speed of deployment and the extent to which charging is considered 'smart'.

At present, the vast majority of EV drivers charge their vehicles during the day or when they return from work, which are peak times for energy consumption, resulting in power system issues that could lead to an increased need for power generation capacity and investment in the power network. In order to placate this trend, Ofgem has issued its own 'call to action' to encourage consumers to charge their EVs outside of peak hours.

By doing this, it is possible for peak demand to be drastically reduced. If consumers were encouraged to charge their EVs during times of lower power demand, like overnight, or during excess

supply periods (when solar output is high), then the need for power generation would decrease.

Inadvertently, there would be less need to upgrade power networks too. A recent

“ The government has correctly identified mobility as one of its key challenges ”

report by BNEF clearly outlines the extent to which charging times can have a significant – financial and environmental – influence on the energy system.

### MAKING THE BEST USE OF CHARGING INFRASTRUCTURES

The mass electrification of transport needs the right charging infrastructure. It may sound obvious, but at present 40% of households are without private parking and cars spend most of their time away from home, parked on work sites or in public car parks. Therefore, commercial and industrial sites (C&I) need to be at the forefront of providing the best charging infrastructures they can for EVs.

There are two key options when it comes to providing comprehensive

charging for EVs. Charging needs to be given to employees at company sites, and charging needs to be available at public sites too.

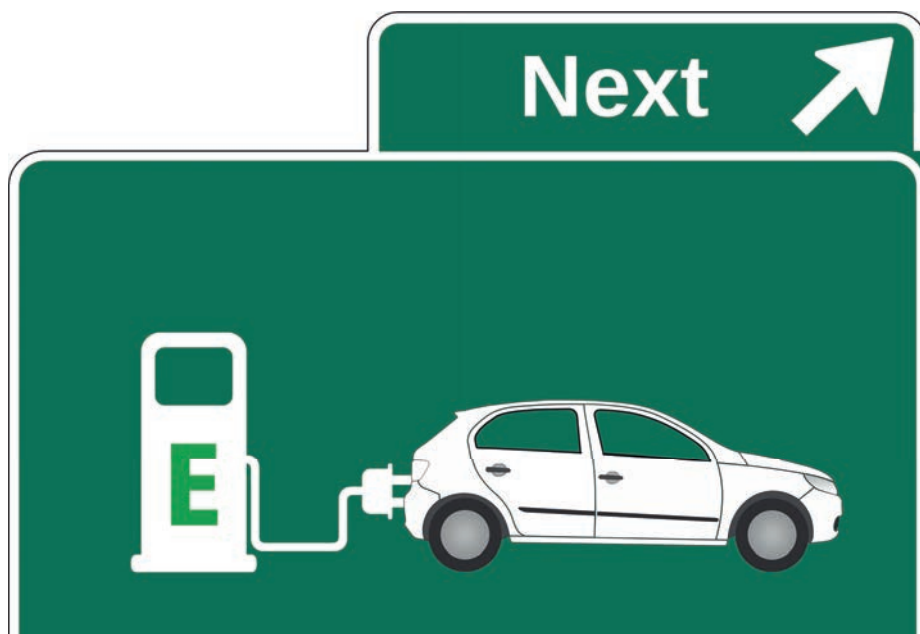
In the future, charging applications will be provided at scale: in car parks, motorway service stations, work places, and fleet van depots too. Charging at company sites will suit those who use more mileage than the average private user. On the other hand, charging in carparks and supermarkets will allow drivers to park their car and top up whilst they complete their weekly shop.

### MAKING A PROFITABLE ROLL OUT OF EVS

C&I charging is likely to be profitable. Going beyond the traditional approach, there is a case for adding other technologies to EV charging, such as vehicle-to-grid (V2G) capabilities and on-site energy storage or solar panels, which can enhance the business cases for C&I EV charging. These technologies have the potential to unlock additional savings on electricity costs, reduce the scale of network upgrades needed and provide extra revenue via the capacity market or ancillary services.

In the summer of 2018, the UK government announced the AEV Act – which aims to support massive improvements in electric charge point availability. This gives the UK government the power to ensure motorway services are upgraded at various points and allows mayors to request installations at large fuel retailers in their areas. The UK's business leaders have clearly taken notice of the environmental and economic benefits of electric mobility, responding to support the trend towards EVs and their supporting C&I sites.

The UK cannot rest on its laurels though when it comes to continued support for EV deployment. It is up to the government and commercial leaders to make significant investments in solutions that will improve infrastructure and alleviate the burden on the grid. Despite being witness to what many are calling the 'electric revolution', much more needs to be done to make electrification a reality within the UK. As it stands, we are not there yet. **ER**





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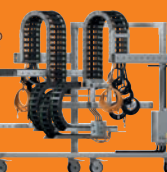
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## Charging begins at home

With electric vehicles increasingly seen on UK roads, Rexel outlines how it supplied an EV charging solution for staff and visitors of Beyond Housing in an effort to meet the growing demand.

**C**alls for a carbon free UK have never been louder. Already this year, the UK has seen protestors bringing London to a standstill, demanding a carbon free UK by 2025. Last year, the government rolled out its Road to Zero initiative, promising that at least half of new cars will be ultra-low emission by 2030.

There are many potential barriers to bringing forth a carbon free UK. Of particular focus for the electrical industry is the move by the government towards much higher

electric car usage. Of course, hand in hand with this desire is the need for a charging infrastructure that can actually support the electric car population.

Not only is there a basic question about grid capacity, currently the UK also lacks the infrastructure required to make electric cars a viable alternative to diesel or petrol.

Rexel has seen an increase in the number of electric vehicle charging (EVC) projects, including a recent installation for Beyond Housing, one of the largest registered

providers of social housing in the north east and Yorkshire.

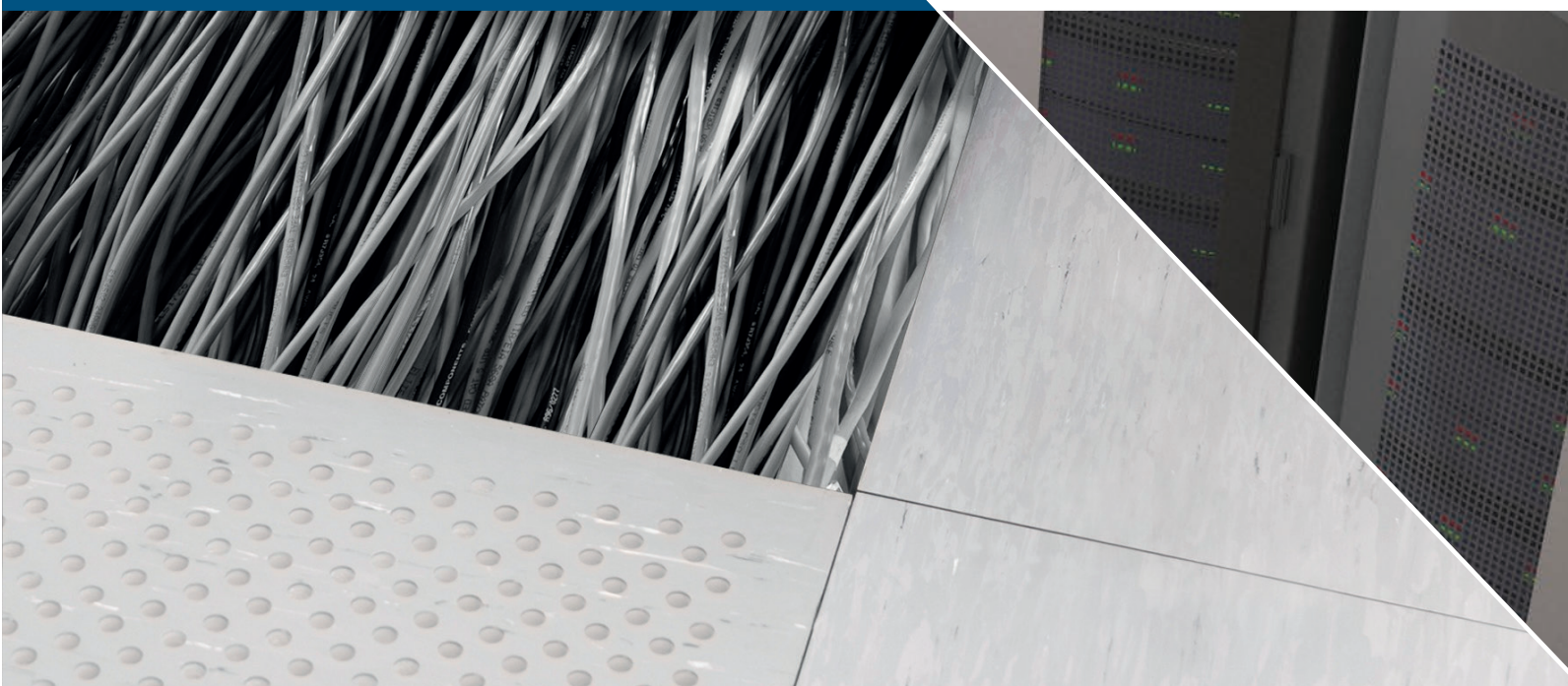
With its Teesside base in Redcar accommodating more than 350 staff, Beyond Housing was keen to implement electric charging facilities in its car park for use by colleagues, customers and visitors. This is a great sign as projects such as this one show organisations not only supporting their own staff, but also the wider community – contributing to the EVC infrastructure. ►





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### NEXT STEPS

Shaun Morgan, category manager at Rexel, has been leading the development of Rexel's EVC offering to businesses and private customers.

"We know the electric vehicle charging market is changing, and it's changing fast. The dynamics, technology and adoption of EVC is accelerating at an incredible speed," he says. "Rexel was an early adopter of EV charging solutions and we have invested heavily in stock across multiple locations across the UK to support a national coverage of electric vehicle charging solutions."

Rexel partnered with Rolec to offer a full catalogue of products to support the domestic, workplace and commercial sectors. Both customers and OLEV (Office for Low Emission Vehicles) accredited installers will enjoy the convenience of a national coverage of product, that is ready to access and install. This year Rexel is looking to invest further into the EVC field to expand the number of locations where they supply electric vehicle charging products, to provide an even greater national coverage and keep up with market demand.

"EVC technologies are becoming more prevalent than ever, with more manufacturers releasing battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV) than ever before. In 2018, the market grew at a rate of +21% with early results in 2019 showing a further increase of 28% for the first two months of 2019. There is a sharp growth pattern seeing more vehicle manufacturers looking to offer a wider variety of electric models across a range of price points," Morgan continues.

"With more choice in the market, we are now seeing buyers considering the benefits and savings these vehicles can bring to their homes and businesses. With initiatives such as the ultra-low emissions zone (ULEZ) coming into effect in London, more businesses are starting to consider the financial benefits of operating electric vehicles," he concludes.

It is expected that 1,000,000 BEV and PHEVs will be part of UK traffic, with recent studies suggesting the UK will need to increase its EVC network six-fold by 2020. The same year the government are looking to make it mandatory for all new houses, flats and office buildings to come with external charging points to ensure that any new buildings are 'electric vehicle ready'. **ER**

### THE PROJECT

Working with specialist EVC installers McNally Electrical, an EVCO423 Quantum Charge system from Rexel was specified to provide the solution.

In 2018, Beyond Housing took the decision to replace its fleet of 160 vehicles as part of an initiative to reduce lease and running costs. The organisation took the opportunity to help the environment at the same time, incorporating a small number of electric cars and vans within the new fleet.

While researching the provision for electric vehicle charging in the local area, it became apparent that the local infrastructure was poor. The decision was made to purchase and install an EVC system at Beyond Housing's Redcar office, not only to support its new fleet vehicles, but to also contribute to increased provision in the Redcar and Cleveland area.

Beyond Housing is now considering the installation of a similar solution at its Scarborough office to allow colleagues to utilise electric vehicles for longer journeys across the wider operating area.

Chris Walker, head of business intelligence at Beyond Housing, says, "When designing our new fleet, we wanted to embrace the latest technology and encourage greater

Currently the UK also lacks the infrastructure required to make electric cars a viable alternative to diesel or petrol

take up of electric vehicles to improve air quality in our operating area. Colleagues have welcomed this initiative and have started to utilise our electric vehicles for service delivery. Furthermore, the availability of charging points allows colleagues who already have their own electric vehicles to top up their batteries whilst at work.

"Our ICT team worked closely with Rexel and McNally Electrical on the equipment specification and installation project, which involved civil works and a temporary power shutdown. This process was well managed and ran very smoothly. We are really pleased with the outcome."



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# Taking charge



Pierre Jeannes, managing director for Mr. Electric, discusses the need to upscale the UK electric charging infrastructure to meet the increasing demands of electric vehicles.

**E**lectric vehicles (EVs), including both pure and hybrid, are making increasing inroads across the UK as consumers are looking to become greener and more sustainable. They are an inevitable new feature of the UK's automobile industry and now come in all shapes and sizes, from two-seater city cars to 4x4 off-landers.

Although EVs still account for a comparatively small share of the new car market, figures have grown gradually in the past five years, and this has also brought a rise in the required charging point infrastructure.

EV technology has developed greatly since the milk float, and as performance and range increases, purchasing an electric vehicle is becoming a very real option for many people, particularly among environmentally and economically-minded drivers.

Today, there are around 60 different electric models (electric and plug-in hybrid) available in the UK, with many of the top manufacturers in the UK now offering a number of EVs as part of their model range. More than 130,000 registered EVs are on UK roads, and there is a growing public charge point infrastructure of over 5,000 locations.

Environmental credentials are one of the key benefits for EVs, as unlike petrol or diesel cars, they don't emit any of the gases that contribute to global warming and make them an obvious choice for anyone who cares about their carbon footprint. As one of 13 members of the Zero Emission Vehicle Alliance, the UK has pledged to make all passenger vehicles sold 'zero-emissions' by 2050.

Government grants for EVs have contributed to the accelerated buying of these vehicles. In the third quarter of 2018, the number of grant eligible plug-in cars registered in the UK surpassed 15,000. By comparison, according to Statista, electric plug-in cars newly registered in January 2019 were 1,334, which is more than half the amount of three years previously.

## REDUCING COSTS

While the initial upfront purchase price of an electric or plug-in hybrid vehicle can be higher than traditional vehicles, this is offset by lower running costs over the lifetime of the vehicle and can offer a number of potential savings. Depending on the tariff, you could pay as little as 96p to fully charge a pure electric car for a 100-mile range. Electric cars are also exempt from road tax and the London Congestion Charge and are entitled to free parking in numerous 'pay and display' areas.

As an example, one Mr. Electric customer who realised the benefits of EVs and made the switch to electric was Alan Plaice, who lives in Truro.

"We have two EVs in our household – my wife's is a hybrid and mine is 100% electric. We already have solar panels installed on our roof, which have proved very cost effective for us, so it made total sense for us to switch our cars to electric and ultimately reduce the air pollution," he said of making the switch to the EV.

"Having made the initial EV investment, which was costly as we bought BMWs, we then needed to find a reputable local electrical contractor who could install the car charging point at our home, as well as replace our domestic fuse box. Mr. Electric carried out the work for us and they were extremely professional and helpful throughout the project.

"We have an EV charging point, which is compatible for our cars and is located by the back door for use, as and when required. Mr. Electric is also currently helping us to apply for the OLEV Electric Vehicle Homecharge Scheme so we can hopefully get a refund of up to £500 on the cost of the installation. We are keen supporters of sustainable green transport and really happy that we made the change – EVs really are the future."

## DEVELOPING AN EV CHARGING INFRASTRUCTURE

EVs are a global phenomenon. They are bringing significant beneficial opportunities for the electrical industry and by 2020, the International Energy Agency believes global EV numbers could hit 13 million. While the focus is to push for EV adoption in a big way, the need for a parallel development of a charging infrastructure is paramount.

The UK needs to increase its EV charging network six-fold by 2020 in order to cope with the amount of EVs due to hit our roads. But the big question is whether the supply of EV charging infrastructure can catch up with the burgeoning growth of EV demand?

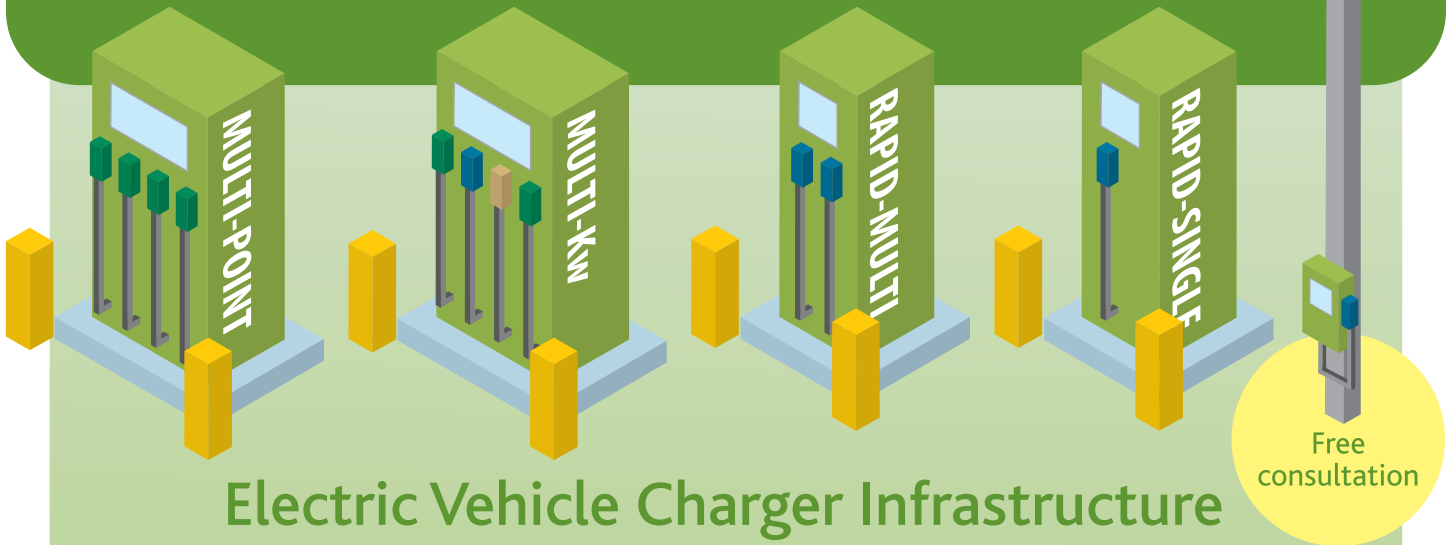
If the UK wants to be a world leader in this market, we need to put a charging infrastructure network in place – including boosting residential power grids, installing smart technologies and investing in workplace and public charging points.

Evidence suggests that the UK network of EV charging points is on the rise. It has increased from a few hundred in 2011 to more than 8,210 charging locations, 13,173 charging devices and 22,385 connectors by 30 April 2019, with numbers rising every month, according to EV charge point locator, Zap Map. The proportion of charger types has also changed significantly during that time with a surge in high power (rapid) units being installed across the UK.

We believe that the ongoing growth of EV ownership in the UK will be reliant on the wider availability of charging infrastructure for consumers and businesses alike, particularly as prices come down and technology improves. If we are to see a national network of high-powered EV charging stations grow, there needs to be greater public and private investment in developing the necessary technology to roll out the infrastructure needed. **ER**



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# The next generation



With a shortfall in engineering graduates on our hands, Vinnie Edge, international operations manager at engineering solutions provider, Boulting Ltd, explores what can be done to secure the future of engineering.

**T**he 2018 Engineering UK *State of Engineering* report states that the engineering industry employs over 5.6 million people in the UK. However, the report also highlights an annual shortfall of up to 59,000 engineering graduates and technicians to fill core engineering roles.

The report commented that 39% of engineering employers in the UK struggle to find candidates with any workplace experience and with the aforementioned reported shortfall, it is clear to see why. The ongoing and

“The government, educators and those across the industry must all make an effort to attract new talent into the shrinking sector”

growing skills gap across the industry could lead to this figure increasing over the coming years, particularly in heavy industry sectors, such as mining, steel and chemical.

Throughout the 1990s, there was a big focus on emerging IT and dot-com technologies. This resulted in an influx of graduates with skills in these areas, yet it also means that more traditional, heavy industry and blue-chip companies are now struggling to recruit.

To combat this, everyone must work together. The government, educators and those across the industry must all





### TECHNOLOGY TRENDS

While the developments in technology will have an impact on the engineering industry as a whole, it is inevitable that these changes will also impact the role of the engineer, particularly over the next five to 10 years. Engineers will become more interdisciplinary, with skills spanning multiple sectors becoming the expected standard for many employers.

For instance, the rise of remote monitoring and working will mean that engineering teams will be able to work closely across multiple nations while having access to an increased level of information and data from the projects they are working on. Augmented reality (AR) and virtual reality (VR) technology will also mean that expert teams won't need to travel to their project site, as instructions can be provided to on-site staff to complete more complex tasks with remote support and guidance.

Engineering is a diverse industry that is investing in Industry 4.0 technology to help combat industry challenges. Some of these applications build upon existing consumer technologies, for example the introduction of tablets and mobile devices as a method of on-the-go tracking and monitoring is changing the way industry manages its people and facilities.

### THE APPRENTICE ADVANTAGE

Despite these advancements in the ease of information gathering, and the insight and understanding of data and knowledge sharing opportunities that are possible across nations, there is still the issue of attracting new employees to the industry in the first place.

More focus should be given on the value of apprenticeship schemes and the opportunities they provide to both employee and employer. Apprenticeships allow new recruits to the industry to try their hand at a multitude of skills and potentially across a wider scope of engineering fields. The opportunities to increase the breadth of experience gained in an apprenticeship is only set to grow further as industries like nuclear and renewable energies continue to receive investment.

Apprenticeships also allow the employer to instil skills and knowledge

●● **Apprenticeships also allow the employer to instil skills and knowledge to their potential permanent recruit from the start of their development** ●●

to their potential permanent recruit from the start of their development. By incorporating them directly into the business, employers can mould the recruit to complete tasks and learn the key skills for their specific industry.

For example, Boulting Ltd has a dedicated apprenticeship, graduate and trainee scheme which provides the opportunity to work alongside experienced engineers to unleash talent in technically stimulating environments across a wide range of engineering services, industries and sectors.

### DRIVEN BY DESIRE

Engaging with students at high school and college level, incorporating them into your business through apprenticeships and work placement programmes has the potential to be meaningful. If your entry level recruits have a desire to learn and have a vision to progress, get them involved in projects and tasks that will harness that enthusiasm.

This involvement can help showcase exactly how diverse the industry is and the broad spectrum of interesting projects and fields that are available to the engineer of tomorrow. Engineering is one of the world's true professions and the opportunity to progress and advance in the industry throughout your career is exciting.

The time is now to buck the trend of skilled engineer shortfalls and those already in the industry must support and inspire the next generation of engineers to keep the profession alive. **ER**

make an effort to attract new talent into the shrinking sector. By promoting and expanding the opportunities for personal development and job satisfaction, just like the initiatives seen recently to attract more teachers into the profession, students and graduates may be more likely to pursue a career in engineering.

Regardless of whether the skills gap is addressed, meaning employees can recruit more staff to the sector, it is already clear that the future role of the engineer will be significantly different to what it is today.



# Smarter safety

Goodlight explores the role of emergency lighting in building safety, and how smart LEDs can enhance safety and compliance.

**E**mergency lighting is integral to evacuation plans for any building, whether it's an office, factory or warehouse, retail or leisure facility, multi-occupancy residence or educational place. Indeed, it is also a legal requirement for most premises, as the BS 5266 Emergency Lighting standard states:

"Every workplace shall have suitable and sufficient emergency lighting and that suitable and sufficient emergency lighting shall be provided and maintained in any room in which persons at work are specifically exposed to danger in the event of failure of artificial lighting."

With any loss of power, an effective emergency lighting system ensures the safety and peace-of-mind of everyone on the premises. Evacuating people out of a building in darkness can be difficult and dangerous, but emergency lighting systems ensure that the path to safety will be well-lit and easy to navigate. And, while safety of building users, owners and occupiers is the main priority, it will also

help emergency services perform their task more effectively.

The basic approach to emergency lighting changed fundamentally in 2016, with the extensive revision of BS 5266 Emergency lighting – Part 1: Code of

“ Emergency lighting systems ensure that the path to safety will be well-lit and easy to navigate ”

practice for the emergency lighting of premises. This is founded on strategies of switching to batteries or backup power when the main power source is lost.

Further details of the requirements

are set in system standards, such as BS EN 838: 2016 for emergency lighting and BS EN 50175 covering emergency escape lighting. Typical guidelines recommend that emergency batteries should test and operate to deliver minimum lux levels of 0.5+lx in open areas and 1lx or more for any escape routes for a three-hour duration in emergency mode.

Such guidelines present a top-down approach, but if existing lighting systems already fulfil the base requirements and system standards, there is still ample opportunity to gain cost and operational benefits by upgrading emergency lighting luminaires, lamps and illuminated signage with LED technology.

LED technology represents the ideal emergency light source. It is more robust than conventional lighting and low energy consumption makes the most of the back-up battery energy source. Moreover, it can withstand a greater degree of heat and other stress before failing than other light sources.



## MORE CONTROL

Smart LED lighting systems have the potential to transform the implementation of emergency lighting in buildings. Manual testing is tedious, time-consuming, costly and may be prone to human error. An emergency lighting monitoring system enables building managers to automate routine and periodic testing of emergency lighting, also the regulatory reporting and recording of test results.

Areas where automation of the emergency lighting process should be strongly considered are in multiple occupancy dwellings, such as social housing, care homes, healthcare, education, hotels and leisure. In the wake of recent events like the Grenfell Tower disaster, the spotlight has fallen on preventing emergency lighting failures that contributed to these tragedies.

Smart LED lights, connected to the building services, create new opportunities. For example, lighting can be connected to the building's alarm system. In the event of a fire alarm, all lighting can be triggered to 100% on to assist the evacuation. Battery back-up mode can be activated only when the mains power to an area actually fails.

## SCALABLE SOLUTIONS

Implementation of these solutions is simplified by the recent introduction of simple, scalable, lighting control systems. For example, Goodlight's Light Boss creates a wireless lighting network, controlled by Android app or web interface, with simple software to set and adjust the building's lighting.

The control system connects wirelessly to individual light fixtures, creating a network of tens or even thousands of LED lights. It provides self-test emergency light monitoring, allowing operators to check for faults remotely without testing individual light fittings, also eradicating the need for manual reporting. In addition, it provides live reporting on energy consumption of all connected lighting fixtures, allowing energy management of a single site or a group of sites.

“ Smart LED lighting systems have the potential to transform the implementation of emergency lighting in buildings ”

Lights can also be programmed specifically to respond to an emergency event, for example ensuring that people inside the premises have all the illumination they need. Lights can follow the escape route through the building, assisting the response team. They can also light the response team's path towards the people in the danger zone.

It is everyone's hope that emergency lighting systems are never used, but the use of LED fixtures keeps the cost of this 'insurance' to the minimum, and compliance to the full. Implementation with easy-to-use, cost-effective solutions for smart monitoring and control increases confidence that the systems will work when they are needed most. It's all about safety and peace-of-mind. ER

Goodlight 2D LED luminaire IP65



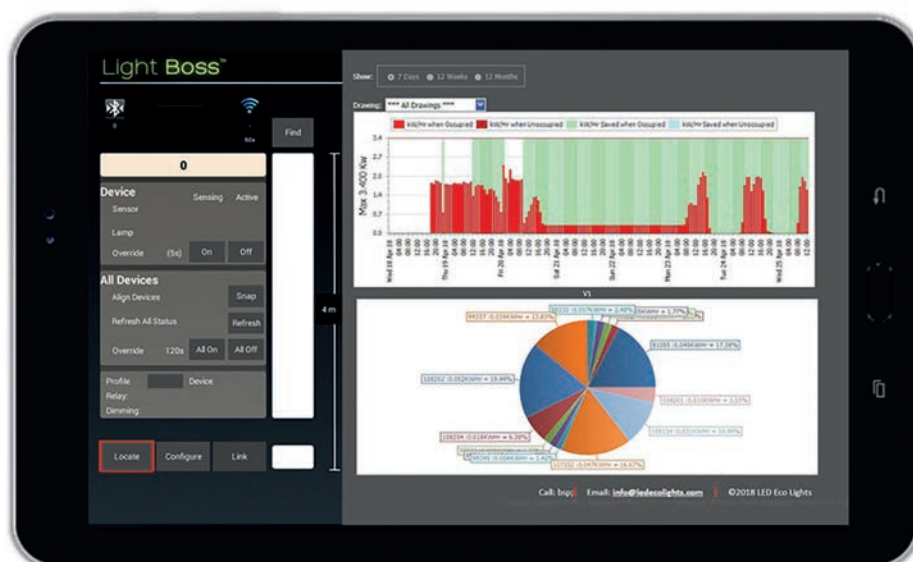
Goodlight 2D bulkhead IP54



Light Boss Smart emergency wireless lighting



Light Boss wireless lighting control tablet





## LED-ing the way



Steve Stark, trade sales director UK and Ireland at LEDVANCE, takes a look at the latest developments in four distinct lighting markets: offices, retail premises, the hospitality industry and industrial premises.

**F**or electrical installers, the accelerating switchover to LED lighting presents a significant business opportunity. Retrofitting LED lighting into existing buildings is increasingly popular, providing an attractive RoI as well as improving the ambience of the facility. The primary drivers for the switch vary significantly from customer to customer.

### THE BIOLOGICAL EFFECT OF LIGHT

One of the major ways in which LED lighting is an advance on the technologies that preceded it is its exceptional controllability. Not only the level but also the colour temperature of the ambient lighting can now be precisely controlled. Regulating indoor light sources not only helps to save

energy, but can also stabilise the natural day and night biorhythms of humans, helping to boost a sense of well-being and improving health.

Offices everywhere are experiencing the benefits of providing controlled and tailored lighting throughout the day, improving working efficiency by adapting light sources to follow the natural course of daylight.

### SETTING THE SCENE

The challenge faced by retailers is how to make the products on display look as appealing as possible, while managing energy costs which make a significant contribution to retail overheads.

At the same time, store layouts are more dynamic than ever as retailers respond to the completely flexible online world to reshape their offer, laying out stores regularly to reflect new products and sales promotions. LED lighting is exceptionally well placed to help them address this triple challenge. Solutions like the retrofittable LEDVANCE 3-phase Tracklight spot LEDs products can be tilted and swivelled to highlight almost any object in the room.

### AESTHETICS MEETS TECHNOLOGY

The hospitality business is about making guests feel good. LED lighting can help achieve this, leveraging unprecedented controllability to deliver benefits that go beyond novel lighting effects and energy savings. LED lighting has quickly become a popular upgrade for hotels and venues keen to present an image and create an attractive, welcoming ambience.

Controlled via an easy-to-use mobile app, or even a voice-command interface, a roomful of LED lamps can produce finely-tuned illumination in almost any colour or provide copious 'white' light at any desired correlated colour temperature (CCT) corresponding to tones from warm, to cool, to daylight white. They can fill-in, accent, highlight, wall-wash, or provide the main illumination, and with dynamic control can transform the mood of an entrance hall, lobby, function room, restaurant, or bar gradually or instantaneously.



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“ The accelerating switchover to LED lighting presents a significant business opportunity ”

### ROBUST AND ENERGY EFFICIENT

Lighting in industrial locations needs to address safety and sustainability requirements, whilst also being fit for purpose in terms of withstanding the environment and providing the right level of illumination. With the right choice of luminaire, retrofitting LED lighting can be straightforward and bring dramatic improvements in both energy costs and the working environment.

For example, Peterborough-based Ability International replaced an existing lighting installation in its warehouse that included six-foot fluorescent linear luminaires using 8.7 kW per hour and costing the business £273 a month. Following the installation of LEDVANCE 55W damp proof LED luminaires illuminance has improved by 20% and energy demand reduced by 5kw per hour, saving Ability 68% on their energy costs.

### EASE OF INSTALLATION

If there is one common characteristic that unites these four very different markets it is ease of installation. If an installer is replacing tens or hundreds of luminaires at a site, a quarter or half an hour of the time it takes to fit each one can make a big difference to the project.

By focussing on reducing the installation time, the installer cannot only



provide a more competitive bid without sacrificing their own margin, but can also improve the RoI making the project more appealing to the customer and creating a greater incentive to proceed.

For Lighting Electricians, the contractors for Ability International, the ease of installation and assembly of the LEDVANCE luminaires was a key factor with stainless steel clamps and safety screws provided alongside mounting

accessories. They were able to pre-assemble and complete much of the installation in their workshop facility off-site to minimise disruption. Once at the customer's premises, the LEDVANCE fitting connected simply using push-fit connectors with all additional parts included.

Using the right luminaires and the right approach, retrofitting LED lighting can be a highly lucrative source of revenue for the lighting installer. **ER**



# Finding the right fit

BEG has installed a comprehensive, energy-saving lighting controls system at the Dyson School of Design Engineering, which the maintenance team can control themselves via their smartphones.

**B**EG Lighting Controls was selected by ICL to provide a user-friendly system which could be maintained by their own maintenance department and meet the lighting control standards required by the research university. BEG worked with mechanical and electrical consultants, Buro Happold, who were tasked to oversee the project.

ICL's main criteria was that the project had to result in energy cost savings for the university for the various areas of the Dyson School department and take advantage of any natural daylight. BEG Lighting Controls and Buro Happold worked on the layout of the lighting as well as the level of light and type of control required for these areas.

Tom Greenrod, specification director at BEG Lighting Controls, says, "The design brief from the Imperial College London meant we had to carefully specify lighting controls products for each area which differed greatly from room to room, so this was by no means a 'one size fits all' solution. It was imperative that the lighting was mostly switched on in the offices and teaching rooms during working hours and that it could be controlled to reduce lighting levels when the natural daylight was brighter. For the laboratories, we used DALI photocells instead of occupancy sensors.



"Areas such as the corridors, stairwell, toilets and storerooms did not need to be fully lit and lighting only needed to be switched on once our occupancy sensors sensed there was a person or persons in the room."

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**DAI** Digital Illumination Interface Alliance

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“ Consumers need to be able to reduce their power requirements from the grid at times of peak consumption ”



## Shifting the demand



**Paul Sheffield, chief operating officer at Haven Power, looks at how to take back control of your energy costs.**

**T**he latest Committee on Climate Change recommends a new emissions target for the UK of net-zero greenhouse gases by 2050. This is a clear indication of the UK's commitment to ending our contribution to rising global temperatures. To achieve this commitment, the drive towards low-carbon power will need to be accelerated and supported by a major expansion of renewable and other low-carbon power generation.

The report states that we can expect to double our electricity demand between now and 2050, which will require a fourfold increase in the generation of low-carbon electricity to meet our net-zero target. Potentially this could mean growth in offshore wind generation from 8GW to 75GW – all produced from 75,000 turbines – and there will be costs associated with this.

Electricity bill payers (households and businesses) currently

pay around £7 billion a year towards the roll-out of low-carbon power. This is expected to rise to around £12 billion by 2030. Additionally, the electricity system must be able to cope with a higher proportion of inflexible generation, such as wind, if supply is to be matched to demand, no matter when or where that demand comes from.

Essentially, what this means for the UK and businesses is that electricity costs will rise, and we will be more dependent on intermittent sources of electricity supply. The Grid will need to adapt, as will businesses, if they are to maintain control of their costs. One thing that organisations can do to optimise energy use and meet their own sustainability targets is to participate in programmes such as Demand Side Response (DSR). All this helps to balance the Grid, something which will become increasingly complex to manage with the increase in intermittent sources such as solar and wind.



#### UTILISING ENERGY AS A REVENUE STREAM

DSR is an umbrella term for a type of energy service that industrial and commercial consumers can participate in to keep the grid balanced. Consumers need to be able to reduce their power requirements from the grid at times of peak consumption, and the quicker they can do this, the greater the monetary reward they receive from the National Grid. Businesses can achieve this by shutting down some operations for a time or relying on self-generated or stored electricity.

Wholesale Market Access is another type of DSR product which allows a business and supplier to enter into a pre-negotiated contract to reduce the electricity supplier's exposure to imbalanced prices. For instance, if the electricity supplier is likely to need more electricity than predicted, the supplier will alert their customer to turn off or reduce consumption, thus reducing the amount of extra electricity they need to purchase at a high price.

Customers who have the ability to shift their demand, without impacting their core operations, benefit from a financial reward which is also dependent on their flexibility.

#### EMBRACING TECHNOLOGY

Achieving cost savings on energy bills can have a dramatic effect on the bottom line – especially for large consumers. Carbon Trust estimates that a 20% cut in a large retailers' energy costs represents the same bottom-line benefit as a 5% increase in sales.

But it's not just about saving money. Businesses can leverage solutions such as DSR as an additional revenue stream as well as achieving their own carbon neutrality targets. However, businesses may need to embrace certain technologies to enable this to happen.

“The drive towards low-carbon power will need to be supported by a major expansion of renewable and other low-carbon power generation”

For example, if estate managers can't measure their energy usage on-site, then they can't improve it. Smart meters allow managers to benefit from half-hourly settlements, enabling them to manage demand by switching to self-generated or stored electricity, or shifting usage to a period when the third-party costs of maintaining and balancing the electricity transmission system are lower.

Additionally, investing in solar power technology in combination with battery storage technology gives businesses the ability to reduce consumption on the grid at peak times by using stored electricity. It also further reduces costs and increases sustainability targets as the electricity is self-generated from a renewable source.

#### WORK WITH THE RIGHT POWER PARTNER

The energy landscape has seen unprecedented change in the last few years and this trend is not going to change. Having a long-term and trusting relationship with the right partner – supplier or consultant, or a combination of the two – will go a long way in helping businesses achieve both cost savings and sustainability goals. **ER**



# The next step



**Yselkla Farmer, director of policy and marketing at BEAMA, discusses how to galvanise investment and accelerate deployment of new technology in the UK energy infrastructure**

**T**he recent government Select Committee inquiry into financing energy infrastructure has sparked widespread discussion across the industry on the current investment and finance climate for renewable generation, low carbon technologies, and products that enable an efficient and flexible energy system. When we refer to investment throughout this article, we are referring to predominantly private investment.

With the decision of Toshiba and Hitachi to withdraw investment from UK nuclear projects, the question has been put to industry: how will we fill the 'nuclear gap'? This is a huge opportunity for the UK to decarbonise further and invest in renewables at all levels in the system. BEAMA represents an industry that collectively is already delivering the technologies needed to do this. However, the current investment landscape is limiting progress and inward investment in the UK, making it more difficult to address our growing energy needs.

## A LOW CARBON FUTURE

How can we galvanise investment for the UK market and accelerate deployment of new innovative technologies to enable our low carbon future?

This is a question BEAMA is championing with government today. There is a huge opportunity here for the UK to be a world leader in delivering new technology and markets, but investment is essential.

This investment is needed, regardless of the 'nuclear gap' we may be facing, because the nature of our energy system is already drastically changing. The way consumers access electricity is changing fundamentally, driven by the move to digitalise and advances in our ability to control energy in the home, as well as trends towards prosumers taking control of their energy choices by generating and trading their own electricity.

These changes are driving new and greater demands on our networks – in particular, the need for more electricity and more flexibility. Improving the capability of the energy system will be key in ensuring capacity for growing electrical demand from electric vehicles and heat, as well as the ability to deal with the volatility of energy from distributed renewable generation.

## CHANGE FROM THE TOP

We know from recent evidence presented by the Committee on Climate Change (*UK housing: Fit for the Future?*, February 2019) that emissions reduction from UK housing has stalled. The focus needs to move to reforming policy and regulation to help drive investment in

low carbon technologies and our housing stock.

One example is the recommendation to support the growth of low carbon heating by ceasing the connection of new builds to the gas grid by 2025. The pure electric and hybrid systems to enable this are easily available today, and acceptance of these new technologies is essential if the UK is to achieve the level of decarbonisation from

the housing stock to meet its targets for emissions reduction.

To add to this growing electrical load from heat, we will also see widespread adoption of electric vehicles. With the recent Committee on Climate Change net zero by 2050 report, arguably the growth and pace of deployment for these new technologies needs to accelerate even further. To do this, government needs to now recognise the new

“There is a huge opportunity here for the UK to be a world leader in delivering new technology and markets”

opportunities from real-time energy data, and consumer control. This has the potential to provide for domestic and non-domestic customers, save unnecessary investment in the grid and reduce carbon emissions. Government should embrace these new data-driven solutions.

It is therefore evident that radical infrastructure planning is needed across the system – from the transmission network, to behind the meter technologies in buildings and on streets.

## RHETORIC OR REALITY

While government ambition and rhetoric has in recent years supported the move to develop low carbon energy and associated flexibility solutions on the energy system, investment in the sector is declining and it is becoming increasingly difficult for technology companies to launch new projects in the UK.

In many cases, diminishing investment is linked to policy failures and unhelpful regulatory changes. There is insufficient policy support for the uptake of required technologies for the UK housing stock, and current building standards, incentives and market mechanisms for the trading and management of flexibility (for example through storage) are not ambitious enough.





## “ The answer is to provide clear market signals and planning ”

A key driver of uncertainty that has had a significant impact on investment decisions, particularly in distributed energy assets, is the state of policy flux and regulatory uncertainty that has come from BEIS or Ofgem in the past eighteen months. Regulatory actions being contradictory to aspirations set out by ministers, policy changes that are harmful or detrimental to the business case for investment in energy assets, a piecemeal approach that leaves investors deeply unsure about future revenues and the stability of the incentive and market frameworks that should be encouraging investment in renewables infrastructure have all had an effect. Examples include the recent proposal to fix residual charges, the removal of the Renewables Obligation and the Export Tariff.

To return to the question asked earlier, the answer is to provide clear market signals and planning. We know regulatory change is necessary for system flexibility, and for improving our housing stock, and this must be done in a planned and co-ordinated way. Before removing existing market incentives, government should be setting out planned new market mechanisms that will enable investment in the UK renewables market, including energy storage.

A strategic infrastructure plan linked to the current government strategies – the Road to Zero strategy, Smart Systems and Flexibility

Plan – covering the next 10-20 years will support the UK's efforts to meet its carbon targets and deliver its Industrial Strategy. This plan will set out not only broad physical infrastructure requirements, but align policy and regulatory change into a planned programme of work that provides the market signals needed to ensure investment in the UK. The government should set about making the UK the preferred location for developing future energy markets. **ER**





## The burning questions



**Energy stored in batteries, especially energy generated from renewable sources, could ease our move away from fossil fuels and towards the low-to-no carbon future prescribed by the recent CCC Net Zero Report, writes ECA energy and emerging technologies solutions advisor Luke Osborne.**

In early May, the Committee on Climate Change (CCC) published its latest report, laying out how the UK can achieve net zero greenhouse gas emissions by 2050.

Perhaps one of the most surprising aspects of the report is not its ambitious target, but how realistically feasible its 'net zero' goal could actually be.

In recent years, the UK's energy mix has shifted dramatically with fossil fuels, notably coal, being dropped in favour of renewable and less polluting alternatives. To put this into perspective, in 2012 coal generated 40% of the UK's electricity, but this fell to just 2% in the first half of 2017. Coal has been largely replaced by increases in wind, solar, bioenergy and gas production.

Even more recently, a particularly encouraging piece of news said that from 1 to 8 May 2019, Britain had its first entire week without using electricity generated from burning coal since 1882, according to the National Grid Electricity System Operator (ESO).

### WINNING COMBINATION

Technology has, for the last decade, driven innovation through renewable energy – now a mainstream, economically viable way to generate electricity using the sun, wind and

water. With the ability to store that energy using batteries, our dependence on conventional methods could be significantly reduced, and the case for batteries made even stronger.

In principle, solar, wind and energy storage are a winning combination. While combined-cycle gas turbine (CCGT) plants still provide most of the UK's electrical energy, they are increasingly underpinned by renewable energy, which has delivered major growth in capacity in recent years. Once set up, renewables tend to deliver the cheapest (and lowest carbon) electricity available to the UK market.

The solar/wind/storage triad can minimise customers' energy bills, and notably their exposure to short-term price fluctuations via half-hourly metering. These savings can even be supplemented by income from emerging activities such as grid balancing. The result: many new installation and maintenance opportunities for the electrotechnical industry, whether for owners, customers, contractors or other third parties.

But the perennial renewables conundrum remains: turbines don't turn without wind, and PV panels don't produce energy without sunshine. Batteries could be the solution to that problem.



### A MORE BALANCED GRID

The government's Industrial Strategy and Clean Growth Strategy are underpinned by a clear understanding that economic growth in the next few years will depend on an increasingly low-carbon UK economy, and the development of more distributed renewable and storage technologies.

To facilitate this shift, the government wants to make the grid fit for purpose, effectively remodelling it to accommodate renewable sources. Batteries could be a major stepping stone towards making our grid (built for fossil fuels) more adaptable and support it on a more flexible basis, allowing us to reach the goal of decentralised electricity generation.

Considerable publicity is given to batteries, many of which offer excellent capabilities. For instance, battery and flywheel systems provide around x10 faster and more precise service response to the grid, compared to turbine generators.


### GROWING MARKET

A key commercial attraction of battery storage, as costs continue to fall, is its relative ease of deployment (batteries can be set up in numerous locations). Lithium-ion batteries currently dominate the market, offering high discharge and recharge rates – ideal for frequency response.

Correctly designed and installed alternative power systems are an essential part of any electrical installation, to safeguard its continued operation during power outages. Using stored energy to this end will likely be the next step on the way to fully decarbonising our economy.

The opportunities for contractors are therefore significant, and they include the design, installation, maintenance and servicing of smart, renewable and distributed power systems. ECA believes this area is set to grow as solar, wind and battery prices continue to fall, and we expect new opportunities in the electrotechnical industry to emerge – provided the skilled capacity to deliver is there.

UK carbon emissions have been reduced by more than 40% since 1990, while the economy has grown by two thirds, which means we have successfully 'decoupled' carbon emissions from economic growth. With implementation of the Industrial Strategy, the Clean Growth Strategy, and now the CCC Net Zero Report, these trends are set to continue and should lead to considerable business opportunities for electrical contractors.

ECA has identified at least 25 different low-carbon or energy-efficient technologies that are available to asset managers and contractors, ranging from LEDs to renewables, and movement sensors to batteries. To find out more, or to join ECA, please visit the ECA website. 

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# Powering the future



Power management specialist Riello UPS has teamed up with energy trading experts RWE Supply & Trading to offer data centre operators the opportunity to turn their UPS systems into a 'virtual power plant' capable of demand side response – providing a lower upfront and operational cost for a more reliable UPS system.

**T**he UK's energy mix is going through what most experts agree is a necessary transition away from fossil fuel-generated electricity to a low-carbon future powered by renewable sources like wind, tidal, and solar. These cleaner, greener sources already contribute 33% of the nation's energy, with this trend on a steadily upwards curve.

In fact, the recent Easter weekend saw the UK break its record for the longest continuous period of coal-free electricity generation, with the 90-plus hours smashing the previous best of 76 hours 10 minutes set last April.

However, this growing reliance on more unpredictable low-carbon energy poses serious challenges to National Grid in terms of balancing supply with demand to ensure a stable, consistent grid frequency.

Diverse smart grids of interconnected power generators, using battery storage to harness the potential of renewables and on-site generation offer an obvious solution, particularly with the price of large-scale premium lithium-ion batteries plummeting 76% since 2012 and likely to continue to fall in the coming years.

## NEW PARTNERSHIP POWERING CHANGE

Up to now, mission-critical sites such as data centres have been slow to join the party, with their persistent concerns over availability and uptime still outweighing the supposed benefits of reduced energy bills and improved efficiency.

A new partnership is dismissing these doubts by arguing operators can tap into the environmental and economic benefits of battery storage without compromising on overall system resilience.

With energy costs accounting for up to 60% of a data centre's running costs, Leo Craig, general manager of Riello UPS, says that now is the perfect time for operators to rethink the role of their uninterruptible power supplies.

"UPS systems are an essential insurance policy for mission-critical sites in case of any failures with the mains power. But in developed societies such as the UK, such major power outages or network crashes are extremely rare, so how often is that UPS actually called upon? More often than not, it's an underutilised asset – one that can be pretty expensive too.

"Recent developments in rectifier technology, along with the increased commercial viability of lithium-ion batteries, mean there's now an alternative to the status quo – something that enhances the security of supply while at the same time offering significant cost savings."

## VIRTUAL REALITY

To deliver those dual benefits, Riello UPS has joined forces with energy company RWE, one of the largest electricity producers in Germany. Through its RWE Supply & Trading division, it is also one of the biggest energy traders in Europe.

Their 'virtual power plant' concept is based on an adapted Riello UPS fitted with a special rectifier that enables the bi-directional flow of electricity to and from the grid network.

This modern, energy efficient UPS system is backed by either premium lead-acid or lithium-ion batteries – the cost of which is partially covered by RWE – equipped with sophisticated monitoring software and communications technologies that enable it to interact with the grid in real-time. The 24/7 mandatory monitoring also helps improve battery reliability through predictive maintenance, and offers greater reassurance that the batteries will work when called upon compared to traditional sealed lead-acid cells, which are much more difficult to monitor.

The batteries are divided into two sections, the first of which is only used to provide backup power in case of emergency. The







second 'commercial' element can be used for various demand side response (DSR) mechanisms or to store electricity at cheaper times avoiding peak charges.

In the event of a power failure, any energy left in the 'commercial' part of the battery can be activated to complement the primary backup, providing a boost to overall runtime.

Dario Hernandez, product manager for RWE Supply & Trading GmbH, explains, "For data centre operators, there are two major benefits. Firstly, we will look to subsidise the more expensive premium batteries; this reduces significantly the upfront and operational costs and increases the system reliability compared to installing a conventional UPS system.

"Secondly, RWE also takes on any associated risk with trading on the energy market. We can help operators reduce standard grid operating costs. Depending on where the project is connected, operators could save up to £6,000 per MW a year. Data centres also have the opportunity to tap into the wide range of financial incentives that National Grid offers to help balance the electricity network."

One such mechanism is dynamic Firm Frequency Response (FFR), which rewards companies that can quickly – within a matter of seconds – reduce their consumption or feed energy back into the network to ensure a consistent grid frequency within 1% of 50Hz.

According to National Grid's latest 'Power Responsive' annual report, FFR provision from DSR providers rocketed from 392 MW in 2017 to 2,720 MW in 2018, a clear demonstration of

the market potential for data centres and other facilities with similar on-site energy generation and storage capabilities such as hospitals, utilities, and councils.

#### PUTTING THEORY INTO PRACTICE

Riello UPS and RWE have been successfully piloting their 'virtual power plant' solution since September 2018 at RWE's global headquarters in Essen, Germany, at a site carrying a secured load of 100 kW.

The project has already been shortlisted in the 'Data Centre for Smart City' category of the 12th annual Datacloud Global Awards 2019, with the winners set to be announced in Monaco on 4 June. A follow-up pilot plant in the UK is scheduled to go online later this year.

A typical 1 MW load plus batteries installed to offer 10 minutes runtime and 1 MWh of FFR, the cost of installing a modified UPS is roughly a fifth lower than standard UPS systems.

Because the advanced battery and system monitoring capabilities reduce the need for manual maintenance, annual operating costs can be cut in half too, saving tens of thousands of pounds over the 10 to 15-year lifespan of a UPS system.

Add in grid tariff savings and the option to even generate additional revenues from schemes such as FFR, and it makes a compelling case for data centre operators to ditch their doubts and transform their UPS systems from a reactive insurance policy into something that's working – and earning – 24 hours a day, 365 days a year.



# A strong backbone



**Livia Rosu, marketing chair at HomeGrid Forum, explains how G.hn technology could hold the key to unlocking the future of the power grid.**

**T**he development of smart power grids is set to be the next innovation for smart cities. With the ever-increasing focus on renewable and clean energy, the use of power is an area where smart developments can have a huge impact on our carbon footprint across the world.

The use of technology to support these developments is already being seen around the world. Internet of Things (IoT) technology is increasingly being used in the UK to allow utility companies to maintain the efficiency of their networks, allowing networks to run more smoothly, be more resilient in harsh environments as well as supporting switchgear, which enables utilities to provide power from both traditional power stations and renewable energy sources.

Japan has also showcased steps towards a society that can run without fossil fuels and produces little CO2 emissions, utilising blockchain technology to allow consumers to 'share' energy thus reducing the burden on the larger energy grid.

Despite these developments, we are still far from being able to call power grids completely 'smart'. G.hn technology has the potential to reach this goal.

## GLOBAL TECHNOLOGY

G.hn is a standardised, unified and globally recognised Gigabit home networking technology running on any home cables and developed by the UN's International Telecommunications Union – Telecom (ITU-T) standards development organisation. The use and deployment of G.hn is supported by the HomeGrid Forum.

G.hn technology has highly flexible PHY and MAC, which allows it to be used in an extensive portfolio of applications, including IPTV, Wi-Fi backhaul and smart grids over any media (powerline, coax, phoneline, plastic optical fibre, and also wireless, including Wi-Fi and visible light communications).

The G.hn network is based on master/slave architecture with synchronised media access, which allows the technology to adapt to all possible topologies and applications, such as TDMA, CSMA and token-passing, and guarantees reservations for QoS sensitive applications. G.hn comes with efficiency mechanisms capable of operating reliably even in the worst network congestion conditions.

## STAYING CENTRALISED

By applying this technology, smart appliances, energy management systems, security and automation systems and all other household IoT devices can be reached, monitored and centralised using the G.hn backbone. As a result, homeowners are better equipped to manage their energy consumption whilst enjoying advanced communication links to several systems in the home and remotely.

These G.hn-powered intelligent links enable utilities to offer advanced services such as energy management to their customers as a value-added option, which simultaneously helps reduce consumer costs and lower power demand during peak periods.

Advanced Artificial Intelligence (AI) systems in utilities, supported by a G.hn backbone, will be able to assess the state of distribution lines and systems and proactively determine where an outage has a high likelihood of occurring, while also taking steps to predict and ultimately prevent such power outages. This will allow utilities to increase the efficiency of power grids, ensuring a smoother and more reliable experience for the end-user and reducing energy wastage.

## KEEPING COMMUNICATION OPEN

Effective and dependable communication lines are vital to support a smart power grid. G.hn technology further enables the utility distribution grid with robust communications links to substations, line-monitoring systems and smart meters. G.hn can provide this backbone network and allows high-speed, high-quality communication across any wire in the home networks. Ultimately this creates a smart grid that facilitates highly intelligent control of energy use in the homes by any networked device.

In a smart grid deployment with G.hn powered devices, the electric utility enables a plug-and-play, self-constructed network in which all nodes act as automatic signal repeaters, creating a complete, self-healing mesh network and real time communication between smart meters and the central office.

## STAYING SAFE

A common concern for consumers is the security of smart technology, particularly with worries over the possibility that smart home devices could be externally interfered with. Advanced metering infrastructure using a G.hn backbone can transmit data frames which remain encrypted with G.hn point-to-point security, protecting each meter and its communications from any threat.

A G.hn-secured smart grid network is able to use relay nodes for passing data frames between concentrators that cannot communicate directly, therefore maintaining full confidentiality for all communication. By using a unique set of encryption keys per each meter, these nodes ensure that no other transceiver in the network can decode its data messages, keeping the end-user completely protected.

As power grids develop to the point where a communication system needs to be in place, G.hn is an excellent backbone. G.hn can pair with Wi-Fi, ZigBee and any wireless technologies that may be used as links to the smart meters from neighborhood network controllers or concentrators.

G.hn is ultimately becoming an integral part of an engineered hybrid-network design, providing all the necessary functions required for a powerful smart grid 'brain', with the ability to manage the complexity of energy services inside the home.

We are evolving towards a future of the power grid that can take its abilities to the next level. In this future, we will see fast outage resolution and intelligent two-way communication links between smart meters and the electric utility central office, which will allow for reliable and effective clean energy developments. In order to achieve this, remote management of energy used by major home systems must all evolve to allow the development of a truly smart grid. **ER**



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## Digitising power



**Dave Roberts, director at EA Technology, explains how the OpenLV project is meeting the challenge of keeping the lights on whilst decarbonising the future.**

**T**he UK energy system is undergoing a transformation towards a decarbonised, decentralised, and digitalised future. Our response to the emergency on climate change has resulted in radical shifts over the last decade in the way we generate electricity, away from a small number of centralised power stations, to many renewable generators distributed throughout the land. This allows us to use low carbon electricity for new purposes – like powering the cars we drive, or the way we heat our homes.

Indeed, the wave of plug-in electric vehicles is starting to build at an increasing pace with changes in policy, coinciding with increased customer choice and lower price points from the car makers. The 2020s are expected to be the period of rapid consumer transition, which will put pressure on the one million Low Voltage underground cables and overhead lines that deliver power to our homes and businesses.

These silent, and in many cases aged, bits of infrastructure are critical to our society – providing the backbone to our very economy. Yet few of us even notice, or care, when we plug in our devices, or switch on new loads. These networks have done a

fantastic job since they were installed, but they are constrained. Each cable has a finite capacity, which, if operated above this, causes damage; ultimately resulting in the lights going out – not great as we become more reliant on electricity as our main energy vector.

### MEETING THE DEMAND

We know that one electric car uses about the same electricity as one home in a year. That's a big deal if we are trying to charge our vehicles at the same time as we are using energy in the house. Bigger networks will be needed in some areas but shifting the demand away from the evening helps tremendously – and has been proven to work. Quicker to roll out, and in many cases cheaper than building new infrastructure, the ability to 'flex' the demand (for example, smart charging for plug-in electric vehicles) will become more and more important to keep the lights on and costs down.

The trouble is, we are all different, and the networks that serve us are also different. The peaks and troughs in power vary across the country, dictated by our activity as users. The demands



## ●● The 2020s are expected to be the period of rapid consumer transition, which will put pressure on the one million Low Voltage underground cables and overhead lines that deliver power to our homes and businesses ●●

are therefore highly specific to an individual street, and it's not obvious to any of us when these occur. And unfortunately, smart meters alone can't help.

The simple answer, then, is to provide an automated link from these networks to users (or organisations wishing to 'bundle' services to users), to encourage us to draw power at a time that works for our lives, and for the power network.

But it's not quite that simple – only a tiny fraction of the 500,000+ low voltage distribution substations are monitored. And those that are monitored use different systems and can't easily talk between vendors. We need a low-cost, flexible and secure way for this to be provided at scale.

### WORKING IN REAL-TIME

This concept is starting to gain traction. The OpenLV project, run by EA Technology and Western Power Distribution, is combining low cost monitoring hardware for local substations, with an open but secure software platform, to provide visibility of the network in real-time, and allowing multiple apps to be developed and deployed by multiple parties (analogous to the ones on your smartphone).

We are making local electricity data available, and open. We are trialling the Low Voltage Common Application Platform (LV-CAP), in 80 substations, to provide decentralised control, enhanced network monitoring, and enabling a new industry to develop apps for new services.

Two years into the project, we have successfully engaged with a range of communities, businesses and service providers. With limited marketing, we have everyone from lone activists seeking to educate their street on local energy use, through to major data organisations who have run global competitions for that 'killer' app. Strong evidence suggests that once deployed, the market will be able to offer a range of solutions, at competitive prices.

### SCALING UP

With confidence building, we are now looking to scale beyond a trial – it needs to be everywhere. As mentioned, to get to all 27 million households in Britain, you need to tap into all the 579,000 local substations. EA Technology's LV-CAP/Visnet ecosystem can be delivered for around £2.10 per year per household.

We are already working on specific offerings to distribution companies, to help them manage faults, and get units deployed in substations as part of their business-as-usual.

We then see three critical steps for further expansion:

**1. Specify a national, open platform.** We believe our LV-CAP would be perfect, but we do recognise that a wider choice, albeit tightly specified, might create more momentum in an open market. Open is the key point here – the way apps work with the platform needs to be published to allow app developers free reign to deploy (think Google's Android or Apple's iOS)

**2. Agree a timeline.** Partial deployment will not unleash the benefits that we've talked about. We need rapid, ubiquitous roll-out from John O'Groats to Land's End, and ideally within five years. The Distribution Network Operators hold the keys (to their substations), the energy regulator, Ofgem, can support/encourage deployment through some light standardisation and an agreement on funding

**3. Agreement on data ownership.** We need clarity on the data – it's for society's benefit. We need ownership to be consistently applied across the country in an open access, easy-to-use format, with suitable levels of cybersecurity.

We believe this solution is the right one to unlock the electricity networks and catapult them forward for the next 50 years – so let's now make this happen. **ER**



### NEW 5W LED FITTING COMPLETES ESP EXIT SIGN RANGE

ESP has added a new 5W fitting to its Ducer LED exit sign range. This completes the product line-up which offers contractors, installers and wholesalers a comprehensive range of independently tested products which combine high performance with ease of installation.

The new 5W LED emergency exit signs (up, down, left and right) feature an SMD 2835 LED lamp which offers a 60 lumen mains output and 44 lumen emergency output, with a viewing distance of 28m. These double-sided signs feature polycarbonate housing and are designed to be ceiling mounted.

The new fitting offers three hours' emergency duration, with charge and discharge protection, and features a green LED charge indicator. It is fitted with a 3.6V 900mAh Ni-CD battery, and has been tested to meet BS EN 60598-2-22 Standards. It measures 345x110x190mm and weighs 1kg.



ESP • 01527 515150  
www.espuk.com

### POWERFUL 15 KV TEST SOLUTION FOR ROTATING MACHINES

OMICRON's new CP TD15 testing accessory is used as part of a complete solution together with OMICRON's CP CR600 compensating reactor and CPC 100 multi-functional testing device for off-line insulation testing up to 15 kV on all types of rotating machines.

The CP TD15 combines a high-voltage booster and a high-precision power/dissipation factor measurement module and it generates test voltages of up to 15 kV. The CP CR600 compensating reactor allows users to test rotating machines with high capacitances of up to 1 µF at rated frequency.

With OMICRON's CPC 100 multifunctional testing device, the complete 15 kV testing solution can measure electrical parameters, such as insulation capacitance and power/dissipation factor, DC winding resistance and contact resistance. The system can also be used for impedance and voltage withstand testing, as well as a high-voltage (HV) source for partial discharge measurements on rotating machines.



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### NEW CLOUD FUNCTION FOR CLICK SMART RANGE

Scolmore has updated the app for its Click Smart range with a new feature called the 'cloud function'. It will provide access to Click Smart installations through the internet, allowing secure control of devices from anywhere in the world; simply get online and control your Click Smart installations using Wi-Fi, 3G or 4G.

Designed with simplicity in mind, the Click Smart box and app can be easily integrated into a new or existing Click Smart installation and just requires broadband connection.

Comprising three basic components, Click Smart box, RF receivers and a smart phone, the system is a high-end, professional one which is very competitively priced and has been designed with installers in mind.

Multiple users can use the system to control their home or building premises. The smart box and applications enable up to 40 receivers to be controlled by up to eight paired phones/tablets.



Scolmore • 01827 63454  
www.scolmore.com

### FREE ELECTRICAL DMM WITH FLUKE CONNECT-ENABLED CLAMP METER

Until 30 June 2019, Fluke is offering a free Fluke 114 electrical digital multimeter (DMM) to purchasers of a Fluke Connect-enabled 376 FC series clamp meter.

The Fluke 376 can log measurements to pinpoint intermittent faults precisely without the need for the technician to be present. Those measurements are then wirelessly transmitted and recorded to the Fluke Connect app on smartphones or tablets and automatically uploaded to the cloud.

With the Fluke Connect smartphone app, technicians can combine measurement data from multiple Fluke Connect test tools to create and share reports from the job site via email and collaborate in real time with other colleagues with ShareLive video calls.

The CAT IV 600V, CAT III 1000V safety-rated Fluke 376 FC clamp meter offers advanced troubleshooting performance to capture a wide range of measurements with a single tool.



Fluke • 020 7942 0708  
www.fluke.co.uk

### NEW HANDHELD POE TESTER FROM IDEAL NETWORKS

IDEAL Networks has launched a new handheld tester designed to eliminate guesswork when installing, maintaining and troubleshooting PoE devices and data cabling.

PoE Pro measures and reports PoE Class, voltage/voltage drop, watts and injector type, making it easy to see how much power is available.

If the PoE test fails at the device location, the technician can measure available power directly from the switch or injector to instantly determine whether the problem lies with the power supply or cabling.

Instant test results are shown on the large backlit screen, up to a maximum of 90W (PoE++). It displays the voltage, PoE Class from zero to eight and Type, whether 802.3 af, at or bt, regardless of cable length, cable quality or other factors.

There's no setup or complicated configuration; users can just connect the PoE Pro to the cable or PoE port to display the maximum power available.



IDEAL Networks • 01925 428 380  
www.idealnetworks.net

### UNITRUNK CABLE TRUNKING USED IN COVENTRY UNI LIBRARY UPGRADE

Multi-compartment trunking from Unitrunk is being used to provide the new data and electrical cabling infrastructure for an upgrade to the library at Coventry University.

The £2.1 million library upgrade was designed by Birmingham-based practice, Associated Architects.

Unitrunk's trunking has been used in two sizes to connect all electrical, LV and data services from the existing risers in the newly constructed and refurbished areas. All the trunking is being installed in the ceiling void and power and lighting cables will be installed in one compartment, while the other compartment will be used to contain data, fire alarm and LV cabling.

The electrical installation is being carried out by Whittaker Brothers, working closely with the university and the other delivery partners to manage the challenges of an occupied building and temporary access.



Unitrunk • 01279 444481  
www.unitrunk.co.uk



### MARSHALL-TUFFLEX LAUNCHES EXTENDED FIREFLY FIRE CLIPS RANGE

To help meet the requirements of the updated BS 7671 IET Wiring Regulations, Marshall-Tufflex has extended its range of Firefly fire clips. In the event of a fire, the clips are designed to prevent cables falling and creating a hazard.

The Firefly range now includes clips suitable for use on Marshall-Tufflex Maxi, Mono, Twin165, Twin Plus, Sterling Profile, Sterling Curve and Odyssey trunking systems. The clips fix to walls or ceilings and with a spring-loaded design are quick and easy to install.

The Firefly fire clips are fire resistant above 1,000°C for up to 120 minutes and feature rounded ends to prevent damage to cables and injury to installers, and the design optimises the usable space within the trunking. The range includes both internal versions that are fitted within the trunking prior to cable installation and externally fitted variants for a fast and simple retrofit.



Marshall-Tufflex • 01424 856600  
www.marshall-tufflex.com

### NEW ABB FACILITY EXTENDS EV SERVICE CAPABILITIES

ABB Electrification's business is extending its service capabilities for electrical vehicle charging systems, solar, low- and medium-voltage electrical systems with a dedicated service workshop located at Coleshill, Birmingham.

The new facility will enable ABB to provide a faster and more efficient turnaround on maintenance, investigation and repair of electrical vehicle charging stations, solar inverters, low- and medium-voltage circuit breakers, low-voltage panels and other electrical apparatus, including uninterruptible power supply (UPS) systems and emergency lighting.

In turn, this will help operators of electrical power distribution systems in utilities, infrastructure, transport and industry to minimise the risk of unplanned outages by ensuring critical assets are returned to service as quickly as possible.



ABB • 0808 258 2000  
www.new.abb.com

### INTELLIGENT VALVE FROM SIEMENS: SELF-OPTIMISING AND CONNECTED TO THE CLOUD

The Intelligent Valve is the first self-optimising dynamic valve for heating groups and air handling units from Siemens Smart Infrastructure that can be connected to the cloud.

The device controls the flow, measures temperature and output, and automatically adjusts the valve settings to the heat exchanger. The valve can be commissioned quickly and reliably via wireless LAN using the Siemens ABT Go app. It fits the space available thanks to flexible mounting options, allowing the flow sensor, valve and controller box to be installed separately.

Because additional functions can be downloaded from the cloud at any time, the Intelligent Valve is always up to date.



Siemens • +49 (69) 797 6660  
www.siemens.com

### FLEXICON LAUNCHES EASY-FIT ABRASION RINGS TO EXTEND CONDUIT LIFESPAN

Flexicon has launched a new range of easy-fit, abrasion rings designed to reduce wear and extend the life of non-metallic, corrugated flexible conduit.

Manufactured in the UK from nylon PA66 and with excellent low fire hazard properties, abrasion rings are ideal for applications where abrasion or mechanical wear of non-metallic conduit could present a potential hazard.

The abrasion rings are supplied as two half shells complete with screws, which are wrapped around the conduit to create a mechanical barrier between the conduit and any surface that it may come in to contact with.

Installation is simple as the rings' internal ribs line up with the corrugations of the conduit. Designed with safety in mind, the new abrasion rings have been independently tested and offer extra low fire hazard properties.



Flexicon Ltd • 01675 466900  
www.flexicon.uk.com

### TRIDONIC INTRODUCES FIFTH GENERATION LLE ADV MODULES

Tridonic's fifth generation of the LLE ADV series offers an amazing improvement in efficiency and incorporates new features for modules with widths of 16 mm and 55 mm. Combined with their narrow colour tolerances corresponding to MacAdam3, the modules offer excellent quality of light and are perfect for use in commercial or educational establishments.

With an impressively high module efficiency of up to 203 lm/W and with a life of 72,000 hours, the LED modules are available with different colour temperatures from 2,700 to 6,500 K, in each case with a colour rendering index Ra > 80.

The modules can be quickly and easily connected with each other via plug-in terminals. Even if several modules are connected one after the other the light always remains homogeneous.



Tridonic • 01256 374300  
www.tridonic.com

### CEF LAUNCHES NEW TRADE CATALOGUE

Electrical wholesaler CEF has launched a new trade catalogue and improved website to provide customers with a more transparent, consistent and convenient shopping experience.

The new trade catalogue, which features everyday value prices, is designed to bring pricing consistency and transparency to the electrical wholesale market.

The catalogue features more than 26,000 electrical products, including cable and cable management, heating and ventilation, plus lighting, lamps, wiring accessories, switchgear, industrial controls, and hand tools, site equipment and test instruments. All products are available for click and collect or next day delivery.

The catalogue also highlights CEF's new lowest priced everyday 'Trade Essentials' range and features connected living products from the company's recently launched Get Smart, Get Connected campaign.



CEF • 01763 272 717  
www.cef.co.uk

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