

In Control

03

Direction: digital

Driving growth with technology



CHARTWELL

Midlands office
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HOW WE CUT ENERGY USE BY 32%

Confidence through Connectivity

Paul Coker, Managing Director

Challenges lie ahead for British businesses as the country navigates some of the most significant changes in a generation. Many companies are now questioning their plans for investment. Chartwell faces no such dilemma.

Our business was born in the midst of the most severe recession in living memory but that hasn't slowed us down. We remain fully committed to investing in our people, our business, our industry and our drive to digital. We're experiencing stronger and more robust growth than ever before; we see no reason for that to change, particularly as we build an ever more connected business.

We've always been known for doing things differently. To enhance quality control and flexibility, we've bucked the industry trend towards outsourcing by bringing a wide range of technical skills in-house – including design, fabrication, systems testing and servicing. To strengthen collaboration and client communication, we built our own bespoke design and manufacturing centre. And we've always championed opportunities for our people, exemplified by our vibrant and award-winning apprenticeship scheme.

We're applying this culture of thinking differently to drive expansion through geographic, technological and market diversification while retaining our laser-like focus on quality, customer needs and collaboration.

The results are clear to see. Our workforce has grown by 21% in the past 12 months alone. We've launched Chartwell Secure (pg 12), a unique, industry-leading platform which offers comprehensive protection from hackers for building energy management systems (BeMS), including cloud-based diagnostics and support. A new office in the Midlands (pg 6) is reinforcing our national service and projects coverage. Beyond



Britain, advanced technology – including our powerful new digital infrastructure, called Chartworld – means we are able to continue to deploy our specialist skills easily and effectively across borders. You'll also notice an informative new corporate website when you visit chartwell-limited.com (pg 10).

It is true that, like the entire British economy, the controls and energy industries face uncertain times ahead. What is certain, however, is that our clients – wherever they are – are confident that they can continue to rely on the technological innovation, attention to detail and absolute commitment to quality that are the hallmarks of the Chartwell group. Enjoy the issue.

p.coker@chartwell-limited.com



Alan King, Director, service and energy

Customers are data hungry – now more than ever before. There's a wealth of information contained within building energy management systems (BeMS) that can be unlocked more easily than previously possible. This is benefiting building owners and operators, helping them to run their buildings and operations ever more efficiently.

However, accessing data is one thing. Interpreting it correctly – with results sometimes spanning tens of thousands of data points over periods of months or years – and then marrying that analysis with the appropriate technical, engineering and software design solutions is another matter entirely.

At Chartwell, we know BeMS inside and out. We understand M&E systems. And that means that when we read the data offered up by controllers, we can interpret it correctly and suggest the most appropriate course of action – whether that be reconfiguring building plant operations, rewriting controller software or altering users' behaviour. Several recent case studies demonstrate our track record of success in this area; one such example is the work we did at the Sainsbury Laboratory scientific research facility (pg 14).

Innovation in where and how we apply our specialist BeMS skillset is creating demand for our work far beyond our traditional core markets. For example, at King's College Hospital in London, we recently designed, built and commissioned 45 BeMS panels for HVAC supplier Daikin. Operating theatres are pressurised to prevent the spread of germs, while temperatures must remain in a specified band to safeguard patient welfare. The systems we've provided now offer medical staff far greater control over their immediate environment.

Our work is finding wider recognition beyond that of our clients. Every one of four BCIA Award entries we submitted in 2017 were shortlisted by judges; our project submission to the Energy Institute Awards 2017 was also named a finalist, despite some stiff competition from much farther afield than the British BeMS industry (pg 7).

By reading controller data correctly, maintenance operations and building plant performance can be optimised, improving internal environmental conditions while reducing energy use and operating cost. The next era for BeMS technology is to contribute more fully to intelligent, condition-based maintenance. The sector is heading in this direction and we're proud to be among the pioneers.

a.king@chartwell-limited.com



Team

Within a

Team

Name: **Tom Day**

Role: Electrician

Part of the Chartwell family since:

Chartwell history:

My typical day:

Working at Chartwell:

Since joining Chartwell, I've completed a four-year apprenticeship, passed my 17th edition and started to run my own jobs.

First fix and second fix on a variety of different facilities, such as plant rooms, office spaces and so on. These can be fairly small projects but they can also be really large – such as when I worked on the first phase of the Battersea Power Station regeneration.

The company provides an enjoyable, professional environment. Your salary is influenced by your own performance over the past 12 months and there are lots of opportunities for additional training, responsibility and progression, so you have a lot of control over your career. The managers are all very approachable, especially if you have any issues – whether these are work-related or not. And it's not all just hard work: the company organises various charity events as well as three or four major social events every year, which are always a good laugh. It's a great place to work.

News

Midlands regional office launched

We have established a **new office in Northampton**, which is now open for business. The office is headed up by Ian Morris, who becomes our Midlands Director.

Our new regional office will provide a permanent staging post for the full range of Chartwell services, reinforcing our national coverage of specialist BeMS design, installation, maintenance and optimisation capabilities.

"The Chartwell story has always been one of sustainable growth, based on absolute attention to detail, a quality-first approach and personal, customer-centred service," says Paul Coker, Managing Director at the Chartwell group. "Our new facility in the Midlands co-locates us much closer to clients in that region and emphasises the importance we place on face-to-face interaction with our customers and partners. We welcome Ian to the Chartwell family and look forward to continuing our success story with him and our new regional office in the Midlands."

Chartwell approved for Constructionline

Chartwell has joined the **Constructionline** construction industry register, following a rigorous assessment process.

The Constructionline register simplifies the pre-qualification stage of the project tender process that public sector organisations must undertake. By standardising the information required, it becomes quicker and easier for us to apply for tenders, while clients benefit by accessing such fundamental information early, allowing them to move on faster to focus on the detailed, specific areas of project tenders.

Prospective members of Constructionline must first pass a detailed assessment to ensure they align with industry standards. This inspection covers a range of business areas, including finance, quality, environment, health and safety.

"Becoming a member of Constructionline sends out yet another message about the strength of our business and our continued commitment to quality," says Paul Coker. "Regardless of sector or project type, our clients know that we can be trusted to deliver technical innovation and value for money."

The Constructionline membership is the latest in a line of accreditations, which include Trend Technology Centre status, Centraline and Honeywell Partnerships, Safecontractor, NICEIC, ISO 9001, ISO 14001 and ISO 18001.

Project wins

High street bank

Commercial

We've been appointed to lead an innovative BeMS futureproofing project at a large London office building for a high street bank. In a bold break with industry convention, we're responsible for design, fabrication, installation and optimisation.

The site of the new project is a seven-storey, 18,500sq m office building in Euston, London. The first part of the programme involves upgrading now-obsolete BeMS technology. This will help protect the building's efficient operation for years to come while simultaneously improving occupant comfort, reducing the risk of system failures and cutting energy use.

"This is not a like-for-like replacement," explains David Edmed, projects manager at Chartwell. "The project calls for the transition of Trend IQ2 controllers to the latest IQ4 controllers, with a keen focus on introducing energy saving enhancements. The work is being undertaken in a 'live' environment – that is, without disrupting our client's daily use of the facility."

The fast-track schedule is seeing some 80 IQ4 main plant controllers and 500 IQECO terminal controllers installed, along with a site-wide utilities metering system. We're working closely with our client's maintenance supplier, CBRE, as well as our client's on-site facilities management team.

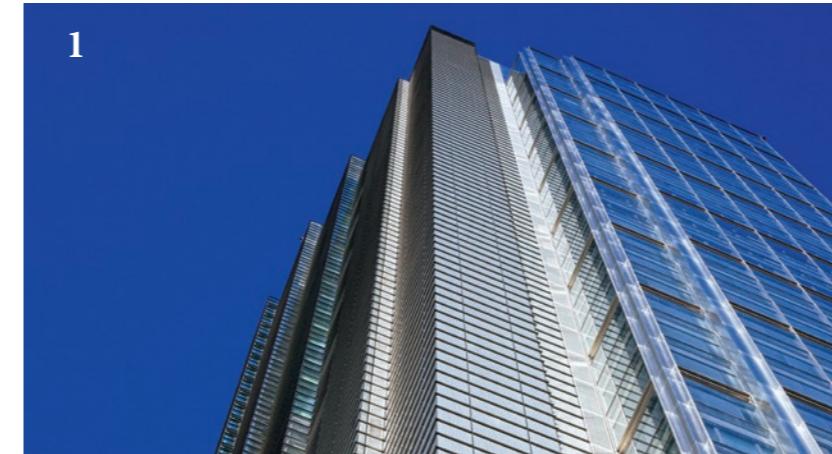
"The market is changing," observes Alan King. "Clients are increasingly aware of the benefits that a properly designed, commissioned and optimised BeMS can deliver, and they are beginning to think about BeMS companies as end-to-end programme leaders rather than specialist subcontractors. Chartwell is equipped to take on the complete package, including mechanical works. We look forward to continuing to reset expectations when it comes to what is possible within the controls industry."

Heron Tower

Commercial

1. We've been engaged to provide ongoing service support and maintenance for the UK's third-tallest building. The 230m, 46-storey structure, officially known as 110 Bishopsgate, is the tallest in the UK with Trend Controls systems. Engaged by Optimum, our role has grown to encompass turnkey support services. One additional project we've already delivered is the Category B fit-out of two floors of office space, to customise the area for incoming tenants.

1



2. **Ian Morris** has been appointed Midlands Director (see News on facing page). After 18 years in the BeMS industry, Ian has a wealth of experience across design, software engineering, maintenance, commissioning, energy management and strategic operations. "Our new regional office has already grown to accommodate five staff plus three specialist subcontractors," says Ian. "This is a really exciting time for Chartwell and I'm very pleased to be leading the group's operations at this strategic post."

Ed Halcrow has joined Chartwell's new Midlands regional office as a project manager. He brings with him more than 27 years of industry experience, including work on many prestigious projects. Just a few of the facilities Ed has been involved with include Cambridge University, the National Theatre, the Tottenham Hotspurs training campus and King's College Hospital. Ed says: "I'm excited to be a part of Chartwell's growth in the Midlands, supporting Ian Morris with this new branch of the company."

Tommy Bates has joined our thriving apprenticeship programme. He is engaged on a four-year course which includes day release to college; he will gain level three qualifications in electrotechnical installation and maintenance. Tommy is a little older than apprentices of school-leaving age, which means his apprenticeship does not qualify for many education grants. "We recognise that true value goes well beyond the size of a grant," says Ben Jenkins, a Chartwell apprentice mentor. "We were very impressed with Tommy's attitude and we're looking forward to supporting Tommy in his professional development."

Management: **Alex McEwan**, Northern business leader;

Guy Bowen, business development manager.

Technical: **Peter Stainer**, estimator; **Mike Sirett**, controls engineer;

Alan Staines, service engineer; **Deaglan Whelan**, junior service engineer; **Steve Morris**, panel wireman.

Support: **Natalie Newman**, accounts assistant;

Natalie Roberts, administrative assistant.

Changing faces at Chartwell

2



Five more award nominations!

Chartwell Energy Solutions has been named a finalist at the **Energy Institute Awards 2017**. The work of our energy division (part of the Chartwell group, along with sister company Chartwell Controls) on the Sainsbury Laboratory has been shortlisted for the Efficiency category of the award, joined by just four others.

The Energy Institute (EI) is the global professional body for the energy sector, delivering good practice information, guidance, training and qualifications. The EI supports more than 23,000 individuals worldwide, and is licenced to award chartered status to engineers and scientists.

The EI Awards are an annual celebration of best practice and innovation drawn from across the industry. This year – the 18th edition of the awards – more than 120 entries were submitted, from 29 different countries.

"Our energy optimisation work is helping the decarbonisation drive across the UK's built environment," says Andy Horrigan, Energy Manager at Chartwell. "This is vital to building a better world for future generations. We're delighted to see our work at the Sainsbury Laboratory recognised so emphatically."

The EI Awards were not the only awards spotlight thrown on Chartwell in 2017. At the **2017 BCIA Awards**, our group was named a finalist in three categories, with four projects shortlisted.

Our energy division submitted two projects for consideration under the Energy Management Award category; both were shortlisted. Our projects division put forward our work on the Battersea Power Station redevelopment, which was shortlisted for the Independent Building Controls & BeMS Installer of the Year category. And our very own Rafal Kapela was considered for the prestigious Engineer of the Year award.

"Chartwell is a byword for innovation, imagination, collaborative working and technical excellence in the BeMS sector but we're delighted to see the hard work of our engineers receive wider praise," says Alan King.

Community

Chartwell family day

1. Helping Chartwell colleagues maintain a great work-life balance has always been a key part of our company culture. We've always been keen to address this, which has led to a number of initiatives, such as remote working and company social events.

However, this year we decided to go one step further and throw a social event for not only our colleagues but also their families. "We've always thought of Chartwell as a family and that goes far beyond just those who come into the office," says Jon Crane, group operations manager at Chartwell. "We wanted to show our appreciation for all those family members who support our staff, because really this is supporting our business too. We always thought it would be a great opportunity for those with children to introduce their kids to the company their parents work for, to see what Mum or Dad spends their weekday hours working on."

The event took place in July 2017 at the Metropolitan Police social club in Hayes. The fun and games included a bouncy castle, tug-of-war, rounders and a barbecue. The event was open to all Chartwell staff members along with their families; around 60 attended.

"This was a first-of-its-kind event for us and it went brilliantly," says Paul Coker. "What's more, everyone survived the cooking (no thanks to Jon and I) so we'll definitely be throwing another event like this next summer. It's important for us to retain a sense of connectedness as the business grows and these sorts of events are perfect for just that. We really do appreciate every person at Chartwell; we are thankful for the support they receive from their families, which are really just a part of the wider Chartwell family."



Charity pedalling

In October 2017, Chartwell group operations manager Jon Crane took to two wheels for the Palace to Palace charity bike ride. This 45-mile event took around 4000 cyclists from Buckingham Palace to Windsor Castle.

"Anyone who knows me will appreciate that I'm not really any sort of athlete," laughs Jon. "But after a recent knee operation, I thought it might do me some good to get out on a bike. There's a strong culture of charity events here at Chartwell, with several colleagues taking part in various marathons and other endurance runs. I was also looking for a charity event I could participate in, so this event was perfect."

After several weeks of training, Jon completed the event in 3hrs55. He was also the 11th highest fundraiser at this year's event, which is a fantastic mark of the generosity of Chartwell family and friends.

Jon resolutely refused to wear Lycra. Next time, Jon. Next time.

Chartwell kicks off sponsorship

When a new football team was created to support the local community and the St Christopher's Hospice charity, Chartwell stepped in to provide the entire squad with team kit.

Green Street Green Rovers football club is a Kent-based adult team, formed to contest the 2017-18 season. Chartwell's contribution enabled the purchase of both home and away kit for the entire team.

"We love supporting our local community so we couldn't pass up on this opportunity," says Paul Coker. "We spotted the team being formed and were very impressed with their ambitions to help strengthen bonds in the local area and support charitable work. We're delighted to have been able to provide this new team with professional-looking kit and we wish them all the best for the season."

Full throttle

When the son of a Chartwell colleague had his motocross bike stolen, we just had to step in. We contributed towards the purchase of a KTM 50 SX motorbike for Tommy Hurst, which has allowed him to continue competing. In fact, this year he finished a close second in the primary championship in which he competes. "I was so proud of Tommy because he rode his socks off this year," says Gary Hurst, Tommy's dad. "And I'm so grateful to Chartwell for keeping Tommy on two wheels!"



Coffee, cake and church

2. Cakes were made and consumed at Chartwell's Macmillan coffee morning in September 2017. Organised by Debbie Brockes, all tools were downed for a morning of cake and coffee, hosted at the Chartwell Technology Centre. As well as our own staff, we also invited our neighbouring businesses to attend. Contributions towards slices of cake were totted up to donate to Macmillan.

We're also supporting Macmillan by donating prize money for a Christmas raffle at a parish church local to the Chartwell Technology Centre in Edenbridge, Kent. The raffle will be raising money for Macmillan.

"Our community is extremely important to us," says Paul Coker. "We benefit from the fabric of society that surrounds our businesses and operations and we're always looking for ways to give back – by recruiting locally, by sourcing local suppliers, and by directly supporting local charities."

A new online home for Chartwell

A brand new website becomes the cornerstone of our digital strategy.

We're pleased to reveal an informative new corporate website, available now at www.chartwell-limited.com.

The site has been designed to be intuitive to navigate, to deliver the best possible user experience. Responsive architecture means the site looks good on any screen, including smart phones and tablets, while the clean aesthetic helps visitors pinpoint information quickly and easily.

A range of informative content is presented at the new site. Key company details, such as the management team, services and skills, case studies and client testimonials, give customers and partners a clear understanding of who we are, as does the dedicated space for our company magazine and other publications.

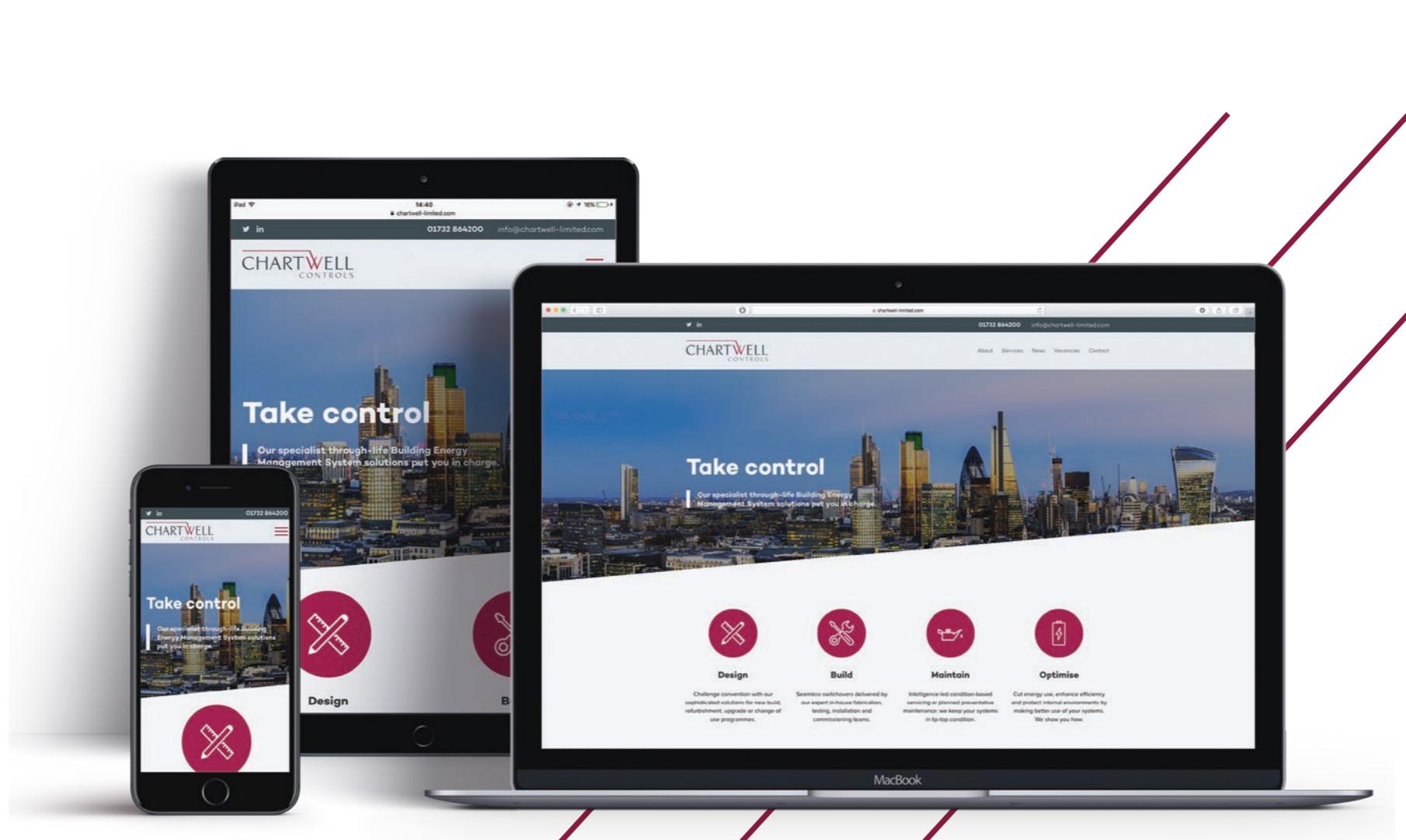
Business-critical updates covering BeMS products, systems, technologies and applications will be featured regularly, which will help make our site a valuable source of information for building owners, operators, designers and contractors.

Vacancies available within our rapidly-growing workforce, both locally and nationally, will also be posted at the new site.

Elsewhere at the site, the locations of our headquarters (the Chartwell Technology Centre, in Kent) and our new Midlands office are both available, as well as other important contact information, including our social media channels.

"The launch of chartwell-limited.com is the cornerstone of our digital strategy," comments Paul Coker. "Our drive to digital already spans Chartworld, our comprehensive online client information and project management infrastructure; social media channels, through which we disseminate news and technology updates; a dedicated email update service which delivers timely, business-critical information direct to our clients and partners; and use of cloud-based BeMS data gathering technologies to boost energy use investigation and analysis. This bright, engaging and informative new website is another example of how we're investing in our business to ensure we're as collaborative, transparent and easy to talk to as we possibly can be."

Subsequent development of the website will incorporate additional features; be sure to check back regularly for fresh BeMS content.



Think hacking doesn't apply to BeMS networks?



Think again.

In their rush to strengthen IT systems in the wake of recent high-profile hacking cases, many businesses are overlooking a small but critical component in their security strategies: their building energy management systems (BeMS).

The global rise of hacking is a serious threat to our interconnected internet-based world. Intruders relish exposing vulnerabilities in networks, often by sabotaging systems or demanding cash in return for not destroying computers (known as "ransomware"). While organisations of all sizes are now keenly aware of the need to protect their main IT networks, the resilience of BeMS infrastructure is often overlooked.

Is this a problem? In a word: yes. Target, the US retailer, was hacked in 2013. The result was a data breach involving 70 million customers. The scale of the breach was breathtaking but the cause even more so. Hackers accessed the company's main IT and till systems via a backdoor: an unsecure BeMS network.

Another example is when the Australian HQ of internet giant Google was compromised in 2014. Software on the head-end of the BeMS network was exploited, giving access to building plant.

The damage a single hacker could cause in situations like these highlights just how important it is to include the BeMS when reviewing your security strategy.

There are typically two types of hacker. There is the thrill seeker, the type of person who enjoys the challenge of finding weaknesses in major organisations. Then there is the professional hacker, who often has a specific agenda revolving around disruption or monetary gain.

Either type of hacker might target your business. Unsecured BeMS networks could fail easily, yielding control of a building's services. The result could be overheating data halls or server

rooms, which would be catastrophic to IT systems or at facilities where maintaining a set internal climate is key (such as hospitals, laboratories and data centres). Or, as in the case of Target, hackers could even gain access to a company's main IT network.

As far as we're aware, an attack of this type hasn't yet been seen in the UK. But that doesn't mean that it will not or cannot happen.

What can building owners and operators do to minimise the risk of such an attack? There are many factors to consider. Is the BeMS isolated from the main network and to what extent? Do the relevant passwords ever expire, are they ever changed and are they sufficiently complex? Is the head-end running suitable virus protection software and is it up to date? Is the head-end in a secure location and who has access?

These are just a few of the queries we're posing to customers under our industry-leading new comprehensive BeMS security support package, **Chartwell Secure**.

Our service starts with an initial security risk assessment to identify weaknesses, before we install powerful virus protection software, security updates and Microsoft Windows updates. Chartwell Secure also includes head-end PC updates as well as remote dial-in BeMS and PC support.

Most important, Chartwell Secure is backed up by our deep technological expertise across all leading BeMS platforms. It's everything a company needs for peace of mind when it comes to protecting BeMS from hackers.

The science of saving energy



The challenge

Take control We reconfigured and streamlined the building energy management system at a leading scientific research facility, cutting annual gas use by more than 32%.

The Sainsbury Laboratory is an 11,000sq m plant science research centre, located at the University of Cambridge's Botanic Garden. The facility is designed to provide a stimulating environment to carry out world-leading studies: better understanding how plants grow and develop is viewed as critical to securing long-term security in the supply of food and food-derived products, such as fuel, minerals and building materials. Opened in 2011, the building has won numerous awards and includes laboratories, support areas, meeting and seminar spaces and a café.

The sensitive nature of the research work being carried out at the laboratory makes it absolutely critical that the internal climate can be effectively regulated. Given the laudable aims of the centre, it is also very important to the facilities management team that the building functions as efficiently as possible. We were engaged on a 24 month project to assess and fine tune the performance of the building services, to ensure that the new facility was working as well as intended.

What we did

As befits a place of scientific rigour, we began with some research of our own: a year-long careful and detailed analysis of the building energy management system (BeMS). A BeMS is a computer-based network that links together hardware (such as heating, cooling and ventilation plant), sensors and software programmes. While it is commonly used to measure, monitor and govern the internal climate of a building, a BeMS is often also used to manage other business critical functions, such as monitoring electrical switchgear and systems that assure power in the event of an interrupted supply or grid outage.

These sophisticated networks are particularly important for facilities in which maintaining specific internal conditions and integrity of building equipment is vital, such as data centres (buildings that house high-tech ICT infrastructure for internet businesses), airports, hospitals, schools and large office blocks.

"We can use the BeMS to understand exactly how plant is operating, such as chillers, boilers and fans," says Andy Horrigan, energy manager at Chartwell Energy Solutions, part of the Chartwell group. "Even in a new building, such as the Sainsbury Laboratory, we can often quickly identify areas for improvement, whether in the software of the BeMS or in how the mechanical and electrical systems have been installed or commissioned."

One particularly effective tool we use to get to grips with the data that a BeMS can provide is a platform called Demand Logic. This third-party system comprises hardware (a device plugged directly into a BeMS control panel, which collects data and broadcasts it to the cloud) and software (a web-based interface which collates that data into a secure, central location, which can be shared by all project partners).

"Within a few weeks, we can build up a clear idea of exactly what the building is doing," explains Andy. "We can then begin to investigate the reasons behind this behaviour, and narrow down our findings to produce a series of short, medium and long-term solutions."

At the Sainsbury Laboratory, we discovered that the boilers and underfloor/trench heating were running all the time; two of the air handling units (AHUs) were also operating when not needed. Elsewhere, the BeMS controllers themselves had been configured in such a way that they were operating right at the very limits of their specification; software issues were causing the controllers to freeze, whilst the way the hardware had been assembled was creating power supply issues.

"Firstly, we found solutions to eradicate the power supply issues faced by the controllers, including rationalising the

modules attached to each unit," Andy explains. "This dramatically improved the stability of the controllers and the entire network. With this vital foundation secured, we could then progress to our end goal of bolstering energy efficiency and internal conditions."

Our next step was to redesign the software being used by the controllers for the two errant AHUs. "We stripped out the over-complex programming, which freed up controller memory and resulted in even better controller and network performance," says Andy. "We also designed the software to run the building services in a more energy efficient manner."

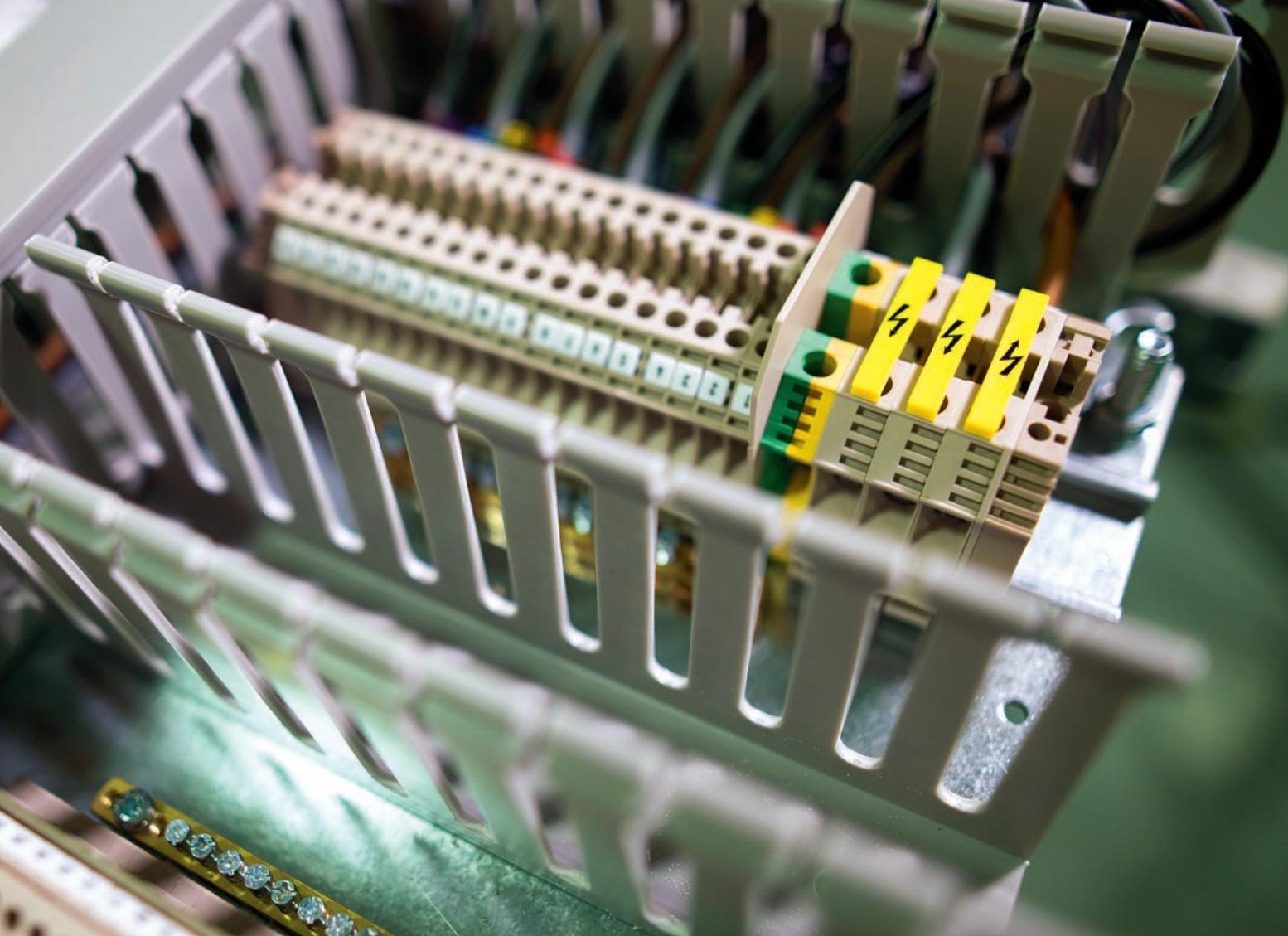
The two constantly-running AHUs serviced areas where meetings and seminars take place. Part of our solution to save energy was to allow staff to control the operation of this plant, by switching the plant on only when needed. We created BeMS login pages so that the facilities management team could set the times of operation as they required. In the main seminar area, we also fitted an override switch to allow the plant run time to be extended by up to six hours, in case an event unexpectedly runs over the pre-programmed time of operation. Giving greater control over building services to staff has caused a significant drop in energy use.

"This project is a great example of collaboration in action," concludes Andy. "Working closely with our partner Unigro as well as our end client helped us to deliver fantastic results."

The result

The changes we introduced have reduced energy consumption by £41,000 per year. The biggest savings were made with the heating plant, such as the boilers and AHUs, where gas use has been cut by 150,000m³ annually – a drop of 32%.

"The work carried out by Chartwell Controls has enabled us to fully understand and implement the most efficient ways to operate our major items of plant," comments Stephen Andrews of the Sainsbury Laboratory. "Many of the problems identified and resolved by Chartwell's team had been present from the original installation and should have been picked up during the building commissioning. However, in modern buildings with complex controls, the commissioning process is often insufficient to accurately reflect all conditions. The solution used here highlighted potential issues quickly, which the controls engineers could then investigate in more detail; the system can also help confirm that changes made actually do have the beneficial effect forecast. The combination of Chartwell Controls and our own technicians working together as a team, making use of innovative technology, has been very successful in both improving reliability and reducing costs."



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TREND

