

CHART ₩ELL



CHARTWELL AT 10

2009 - 2019

















PAUL COKER

Ten years young and what a journey it's been!

The past decade has flown by. There have been highs and lows along the way – mainly highs – as well as plenty of hard work. All the while, we've remained focused on the challenge of continuously developing and re-inventing ourselves, both as individuals and as a business. The result is a family, a company and a set of achievements that have surpassed all my expectations.

I mentioned plenty of highs – to me, most of those are the people that make Chartwell what it is today. I remain especially indebted to those who joined us when Chartwell was really no more than an idea. Those colleagues left the comfort of long-established companies to join our team: what a bold, brave step to take. Watching these people grow personally while also shaping our business has been a real pleasure and is my biggest source of satisfaction.

Step by step, Chartwell has expanded from my kitchen table to four high-tech facilities located across the UK. We've won fantastic contracts at iconic buildings, become a multi-award-winning business and forged long-term relationships with customers. We've been commissioned to support our clients at sites across the globe, including the UK, the Netherlands, France, Sweden, Norway, Germany, Gibraltar and the Caribbean.

We have hand-built a team that I truly believe is the best in the business. We're equipped to deliver every aspect of building management systems (BMS) to the highest standards, from design and fabrication through to installation, maintenance, optimisation and replacement.

Time and again I hear from competitors, customers and suppliers that Chartwell has acquired an excellent reputation and is a company that can be relied upon for cast-iron quality from start to finish. This is a reputation of which we are all justifiably proud and that we push ourselves every day to exceed.

My goal, back in those early days of Chartwell, was to create an environment in which every colleague would feel safe to innovate and grow. I wanted our people to be proud – of themselves, of our team and of our accomplishments.

The fact that our people have encouraged husbands, wives, sons and nephews to join Chartwell shows that we've succeeded in achieving a business that is as close-knit as family.

The journey does not end here. In the coming 10 years, we will continue to analyse where we can do better. We won't stop looking at where and how we can help our clients more. And we will continue to have fun on the way. We're only just getting started.

WE'RE ONLY JUST GETTING STARTED.





WE'RE PROUD TO BE GAME CHANGERS.



WHO.

ALAN KING Director, service and energy

When the game changes, you're faced with two choices: adapt or get left behind. There is, however, a third way: to be the game changer, the one at the forefront of innovation, the one pioneering a new way.

Chartwell has been that trail blazer for the past 10 years when it comes to embracing new technologies in our industry. We're always looking for better ways to solve familiar problems, for solutions which achieve the goals of our customers faster, more efficiently, and with less impact on the planet.

We were an early advocate of using data to optimise the performance of our built environment. Building management systems (BMS) – or building energy management systems (BeMS) as they are now more commonly known – act as brains for buildings. These systems are becoming increasingly sophisticated, providing more and more information about how a building is functioning. Used correctly, this data can help to pinpoint where improvements can be made in a way that simply isn't possible with conventional methods.

The technology itself has been around for a while now. Buy-in from key stakeholders has been slower to follow.

When we began using analytics years ago, we were convinced of the benefits but the market wasn't ready to change. This transition to intelligence-led optimisation and maintenance was being bottle-necked, perhaps due to the inertia of the familiar. Periodic maintenance was tried and tested and easy to understand, in much the same way that the 4-4-2 formation in football used to be.

But times change. We've persisted in showing our clients and partners the power of harnessing data. Now we are witnessing more acceptance in its deployment and a trend towards "data-driven maintenance and wellbeing".

Throughout our 10-year history, we've embraced new ideas, solutions and methodologies to reduce cost, time and carbon for our customers. We've even developed several of our own tools.

The result is that Chartwell has become more than an engineering firm. We're a true technology company and we're proud to be game changers.



IAN MORRIS Midlands director

When I joined the Chartwell family in June 2017 to open our Midlands division, it's fair to say that I felt the weight of responsibility besides the natural excitement.

Here was a thriving engineering firm which had quickly become known throughout our industry as the watchword for imagination, rigorous attention to detail and a great place to work. I was welcomed with open arms but would I be able to help Chartwell build on an already enviable reputation?

I'm pleased to say that the past two years have seen rapid yet sustainable growth for this new part of the business. In a short period, we've built an outstanding portfolio of maintenance contracts (including a nationwide contract for a high street bank), along with many prestigious BeMS controls projects. We've strengthened and expanded existing relationships at the same time as generating new contracts.

One key achievement was guiding our new division to £1million turnover only seven months into our second financial year. Another is the rapid expansion of our fantastic Midlands team, which already numbers 11 and which is growing all the time.

I can't wait to see what the next phase of our journey will include. The BeMS market is always on the move but I can't think of a better place to be than at Chartwell. We embrace change, invest in our people and seek out the best emerging technologies.

Something that impressed me so much about Chartwell's culture was its apprenticeship and retraining programme, which included four young people and a former soldier. That this was introduced so early in the company's history says more about our commitment to people than words ever could.

Another unusual aspect of Chartwell is its concern for the environment. In many small businesses, the bottom line is always top trump. Not so in this case. Not only do Chartwell engineers focus on trying to reduce materials and energy use on projects – thereby saving carbon at both construction and operation phases. Chartwell is ever evolving. It's a place of positivity with an incredible leadership team that actively listens – to our colleagues, our partners and our customers.

I'm intensely proud to be part of the Chartwell family and to be in a position to support so many of our colleagues in their personal development. We've been able to reflect the reputation that Chartwell has already created; it won't be long before our Midlands division is also marking its tenth anniversary.

WE EMBRACE CHANGE.





WHERE.

Westerham

From little acorns: Chartwell began life at Paul's kitchen table.

Edenbridge

The nerve centre: our bespoke design and manufacturing centre was officially opened by the Secretary of State for Defence in 2015.

Midlands

Stretching geographies: while Chartwell has always offered national coverage, this facility gave us a centre closer to some important customers in 2017.

Scotland

To boldly go: continuing our march across the country, this office was opened in 2018 to give our engineers a base while travelling to our most northern shores.

London

Capital coverage: the latest addition to our network gives us doorstep access to many of the prestigious buildings and infrastructure projects on which we're engaged. LONDON



Building management systems (BMS) / building energy management systems (BeMS) Computer-based networks that link together hardware (such as heating, cooling and ventilation plant), sensors and software programmes. Commonly used to measure, monitor and govern the internal climate of a building; often also used to manage other business-critical functions, such as monitoring electrical switchgear and power supply.

WHAT.



WEMBLEY STADIUM

Location: London Dates worked: 2018 -Summary: Premier league performance for BeMS upgrade

Wembley Stadium is one of the largest sporting arenas in the UK and an icon of the London skyline.

The large structure contains more than just a football pitch: conferencing and catering facilities, offices and hospitality suites are all features of this multipurpose venue. The BMS is kept busy running ventilation, chillers and boilers; monitoring electrical systems and stairwell pressurisation; and, unusually, even housing items such as escalator controls.

The original BMS used a proprietary product which did not integrate well with third party products. When 117 BMS controllers approached end-of-life, our client was faced with having to replace the entire system using products from only this supplier – removing any element of control and choice.

Instead, Chartwell's solution was to switch the entire site to Trend IQ4 controllers and Trend IQ Vision software. The project is technically demanding, requiring intensive design and testing and carefully sequenced installation to minimise risks and downtime.

The result is a BMS that is both more intelligent and more resilient than the outgoing system. That's not all. This Trend platform is open protocol at heart, making it better able to accommodate new methodologies and technologies in the future, whichever BMS provider the owner chooses to commission.

That's another match-winning performance from Chartwell.





BATTERSEA POWER STATION

Location: London Dates worked: 2014 - 2018 Summary: Futuristic technology for a historic site

In 1929, construction began on what would become one of the world's largest brick-built structures – and one of the most recognisable features along the banks of the River Thames.

Battersea Power Station was once a coal-fired power plant but was finally decommissioned in 1983. Today, after lying dormant for decades, the building and surrounding areas are undergoing a multi-phase regeneration to create homes, shops, restaurants and offices. (Apple is set to make the site its new London headquarters with 1400 staff situated there.)

Chartwell was appointed by contractor Skanska to the £400million first phase of the Battersea redevelopment. Some 850 apartments were to be constructed in 12 high-rise buildings to house more than 1000 Londoners, along with an energy centre.

We were commissioned to design, test and install building energy management systems and energy management systems, including 85 controls panels. Our systems monitor energy use in each of the living spaces, transmitting this data autonomously to the energy supplier via the cloud.

Conventionally, every apartment would have required each of three energy meters to be connected to a control panel via cables. Instead, we devised a solution that connects meters to panels via the building's internet network, which had already been installed. This saved 22km of cabling and 24 associated controllers.

The controls panels we supplied were all designed, built and tested at the Chartwell Technology Centre, where we scaled up our workforce of skilled technicians by 30% to meet the demands of this complex project.

Battersea Power Station may no longer produce electricity but the site remains a catalyst for generating engineering ingenuity and improving the lives of Londoners along the way.





110 BISHOPSGATE

Location: London Dates worked: 2016 -Summary: Towering turnkey service support

The UK's third-tallest building is officially named 110 Bishopsgate and is also known as Salesforce Tower.

This 230m tall, 46-storey structure stands head-and-shoulders above its neighbours – including the Gherkin, the Leadenhall Building and 20 Fenchurch Street (popularly called the "Walkie Talkie" building) – except for only the Shard and One Canada Square.

The skyscraper is the tallest in the UK with Trend Controls BMS systems. Chartwell was engaged in 2016 by Optimum to provide ongoing BMS service support and maintenance. This multi-faceted role involves both the controls and energy divisions of the business.

We were also called in to solve an unusual problem. The passenger elevators are located on the exterior of this tall building and glass-fronted. Once in operation, it was soon discovered that people travelling in the lifts could feel queasy in strong winds.

Our solution was to install a roof-mounted weather station and integrate this into the BMS. When high winds are detected, the elevators are automatically slowed down, which has dramatically boosted comfort for users.

Clever engineering, from top to bottom.





THE SAINSBURY LABORATORY

Location: Cambridge Dates worked: 2017 – 2018 Summary: Scientific rigour for root-and-branch BeMS optimisation

The award-winning Sainsbury Laboratory is a scientific centre located at the University of Cambridge's Botanic Garden. This 11,000sq m facility is home to a community of 160 people and 14 research groups conducting word-leading studies into how plants develop and grow.

The sensitive nature of the research work being carried out at the laboratory makes it critical that the internal climate can be accurately regulated. 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 at the recently-opened facility, to ensure that the laboratory was working as well as intended. After thorough analysis, we discovered that the boilers and underfloor/trench heating were running all the time and two of the air handling units were operating when not needed.

Elsewhere, the BeMS controllers were operating right at the very limits of their specification; as well as power supply problems, software issues were causing the controllers to freeze.

Our first step was to solve the power supply issues, which we did in part by rationalising the number of modules attached to each unit. With the controllers stabilised, we next stripped out the over-complex software programming, which freed up controller memory and resulted in even better controller and network performance. We redesigned the software to run the building services in a more energy efficient manner and introduced better controls for building users.

Our interventions resulted in reducing energy consumption by £41,000 per year. The biggest savings were made with the heating plant, where gas use was cut by 32%, while our client also welcomed the vastly improved BeMS reliability.

When it comes to BeMS engineering, scientific precision has always been a Chartwell hallmark.





POWERGATE

Location: London Dates worked: 2010 – Summary: Nine years of continuous technical innovation

Data centres are big business. This is where the internet lives, in rows of servers housed in structures sometimes the size of football pitches. These facilities require carefully controlled internal climates to ensure the stability and safety of all that electrical equipment and, with it, the global economy.

Equinix has 145 data centres worldwide and has racked up US\$13billion of capital investment to service more than 8,000 customers on five continents.

The company's Powergate complex in London has more than 20 data halls. We've been working continuously at the site since 2010. We are currently adapting the BMS to integrate fully with new agile DCIM technologies to give our client greater visibility of plant performance, as well as providing 24/7 call-out cover from our service division.

This is just the latest in a long line of technical innovations we've introduced here. Previously, we swapped conventional hard-wired systems for RF code wireless technology to provide far more flexibility in data hall configuration. We also incorporated full control of chillers into the BMS. Conventionally, these types of sites have separate chiller sequencing panels which are hardwired to HVAC plant; high-level communication via the network instead has improved capacity and reduced energy use.

On our client's recent £1.2million fit-out of six new data halls, we were responsible for designing, fabricating and installing seven large BMS controls panels (each of which is 7m long and uses leading-edge Trend IQ4 controllers). Our familiarity with the site helped us keep the entire project on track when the deadline was brought forward by six months while the programme was underway: that was a 25% jump in delivery schedule made possible only through our BMS expertise.

Who knew that Chartwell engineering would help to safeguard the World Wide Web?





TRITON SQUARE

Location: London Dates worked: 2016 – 2017 Summary: Seamless project delivery pays off

Buildings are becoming more intelligent, bristling with sophisticated systems designed to minimise energy use while keeping occupants comfortable. Reducing energy consumption is better for the planet and better for the bottom line of building owners and operators. The BeMS plays a vital role in achieving these aims.

High-street bank Santander has been at the forefront of working with technology to improve building performance. After we had helped Santander achieve considerable energy savings at 10 sites across the UK, the bank appointed Chartwell as primary contractor for a fast-track BeMS upgrade and optimisation programme at its UK headquarters, in Triton Square, London. This is a sevenstorey office block, which was to remain in daily use throughout the project.

The initial scope, from WPP and Trend, included replacement of nearobsolete Trend IQ2 controllers with 80 IQ4 main plant controllers and 500 IQECO terminal controllers. We quickly realised that a reworked scope would result in better return-on-investment for our client.

Under the revised upgrade programme, we installed 120 IQ4 and 680 IQECO controllers; replaced fresh air fans with more energy efficient units; installed dedicated UPS supplies; installed monitors in maintenance provider CBRE's office to give greater visibility of plant performance and alerts; and integrated upgrades with a newly-installed Mardix power monitoring system.

It is unusual to employ just a single supplier on this type of project – much less a BeMS specialist – yet Chartwell was awarded the entire contract (including mechanical and electrical components). We deployed our in-house design, fabrication, installation and energy teams, which bolstered communication, collaboration and quality.

The project was completed with zero plant downtime; identified and resolved previously-hidden operating issues; cut electricity consumption by 17%; and was delivered £200,000 under budget.

Chartwell engineering expertise delivers innovation you can bank on.







CROSSRAIL

Location: London Dates worked: 2018 – Summary: Assuring safety at a new underground railway station

Building a new, 117km-long railway through a city as densely-populated as London is an ambitious undertaking. Crossrail will connect the east and west of the UK capital better than ever before. To do so, the project requires some 22km of tunnels, along with nine new stations and modifications to a further 31.

Four storeys beneath one of London's most historic and well-known train stations, a new Crossrail platform is being built. Sophisticated infrastructure will assist both railway users and emergency service personnel in the event of an underground fire – and Chartwell is leading the way.

The smoke extraction system at this station includes six huge units, each containing two fans and measuring 10m long, 3m wide and 4m tall. A secondary fan system is also required to avoid internal doorways becoming sealed shut by the change in air pressure caused when those huge fans turn on. Both systems will protect the egress of passengers and the entry of emergency service crews.

We're building and installing the four large controls panels which will run both systems. We're using a PLC (programmable logic controller) system rather than a traditional BMS, as it is much faster to respond and less prone to software issues.

Two unusual features of our PLC system are a self-test routine, which allows the system to identify any maintenance requirements itself to operators; and the way we've integrated this into the station BMS, which will make it faster and easier to pinpoint potential plant problems. This will help keep this critical safety infrastructure in good working order for many, years to come.

Chartwell expertise is helping to successfully engineer not just what Londoners can see on their skyline but also what's underneath their feet.





HARBOUR EXCHANGE SQUARE

Location: London Dates worked: 2013 – Summary: Using first principles to solve 21st century challenges

The data centre at Harbour Exchange spans multiple buildings. Owner Equinix invests billions to make sure its advanced facilities remain in tip top condition. We've been working at the site continuously since 2013, tasked with several fit-out and upgrade projects.

When a new 45-storey residential tower block was built directly adjacent to the Harbour Exchange data centre, Equinix was suddenly confronted with a challenge: the new neighbours did not like the noise of the roof-mounted cooling plant. Keen to preserve good relations in the community, Equinix began investigating solutions.

In a conventional cooling system at this type of facility, water carries heat away from plant inside the building to the roof; fans are used to cool that water before it is returned to absorb more heat. While this is effective and reliable, there was a quieter answer: cooling towers. Here, the hot water is fed into a pond and allowed to cool naturally. As heat dissipates from the pond, it rises and helps to draw cooler air across the surface of the pond. It's an age-old concept but married with new technology to ensure the desired results are achieved. Fans are still employed but these can turn much more slowly, meaning far less noise and far less energy use.

At Harbour Exchange, four towers were installed to replace the cooling systems at two buildings. Each tower is 7m tall and 3m wide. This was not a straightforward undertaking, however, given that the internal climate could not be compromised during installation of the new systems or removal of the existing plant. That required careful sequencing and extremely detailed design and testing phases.

We designed, built and installed seven BMS controls panels which, among other things, run the new cooling towers and plant.

Partnering forward-thinking engineering with sound scientific principles: that's when good neighbours become good friends.





GLOBAL SWITCH AMSTERDAM

Location: Amsterdam Dates worked: 2009 – 2012 Summary: Chartwell's first ever project

All stories, however epic, have a beginning. This is ours.

Global Switch owns and operates 12 data centres across the world and is respected for its stable of efficient, reliable and advanced facilities. Data centres include huge halls filled with expensive and sensitive IT infrastructure. These machines produce large amounts of heat when operating; this heat must be extracted from the internal environment before the equipment overheats. In today's internet-driven world, the subsequent downtime resulting from such failures could cause catastrophic damage to businesses and to the wider economy.

In 2009, Global Switch had an unusual problem. The internal climate at its Amsterdam facility was being kept cool by temporary chillers located in the car park while a new, state-of-the-art energy centre was under construction.

Switching over to the new cooling system was far from straightforward, however. As the data centre was already live, the internal climate had to be precisely maintained at all times.

We designed and installed the BMS for four large data halls, including all chilled water plant and monitoring of critical systems such as leak detection, gas suppression, fire alarm and electrical infrastructure. These all reported back to a central user interface that would alert the on-duty maintenance technician with an SMS message via mobile phone in the event of any alarms being detected.

The works spanned multiple projects over a five-year period, with the final phase including a new building with two further data halls and associated systems.

This was no easy assignment, especially as our first project as a new business. However, the expertise and imagination that was already programmed into Chartwell's DNA made sure that we successfully delivered this tough technical brief – building an immediate reputation in the process for being the "go-to team" for difficult BMS projects





PERSONAL GROUP

Location: Milton Keynes Dates worked: 2018 – Summary: Making obsolescence obsolete

Personal Group is a leading UK provider of employee services, including employee benefits and insurance products. The company has more than 250 people and is headquartered at a large office block in Milton Keynes.

When the company instituted a project to upgrade fan coils throughout the building, we won the tender to provide BeMS expertise.

Working in collaboration with HVAC lead Coolair, we replaced 46 obsolete controllers per floor with new Trend IQECO MSTP network series controllers. We also introduced new software strategies to ensure maximum energy efficiency with the added benefit of proactively highlighting potential issues before they could cause any disruption to the business.

The controllers and fan coil units were replaced to a tight schedule along with mechanical installation works, to ensure minimal disruption as the business remained in situ during the project. New Wallbus Trend WMB range temperature detectors were included as part of the installation.

State-of-the-art Trend BeMS supervisor schematics were designed and commissioned, along with 4D floor layouts to ensure our end client has maximum control over the system.

Personal Group was so impressed with our expertise and knowledge of the systems that we have since been commissioned to provide BeMS maintenance services for three years. Chartwell Bureau support means we can proactively assist our client's facilities team thanks to remote cloud-based real-time analytics.

Personal service for the Personal Group: business as usual for Chartwell.



CLOUD-BASED INTERNAL ECOSYSTEM

In order to function, many businesses require a suite of desktop applications from numerous providers. We chose another route to boost efficiency and communication compared to conventional ways of working.

ChartWorld is our proprietary cloud-based business management system, engineered over five years with a correspondingly significant financial investment. We've built the system in modules, which include:

- Secure databases for clients, sites, tenants and approved suppliers
- Quote log, which can move a simple enquiry all the way through to the specification for a live project

• Project management platform: a single place to see all live and completed projects; individual dashboards present information for specific roles, such as project manager, lead engineer, site contacts and so on.

• Report centre: a bespoke step-by-step service process, set up for each individual site and which automatically generates a report each time a task is completed

• A centralised purchasing system linked to our supplier database

• Works planner, which collates all of our callouts, site visits and project works and which also interfaces with our staff's individual Outlook calendars for real-time project updates

• Customer dashboard: designed to keep our customers fully briefed on all works that have been undertaken; this single location provides immediate access for quotes and reports.



AUTONOMOUS DIAGNOSTICS

A Chartwell innovation cell created a **self-testing and diagnostic tool** which has cut commissioning time by two-thirds compared to conventional methods. Under a traditional commissioning process, each fan coil and VAV device would have to be checked manually to ensure it is functioning correctly – an extremely time-consuming process at large facilities where there might be 50 such units per building floor.

Our technology instead makes these units "intelligent": each component runs its own testing regime, looks for expected outcomes and reports on performance. Commissioning engineers can thus pinpoint specific devices which may not be functioning as desired. On a recent project, our engineers reduced a three-day process to a single day using this tool.

As well as condensing the commissioning process, this autonomous tool can be used by our clients to make it quicker and easier to carry out both pre-planned and condition-based maintenance.

What's more, these "intelligent" units also each measure how much energy they are using, which can help the end user reduce overall energy use in future through more targeted plant deployment.

FIGHTING CYBER CRIME

Hacking is an ever-growing global threat, yet BeMS network security is often ignored. An unprotected BeMS can offer hackers a back door into building plant, services and even main corporate IT systems. The risk is very real.

Target, a US retailer, was hacked via an insecure BeMS network in 2013, leading to a data breach totalling 70 million records. Google's Australian HQ was attacked in 2014; insecure and out-of-date headend PC software permitted hackers to gain access to building plant.

In August 2017, we launched **Chartwell Secure**, a comprehensive security package which brings together cutting-edge technologies, our own in-depth BeMS expertise and a collection of industry-leading features to give clients total peace of mind when it comes to BeMS security. The package includes features to minimise the risk of attack, including dialin BeMS support and 24/7 remote PC maintenance and health monitoring.

10 YEARS OF INNOVATION.

Research and development is the lifeblood of engineering innovation. We are always looking for better ways to deliver our customers' projects, to reduce time, cost and impact on the environment.

We drive R&D through numerous channels at Chartwell, and small "innovation cells" are continuously at work. Here are just a few of the things we're proudest of developing in the past 10 years.

UNSHACKLING BMS ACCESS

We realised early on that the "internet of things" holds the potential to usher in a whole new way of approaching BMS and BeMS monitoring. Our agile, forward-thinking approach helps us to keep up with technology evolutions.

Our **Chartwell Connect** platform allows our customers to access their BMS remotely, from anywhere in the world, via smartphone, tablet, laptop or desktop computer. We can even monitor BMS functions in real-time and perform diagnostic works from our offices, which reduces call-out time and costs.

Chartwell Connect is available on both Android and Apple operating systems.



HOW.



CUSTOMER-FOCUSED, TECHNICALLY DEMANDING PROJECTS



OPTIMISE





PEACE-OF-MIND OPERATIONAL PERFORMANCE



A ROBUST PLATFORM TO DELIVER CONTINUOUS IMPROVEMENTS

We apply imagination and technical expertise at every stage of a BMS and BeMS lifecycle, from planning and design through to installation and commissioning and on into operation, support and replacement.

This breadth of in-house skills and specialisms gives us a unique toolbox to help building owners and operators achieve more efficient, more secure and more future-proof facilities.

We call this 360 degree service offering Chartwell Complete.



NEXT-GENERATION TOTAL BEMS CAPABILITY

2019 AND BEYOND



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