

CIBSE

JOURNAL



The official magazine of the Chartered Institution of Building Services Engineers

June 2014

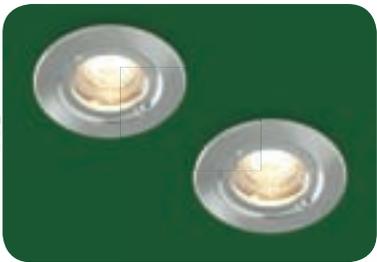
GOING GLOBAL
CIBSE's new President
breaks the mould

SUPERMARKET CHECKOUT
Tesco switches on
to energy saving

**WITH THIS
ISSUE
BIM
SPECIAL**

Seed **CAPITAL**

How urban planting is returning
cities to good health



LUCECO  from 
LED Lighting

The Luceco range of LED lighting from BG Electrical

- Market leading guarantees and warranties
 - UK based technical support
 - Dedicated customer service
- Easy to specify cost saving, sustainable lighting

For more information contact Luceco on **(01952) 238 100** or visit **www.luceco.co**

Contents

NEWS

7 News

Solar industry singled out for 'harsh' cuts in subsidy; payment breakthrough; call for biologists to join design teams; Obama backs solar panels

12 CIBSE News

Two new categories announced in Building Performance Awards; South Wales YEN to launch; CIBSE Home Counties conference focuses on future cities

OPINION

16 Feedback and letters

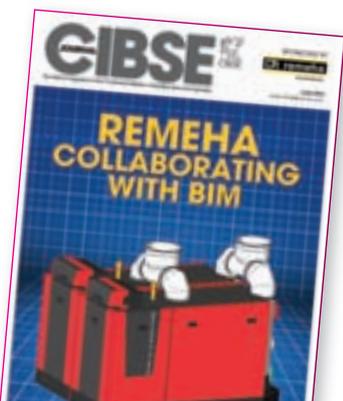
SMEs in danger of being left behind by BIM and the risks of overstating carbon factors in CHP

18 Model data

Central government is committed to introducing Level 2 BIM on all its public construction contracts by 2016. What does this mean for building services?

20 SBEM and the government's race to the bottom

Changes to Building Regulations could see district heating systems penalised



BIM Special

How industry is meeting the challenge of Level 2 BIM; the role of product data templates; importing real-life data into BIM models; and Geoff Prudence on why facilities managers are key to the success of BIM

28



Features

24 Into the blue

To mitigate the effects of climate change, cities must come 'alive' by turning from grey to green and even blue

28 Tesco's finest

The new Tesco Extra in Wisbech, Cambridgeshire, is piloting a host of low-energy technologies that could transform the retail giant's estate

34 Trimming the fat

LEDA uses the principles of lean construction to minimise the use of materials and resource on M&E projects

37 Special feature: Command and conquer

Optimised chilled water systems with intelligent controls can result in energy reductions of up to 45%

43 Special feature: Closing prediction gaps

The chiller at a new John Lewis store in York uses 25% less energy thanks to accurate modelling

LEARNING

45 CPD

Applying chilled beams to reduce building total carbon footprint

CLASSIFIED

50 Products

A round-up of systems and services for the industry

54 Directory

A guide to suppliers

PEOPLE AND JOBS

55 Appointments

Jobs at jobs.cibsejournal.com

58 Looking ahead

The 2014 Facilities Show and the ILIVE and SoPHE AGMs

The Renewable Solutions Provider
Making a World of Difference

Can a heat pump deliver community heating, reduce running costs and qualify for RHI? ...ecodan can



Mitsubishi Electric's Ecodan heat pumps are specifically designed for community heating schemes or any commercial building that requires space or water heating.

Using proven heat pump technology to deliver effective, low carbon heating, our Ecodan systems provide a simple, renewable solution that rivals traditional heating systems.



Certificate Number: MCS HP0002
Product Reference: PUHZ-W50VHA-(BS)
PUHZ-W85VHA2-(BS), PUHZ-HW140VHA2/YHA2-(BS)
PUHZ-SW40VHA, PUHZ-SW75VHA
PUHZ-SW120VHA, CAHV-P500YA-HPB



- Centralised or decentralised solutions to help achieve renewable energy targets
- Capital cost financing available
- Easy to design, install and maintain
- Fully scalable and can work independently or in conjunction with other systems
- Optimised systems from 4kW to 688kW
- MCS approved and qualifies for the Renewable Heat Incentive
- Both air source and ground source systems are available

For more information please call: **01707 282880**
email: heating@meuk.mee.com
or visit: heating.mitsubishielectric.co.uk



Air Conditioning | Heating
Ventilation | Controls



You Tube View our Ecodan for multi-dwelling buildings video at: [mitsubishielectric2](https://www.youtube.com/channel/UCm3v8v8v8v8v8v8v8v8v8v8)

For information on attending one of our free commercial Ecodan seminars please contact us at heating@meuk.mee.com or register online at www.mitsubishielectricevents.co.uk/ecodanseminars



www.cibsejournal.com

Editorial

Editor: Alex Smith
Tel: 012 2327 3520
Email: asmith@cibsejournal.com
Senior Reporter: Liza Young
Tel: 012 2327 3529
Email: lyoung@cibsejournal.com
Designer: James Baldwin
Technical editor: Tim Dwyer

Advertisement sales

Sales manager: Jim Folley
Tel: 020 7324 2786, jim.folley@redactive.co.uk
Sales consultant: Mark Palmer, Tel: 020 7324 2785, mark.palmer@redactive.co.uk
Sales executive: Darren Hale
Tel: 020 7880 6206, darren.hale@redactive.co.uk
Senior sales executive: Paul Wade
Tel: 020 7880 6212, paul.wade@redactive.co.uk
Advertising production: Jane Easterman
Tel: 020 7880 6248
jane.easterman@redactive.co.uk

For CIBSE

Publishing co-ordinator: Neil Walsh
Tel: 020 8772 3696, nwalsh@cibse.org
Publishing co-ordinator: Nicola Hurley
Tel: 020 8772 3697, nhurley@cibse.org

Editorial advisory panel

George Adams, engineering director, Spie Matthew Hall
Patrick Conaghan, partner, Hoare Lea Consulting Engineers
Rowan Crowley, director, einsidetrack
James Fisher, e3 consultant, FläktWoods
David Hughes, consultant
Philip King, director, Hilson Moran
Nick Mead, group technical director, Imtech Technical Services
Jonathan Page, building services consultant engineer, MLM
Dave Pitman, director, Arup
Christopher Pountney, senior engineer, Aecom
Alan Tulla, independent lighting consultant
Ged Tyrrell, managing director, Tyrrell Systems
Hannah Williams, mechanical engineer, Atkins
Ant Wilson, director, Aecom
Terry Wyatt, consultant to Hoare Lea

CIBSE Journal is written and produced by CPL (Cambridge Publishers Ltd) Tel: +44 (0)12 2347 7411. www.cpl.co.uk
275 Newmarket Road, Cambridge CB5 8JE.

Editorial copy deadline: First day of the month preceding the publication month

Printed by: Warners Midlands PLC

The opinions expressed in editorial material do not necessarily represent the views of the Chartered Institution of Building Services Engineers (CIBSE). Unless specifically stated, goods or services mentioned in editorial or advertisements are not formally endorsed by CIBSE, which does not guarantee or endorse or accept any liability for any goods and/or services featured in this publication.

CIBSE, 222 Balham High Road, London SW12 9BS
Tel: +44 (0)20 8675 5211. www.cibse.org
© CIBSE Services Ltd. ISSN 1759-846X

Subscription enquiries

If you are not a CIBSE member but would like to receive *CIBSE Journal*, subscribe now! Costs are £80 (UK) and £100 (international). For subscription enquiries, and any change of address information, please contact Neil Walsh at nwalsh@cibse.org or telephone +44 (0)20 8772 3696. Individual copies are also available at a cost of £7 per copy plus postage.

The 2013 US annual subscription price is £100. Airfreight and mailing in the US by Air Business, C/O Worldnet Shipping NY Inc, C/O Air Business Ltd / 155-11 146th Street, Jamaica, New York, NY 11434. Periodical postage pending at Jamaica NY 11431. US Postmaster: Send address changes to *CIBSE Journal*, C/O Air Business Ltd / 155-11 146th Street, Jamaica, New York, NY 11434.

Cover image: Jesse Kunerth / Shutterstock.com



ABC audited circulation:
19,134 January to
December 2013



New benchmarks

Peter Kinsella may be the first overseas CIBSE President in the Institution's 117-year history, but the themes in his inaugural address will be familiar to CIBSE engineers working in the UK. He calls for an improvement in the feedback loop between buildings operators and designers, so that issues faced by facilities managers are fed into the early design stages, and he calls for more benchmarking so property managers can compare the performance of their buildings.

In the dearth of benchmarks available for many building types, there is a notable exception – the largest supermarket chains have thousands of near-identical stores, and reams of data against which to benchmark new buildings.

With around 4,500 stores, Tesco is the largest chain, and over the last few years it has used building data to measure the effectiveness of energy-saving measures being trialled in its newest stores. All Tesco's energy-consuming assets are monitored and a team of eight analysts look for trends in the data that might identify problems with components, or opportunities to save more energy (page 26). According to engineering project manager and CIBSE engineer Rob Redfern, this data will soon be used to minimise energy use in

overseas stores, which make up 40% of the company's property portfolio.

John Lewis is another retailer using monitoring to help iron out HVAC issues in new stores, and to ensure a soft landing. In its new store in York, it is using the IES-Scan tool to import actual building data back into the model, allowing the consultant, Lateral Technologies, to refine its original design. The

“ Supermarket chains have thousands of near-identical stores, against which to benchmark

updated design model can be used to give much better predictions for energy use in new stores, enabling the designer to avoid the costs of oversizing HVAC. Having modelled the impact of building controls on the building, the consultant also specified a smaller, more energy efficient chiller (page 43).

While dynamic modelling is allowing engineers to minimise the energy used to cool buildings, a return to nature in cities is helping to reduce the cooling requirements in the first place. With temperatures in cities spiralling ever upward, green and blue infrastructure will be seen as an increasingly vital (and cost effective) way to keep cities habitable. Read our feature on page 24 to see how the power of the natural environment is combatting man-made climate change.

Alex Smith, editor

asmith@cibsejournal.com





Concord



Organic Response Sensor Node

OFFICELYTE LED WITH ORGANIC RESPONSE®

LIGHT WHERE AND WHEN NEEDED

Officelyte with integrated LED and Organic Response wireless technology, delivers the ultimate in cost savings and longevity. As well as turning lights off in unoccupied areas, or dimming down in low activity zones, the Organic Response Sensor Node in each luminaire wirelessly communicates with its neighbours to ensure automatic group-wide adjustment to occupancy and ambient light, guaranteeing user-comfort and maximising energy efficiency at all times. Outperforming T5 fluorescent and rated up to 90lm per circuit watt, Officelyte is one of the most efficient LED modular fittings on the market. Available in 3000K, 4000K and minimum CRI 80, the Officelyte LED's satin acrylic diffuser provides perfect, homogeneous illumination. There are two sizes and two output options equivalent to 2 x 24W T5 and 1 x 55W T5 TC-LE fluorescent modules.



Winner of the Lighting Controls category

FIRST INTERNATIONAL PRESIDENT TAKES THE CIBSE REINS

New CIBSE President Peter Kinsella outlined his goals after receiving his badge of office last month.

In his Presidential address at London's Royal Society, Kinsella said he wanted to develop CIBSE's influence worldwide, see more benchmarking of energy use in buildings, and promote a comprehensive feedback loop.

The new President, who studied at South Bank Polytechnic before moving to Melbourne in 1995, stressed the importance of bringing FMs onto projects from day one.

An associate of Lehr Consultants International (Australia), Kinsella said: 'It's so important that the building that is handed over is in line with the original design, and can be used – and used efficiently.'

He said shared knowledge was the key to improved performance.



Watch an interview with Peter Kinsella at www.cibsejournal.com

Solar industry singled out for 'harsh' subsidy cuts

● Large 'farms' face grant cutbacks to make way for roof installations

Government plans to cut subsidies for solar farms under the Renewables Obligation (RO) from next April have come under attack.

The Department for Energy and Climate Change (DECC) will close the RO to new solar PV capacity above 5 MW because it says the large-scale solar market is growing faster than anticipated. However, large projects will still be able to apply for support through the new Contract for Difference (CfD) regime, which guarantees energy prices for renewable generators.

As part of the government's Solar Strategy, DECC wants to incentivise the number of solar panels installed on the roofs of commercial and public sector buildings and reduce the growth in 'solar farms'.

It claimed that, on current trends, there will be more solar capacity than is affordable by 2017, but industry observers are concerned that another change could destabilise the renewable energy market, scare off investors and push up costs.

'The piecemeal approach to the CfD scheme leaves a lot of questions still unanswered, and the lack of capacity ring-fencing for most technologies

compounds that uncertainty,' said Renewable Energy Association chief executive Nina Skorupska.

Paul Barwell, chief executive of the Solar Trade Association, said the industry would be 'alarmed by these proposals and surprised to be singled out for harsh treatment'.

He warned that the subsidy cuts planned could undermine the progress the industry had made in reducing the long-term cost of solar energy.

'If these proposals go through, they will knock the industry's extraordinary progress back and actually reduce healthy competition in the renewables sector,' he said.



Three win £50k for BIM tool proposal

Three industry teams have each secured £50,000 to come up with proposals for a digital BIM tool.

BRE Global Limited, NBS – part of RIBA Enterprises – and C8, led by CIBSE, received the funding from the Technology Strategy Board.

The teams will undertake feasibility studies to develop a free-to-use digital tool that can exploit the standards being made publicly available for BIM.

In phase 2, one participant from the first phase will receive up to £1m to develop their project further over six months.

The competition is run in partnership with the BIM Task Group and the Department for Business, Innovation & Skills (BIS).

C8's id³ initiative, led by CIBSE, will provide a web-based tool to enable widespread adoption of Level 2 BIM across all infrastructure sectors and the built environment.

'We're determined to develop a proposal that the whole industry can buy into,' said CIBSE technical director Hywel Davies.

See more BIM news in this month's BIM Special.

Architects expect BIM data to be free

Architects across Europe now expect building information modelling (BIM) data to be available quickly, and for free.

According to a survey by market research company Arch-Vision, architects are increasingly adopting BIM, but are also demanding more of manufacturers.

The European Architectural Barometer surveyed 1,600 architects in eight European countries, and concluded that manufacturers should start to think about making BIM product information available through open-source BIM libraries, and providing 3D BIM object information.

Morrisons goes for NG Bailey scheme

Morrisons supermarket chain has hired NG Bailey to roll out an energy-management system across 395 of its stores.

The Rare Energy programme has been piloted in 105 of the retailer's outlets, and Morrisons now wants to expand it across its entire 500-store estate.

Morrisons is already saving about 16% in annual energy costs, and plans to cut its energy consumption by 30% over the next five years.

Rare Energy uses partner Elutions' technology platform to identify, manage and reduce energy use through better performance of existing assets.

For more on sustainability in the retail sector, see the Tesco and John Lewis features on pages 28 and 43.

US buildings to benefit from disaster-planning initiative

New guidelines to help American construction industry adapt to natural disasters

US property owners, planners and constructors have agreed a new set of standards to improve the safety and resilience of buildings, including rules on materials selection, design, construction, and operation.

More than 20 design and construction industry associations – representing 700,000 members – used Building Safety Month to issue guidelines for helping building stakeholders 'prepare and plan for, absorb, recover from, and adapt to adverse events'.

'We recognise that natural and man-made hazards pose an increasing threat to the safety of the public and the vitality of our nation,' a statement by the associations said. 'We further recognise that contemporary planning, building materials, design, construction, and operational techniques can make our communities more resilient to these threats.'

They agreed to 'significantly improve' the resilience



DUSTIE / SHUTTERSTOCK

of the USA's entire built environment through research into new materials and construction procedures. They also pledged to improve continuous learning; push for effective land-use policies; respond to disasters alongside first responders; and plan for future events, with a strategy for fast recovery.

ASHRAE President, Bill Bahnfleth, said the industry had to learn from disasters and climate-change predictions, 'to save lives and infrastructure in the future'.

Obama backs solar panels

President Barack Obama has announced major initiatives to expand solar energy use in the USA's private and public sectors.

His administration has also said it will spend \$2bn on energy efficiency improvements in federal buildings by 2016.

The president backed a new commercial-building energy code, which increases efficiency by 8.5%, and praised renewable energy pledges from companies such as Apple and Home Depot, as well as from the Treasury department, and



BIKERIDGON / SHUTTERSTOCK

the Department of Housing and Urban Development.

Wal-Mart has promised to double the number of solar projects at its retail stores and distribution centres by 2020.

The US Department of Energy, meanwhile, has unveiled two new efficiency rules, designed to cut the energy consumption of new electric motors and retail cooling equipment. It has also launched training programmes at community colleges, aimed at producing 50,000 new workers in the solar industry by 2020.

These initiatives should produce more than 850 MW of solar power and energy-efficiency investments in more than 1 bn ft² of buildings, according to the administration.

LoadTracker - Bringing CHP down to size!

www.sav-systems.com

SAV has introduced 6kW_e/13.5kW_{th} and 9kW_e/20kW_{th} LoadTracker CHP units, bringing the low carbon benefits of CHP to smaller projects.

- Load tracking for maximum run times
- Modular design flexibility

LoadTracker CHP



To find out more call: +44 (0)1483 771910
or email: info@sav-systems.com



Scottish contractors delighted by payment breakthrough

● First PBA set up for Monklands Hospital

The campaign to improve cashflow in the construction supply chain has reached a major milestone, with the first payments from a project bank account (PBA), set up for the Framework Scotland 2 contract at Monklands Hospital.

The Specialist Engineering Contractors' (SEC) Group applauded the Scottish government for its payment initiative, which is designed to ensure monies are not delayed – or unfairly withheld – from sub-contractors.

'As well as providing payment security to small and medium-size companies, PBAs encourage greater



collaboration in project delivery – which, in turn, reduces building costs for the taxpayer in Scotland,' said Eddie Myles, chairman of SEC Group Scotland.

'As we emerge from a long and tough recession, it is vital that small firms have assured cashflow if they are to contribute to the Scottish economy through

expansion and investment in skills and technology.'

The SEC Group is campaigning for PBAs to be adopted on all construction works in the public sector.

The Building & Engineering Services Association has also called on the UK government to develop a digital

banking platform for public sector projects. The association's head of commercial and legal, Rob Driscoll, said a system similar to the one used by online retailers should be used to streamline project payments.

'This would create an integrated payment system that is totally, digitally transparent, and more efficient,' said Driscoll.

Celebrate women in engineering

A day dedicated to raising the profile – and celebrating the achievements – of women in engineering will be held on 23 June.

National Women in Engineering Day – which was set up by the Women's Engineering Society – aims to spread the word that engineering offers as many opportunities for women as it does for men.

The idea behind the day is to encourage individuals and groups – whether they are in government, education, business, or professional institutions – to organise events, and link to others, for maximum impact, through the use of the NWED resources. For more details, visit www.wes.org.uk

MI6 DEC soars from G to D

The headquarters of the UK's Secret Intelligence Service, MI6, has cut its carbon emissions, and gone from having the worst energy efficiency rating to being better than typical for a building of its kind.

Its display energy certificate (DEC) – which, until recently, was available on the internet – shows that, since 2011, the building's energy rating has improved from 166 to 88. It's carbon dioxide emissions have fallen by around 10%, but it doesn't use any renewable sources of energy.

The HQ, at Vauxhall Cross in London, featured in the most recent James Bond film, *Skyfall*, in which it was blown up by hackers entering its BMS system.

Firms face energy reports

Large energy users face the prospect of having to produce mandatory energy efficiency reports from this month, after the launch of the Energy Savings Opportunity Scheme (ESOS).

Companies employing more than 250 people – and with an annual turnover of more than £41.5m – are affected by the Department of Energy and Climate Change (DECC) scheme, which is designed to meet the requirements of the EU's Energy Efficiency Directive. The directive came into force in December 2012, with member countries given until December 2015 to implement it fully.

ESOS aims to ensure end users are compliant by the deadline, and requires them to provide: a review of their total energy use and energy efficiency measures

each year; a breakdown of energy use per employee; and information on potential savings that identify and quantify cost-effective energy-savings opportunities, based on life-cycle assessments rather than payback periods.

An approved ESOS assessor – with responsibility for carrying out these exercises – must be appointed and identified to DECC.

Public sector organisations are exempt because they already have a separate target to renovate at least three per cent of their floor areas each year, to meet minimum energy performance requirements.

Jon Williams, of risk management firm Achilles, said this was 'an ideal opportunity for businesses to cut their energy costs'.

Airedale
APPLIED THERMAL INNOVATION



FIND OUT MORE

Engineered to perform

Our cooling systems are designed to amplify performance



Making the most of the environment in which they compete, Airedale cooling solutions respond with less effort, to deliver industry-leading energy efficiency and guaranteed uptime.

Scalable to grow with demand and intuitive to adapt with load, Airedale systems measure, monitor and reduce energy consumption 24/7, helping you meet your business challenges.

Maximise efficiency, amplify performance
Contact us today



+44 (0)113 239 1000
connect@airedale.com

www.airedale.com
@AiredaleAC

In brief

FOX STEPS DOWN AS AREA PRESIDENT

After serving a double term of four years, UK contractor Graeme Fox has stepped down as president of the Air Conditioning and Refrigeration European Association (Area).

A fireless campaigner for revisions to the F-Gas Regulation, Dundee-based Fox handed over the reins to Sweden's Per Jonasson, at the association's general assembly in Padua, Italy. Jonasson thanked Fox for his 'close involvement, tremendous work, and overall success in the past four years, notably with the revision of the F-Gas Regulation'.

DOUBLE HONOUR FOR BRAHAM

Leading CIBSE Fellow Derrick Braham has been awarded two top accolades. As well as being presented with his CIBSE Fellowship at the Institution's AGM, he also received the REHVA Professional Award for his achievements in technology, and for his contribution to improving energy efficiency and the indoor environment of buildings. See page 14 for more CIBSE Fellowships.

GLASGOW ENGINEERS SCOOP GLOBAL HEAT PUMP AWARD

A team of Glasgow-based engineers has won the Rittinger Award at the International Heat Pump Conference, in Montreal.

The group from Star Refrigeration – led by managing director Andrew Pearson – designed and built the world's largest zero-carbon, high-temperature, ammonia district heat pump. It provides hot water and heating for multiple buildings in Drammen, near Oslo.

The 13 MW industrial heat pump 'harvests' heat from a local river, and then boosts it to heat the equivalent of 6,000 homes, with 85% of the heat generated without the use of fossil fuels.

The industrial water heat pump is 25% more energy efficient than conventional commercial heat pumps, and makes use of renewable hydroelectricity from a fjord.

The Rittinger Award is granted by the International Energy Agency Heat Pump Programme.

Biologists must feature in design teams, says architect

● Bio-mimicry not a 'stab in the dark', Patrons told

Eden Project architect Michael Pawlyn has called for biologists to be an essential part of any building design team.

Speaking at this year's annual CIBSE Patrons lunch, held at the House of Lords, he explained how 'bio-mimicry' – which bases engineering solutions on natural phenomena – made the Eden Project possible, and is now being adapted for commercial office buildings.

Passive cooling techniques – based on termite mounds and solar shading inspired by the design of insect wings – are already being applied in commercial building designs, Pawlyn said. There are also wind turbines generating energy at very low wind speeds, thanks to an innovative blade design copied from whale fins.

The natural process of evolution refines solutions, and Pawlyn called



FRANCESCO CARUCCI / SHUTTERSTOCK

on the industry to do the same thing with technology, and 'get rid of all our faulty products'. 'These things have been in development for 3.8 bn years, and we should be looking at how this can help architects and engineers to design for the next billion years.'

He said the word 'sustainable' was not inspiring, and urged the building engineering sector to be more ambitious, and aim for things that were 'restorative' instead.

Using biology in the built environment is 'not a gamble',

because the principles have been proven to work, said Pawlyn. 'We need to show some leadership, and create a structure where the industry can adapt its processes for the future. These are not stabs in the dark – they are proven.'

Pawlyn explained how the Eden Project buildings were designed to adapt to the landscape, rather than the other way round.

He also said it was important to 'suppress the architect's ego' in order to create a more collaborative approach to projects.

UK warned it is falling short in delivering 2020 targets

Europe has warned the UK that it must make 'additional efforts' after statistics showed it is falling behind on its 2020 renewable energy targets.

Data released by Eurostat – the statistical office of the European Commission – revealed that the UK has dropped below the interim target it set to demonstrate how it would deliver 15% of energy demand from renewable sources.

However, the latest UK Renewable Energy Roadmap update – released in November 2013 – claimed that the nation was 'above our interim target'.

It said the UK had made 'very good progress' against the target – introduced in the 2009 EU Renewable Energy Directive –



YORIDANA / SHUTTERSTOCK

adding that, in 2012, 4.1% of UK energy consumption came from renewable sources, up from 3.8% in 2011.

The UK – along with Malta, France and The Netherlands – were

named as the member states falling short on delivering their legally binding targets. The EU report said: 'Comparing the average of 2011-12 to the indicative trajectory set out in the Renewable Energy Directive, it can be seen that four countries are below the first indicative trajectory values, while all other countries were above them.'

According to the report, the four countries were roughly 10 percentage points behind their 2020 target, with the lowest share in 2012 observed in Malta, and the highest in Sweden.

The UK's Department of Energy and Climate Change said it was on course to meeting the next interim renewable target of 5.4% for 2013/14.

Why Vaillant?

Because we offer wall to wall solutions for every commercial specification.

- Outputs range from 80kW to 120kW
- Cascades up to 960kW



Vaillant



Models:

Wall hung boilers
46, 65, 80, 100, 120kW
Stainless steel heat exchanger

Cascade rigs:

Wall to wall
Back to back
L-shaped
Full pipework and insulation
Cascade flues
Low loss header

Integrated in the boiler or separate as an accessory:

Modulating shunt pump
Isolation valves
Pressure safety valve
Gas isolation valve

Controls:

Compatible with Vaillant controls and BMS systems
Boiler management system VRC630
Boiler and solar integrated management system VRS620

For more information or to contact your local business manager please call **0845 602 2922** or visit www.vaillantcommercial.co.uk

■ Heating ■ Hot Water ■ Renewables

Because  **Vaillant** thinks ahead.

Are you one of the Top 500?

McClelland Media, in conjunction with CIBSE, have compiled a ranking system for the Top 500 BIM influencers to measure interactions and impact across major social media channels and online. The system uses online metrics tools to rank influencers in building information modelling.

The list is updated weekly. Will you make the cut? Find out at www.leaderboarded.com/bim or search for #BIM500 on Twitter.

Corrections made to guides

Important corrections have been made to two key pieces of CIBSE guidance: the *Domestic Heating Design Guide* (DBSP) 2013 and *Guide C*. Both sets of changes are freely available to existing purchasers via a download on the Knowledge Portal. For future purchasers, the corrected sheets are integrated into the print and downloadable PDFs.

www.cibse.org/knowledge

Call for entries

Now in its third year, the Building Simulation Group Award encourages the use and innovative development of building simulation techniques for research and development.

Teams working on projects that involve: the application and development of advanced simulation techniques; software for predicting the performance of buildings; and environmental control systems, are encouraged to enter.

University students conducting research at Master's level or equivalent, which is due to be completed in 2014, can enter.

For information, and to submit an expression of interest, visit www.cibse.org/bsg

The winner will be announced in late 2014 and will receive £1,000 and a certificate.

Two new categories announced for BPA 2015

● Judges will also look for use of BIM in entries

Categories for the 2015 CIBSE Building Performance Awards have been announced ahead of entries opening on 2 June 2014. There are some changes to the line-up, including two new categories: Building Control Systems, and Lighting for Building Performance.

The Building Control Systems Award will reward integrated and automated control systems that manage and maintain optimum building performance.

The Lighting for Building Performance Award, endorsed by the Society of Light and Lighting (SLL), will recognise the importance of natural lightscapes within the built environment and their impact on energy consumption.

In both categories, our panel of distinguished industry judges



will be looking for innovation in design, technology and/or application, as well as proven and measured performance, not design intent or performance specifications.

Following its success in 2014, the International Project category will continue to reward achievements in building performance from outside the UK.

The judges also hope to

see entries featuring building information modelling (BIM) entered into the Collaborative Working Partnership category, with BIM increasingly adopted in the industry as a tool to aid collaboration, which ultimately produces better performing buildings.

Find out more about this year's categories, and how to enter the awards, at www.cibse.org/bpa

South Wales YEN set to launch

The first CIBSE Young Engineers Network (YEN) for the South Wales Region will launch this summer.

The free-to-join group has been set up specifically for engineers under the age of 35 and will offer members the opportunity to meet on a regular basis with other professionals working in building services engineering.

The network will host a mixture of social events, technical CPD seminars and interesting site visits across the region.

Graham Stewart, senior engineer at Arup, has been appointed as chair of the network.

He said: 'The aim of the South Wales group will be to provide networking and professional



development opportunities for young people in the industry in this part of the UK. This is a thriving sector in South Wales, and it is important that those at the beginning of their careers have the opportunity to meet and share ideas.'

Members are not

required to have CIBSE membership, but should have a strong interest in, or work in, the field of building services engineering.

The network's launch night – sponsored by energy metering specialists Enica, Daikin and CMB Engineering – will be a social event starting at 6pm on 4 July at Park House in Cardiff.

All enquiries to cibseyensouthwales@gmail.com

Experts debate future cities

● CIBSE Home Counties event attracts leading figures from across the built environment

Society has to factor in the environmental cost of construction, if future cities are to be truly sustainable.

This was one of the key themes heard at an event organised by CIBSE Home Counties North West and supported by HCSW, HCNE and HCSE.

Immediate past CIBSE President George Adams CEng FCIBSE said communities had to design for climate change, even if it didn't impact upon them in the short term.

Delegates at *Sustainable cities: What do they mean and where are we going*, also heard leading engineering speakers discuss carbon profiling, the performance gap, and holistic design.

In a conversation with Greenpeace UK political director Ruth Davies, Adams said: 'We're not truly costing things. We're costing at face value, not for the future.'

Davis said communities needed to take ownership of energy resources, and generate locally. Adams said local authorities were fulfilling that role, with councils such as Islington connecting local heat networks for the benefit of residents.

Gareth Roberts, co-founding director of Sturgis Carbon Profiling, highlighted that – on average –

unlisted buildings in the City of London were replaced every 17 years, and that lifespans should be taken into consideration when calculating carbon footprints.

Consultant Sandi Rhys Jones spoke of the need to attract a new generation of engineers to construct future cities. She said industry needed 'fresh voices to promote important issues'.

Other notable speakers included Bill Bordass FCIBSE and Buro Happold's Lindsay Martin. Bordass said cities were suffering from over-complication and warned that professionalism was being replaced with 'regulations, targets and tick boxes'.

Watch an event video via <http://bit.ly/1gWWSks>



The event took place at Conway Hall

In brief

50TH ANNIVERSARY DINNER PLANS

The Southern Region will be celebrating its 50th anniversary with a dinner on *HMS Warrior*, in Portsmouth Dockyard. Dinner will be served on the gun deck. The event will take place on 7 June, and tickets are £65.

For more information, email doug@dpconsultants.co.uk or visit www.cibse.org

LR&T ANNOUNCES SYMPOSIUM

The metrics used in the design of lighting are changing. This LR&T Symposium, taking place on 15 July in London, explores these changing metrics. It will feature presentations from some of the leaders in lighting.

To find out more, visit www.cibse.org/training-events/july-2014/lr-t-symposium-better-metrics-for-better-lighting

CASTING LIGHT ON SOUND

The Society of Light and Lighting is co-hosting a seminar with the Institute of Acoustics (IoA) Young Member Group at Charles Darwin House, London, on 17 June. 'Casting Light on Sound' focuses on how to boost health, stimulate learning and achieve better behavioural outcomes through light and sound design.

For full details, contact linda.canty@ioa.org.uk

TM54 IN PRACTICE

CIBSE and London South Bank University are supporting a professional development day, which puts *CIBSE TM54: Evaluating operational energy performance of buildings at the design stage* into practice. This will be the second time that 'Avoiding the performance gap between building design predictions and operational energy use' will be run.

The session, on 4 June in London, responds to the need for developing new skills to give more realistic energy performance predictions at the design stage. For bookings, call 01442 873439.

CIBSE research journal offers insight in 14 key areas

Building Services Engineering Research and Technology (BSERT) is one of two international academic journals published by Sage on behalf of CIBSE and the building services research community since 1980.

It publishes high-quality, peer-reviewed research articles on all subjects relevant to building services, and all CIBSE members are entitled to free access via the CIBSE website, at www.cibse.org

This year, there are six BSERT issues – 35(1) and 35(2) which collectively present research articles dealing with:

- Adaptive thermal comfort in hot, humid climates
- Improved methods of analysing building energy use through modelling tools
- Weather data, including urban heat island effect

- Distribution of monthly energy predictions for use in detailed system analysis

- Siphonic rainwater outlets
- A new round-trip time formula for lifts
- Plant – improved predictive control for ground source heat pumps coupled with underfloor heating
- Use of a liquid desiccant system for dehumidification.

Other articles cover a range of building performance and user-behaviour issues, including:

- Energy saving through internal window shutters
- Airflow patterns in naturally ventilated atria influenced by wind forces
- The cooling effect of refrigerated displays in supermarkets, and relationships with occupant behaviour

- Energy saving in non-domestic buildings.

Call for reviewers

Both BSERT and LR&T rely on excellent papers, but they also need competent, well informed, volunteer reviewers, particularly those who are research-engaged experienced practitioners. If you believe that you would be suitable to act as a reviewer for a subject area covered by the journals, and you have appropriate qualifications and experience, please send some evidence of your area of expertise (for example 2-3 recent publications) and a CV. If you meet the needs of the editor, he will contact you and add you to the list of available reviewers.

For more details email Bill Whalley at williamwhalley@tiscali.co.uk

New CIBSE associates

ASSOCIATE

- Bartholomew, Carla**
Bath, UK
- Caivert, Paul Lee**
Leeds, UK
- Chandroth, Vinod**
Dubai, United Arab Emirates
- Clark, Ross**
Bexleyheath, UK
- Curtis, Daryl**
Maidstone, UK
- Davies, James Thomas**
Bridgend, UK
- Duncan, Andrew**
Basildon, UK
- Gordon, Mark**
Solihull, UK
- Gordon, Robert**
Reading, UK
- Houlker, Matthew**
Preston, UK
- Johnson, James Scott**
Newcastle upon Tyne, UK
- Lane, Simon**
Eastleigh, UK
- Lennox-Hennessy, Daniel James**
St Albans, UK
- Makinde, Akin**
Oxford, UK
- Norton, Michael Robert**
Hull, UK
- Saitar, Ehsan**
London, UK
- Saunders, Alan David**
Pershore, UK
- Sharpe, Gordon Michael**
Nottingham, UK
- Singh, Naresh**
Cape Town, South Africa
- Stevenson, Shaun Edward**
Nudgee, Australia
- Tabis, Lee**
Birmingham, UK
- Ujoodha, Neeteel**
Montagne Blanche, Mauritius
- Vourganas, Ioannis**
Gateshead, UK
- Widdowson, Ben**
Chesterfield, UK

Honouring our members



Outgoing president George Adams presents an Honorary Fellowship to Derrick Braham



John Stephen Wynn receives his Honorary Fellowship



An Honorary Fellowship for Dr Gina Barney



CIBSE officers, l to r: Peter Kinsella, Nick Mead, George Adams, John Field, Cathie Simpson and Tadj Oreszczyn

● **Three Honorary Fellowships awarded at Presidential Address**

Three outstanding industry professionals: Dr Gina Barney, of Gina Barney Associates; John Stephen Wynn, senior lecturer at the school of the built environment at Liverpool John Moores University; and CIBSE Council member Derrick Braham CEng FCIBSE have been awarded Honorary Fellowships of the Institution.

The honours were conferred at the CIBSE AGM and Presidential Address at the Royal Society in London. (See page 22 for an interview with new President Peter Kinsella CEng FCIBSE).

Barney was honoured for her dedicated involvement with the CIBSE lifts group over the past two decades. She has also been a lead author of *CIBSE Guide D* for at least the past four editions.

Wynn was praised for his outstanding

contribution to the education and training of generations of young engineers. While Braham, who was national delegate to the European Federation REHVA for the past 12 years, was lauded for his broad-ranging work within the energy, heating and ventilation sectors.

The following CIBSE officers were appointed at the event, which was chaired by outgoing president, George Adams CEng FCIBSE:

- President, Peter Kinsella CEng FCIBSE
- President elect, Nick Mead CEng FCIBSE
- Vice-president, Professor Tadj Oreszczyn CEng FCIBSE
- Vice-president, Cathie Simpson CEng FCIBSE
- Continuing vice-president, John Field CEng MCIBSE
- Treasurer, Stuart MacPherson CEng FCIBSE.

Watch interviews with the Fellows on the app at www.cibsejournal.com/app, or on the web/Android via www.cibsejournal.com



1hr in-house CPD seminars available

JS Air Curtains

The widest range of air curtains in the UK with expert advice and technical support.

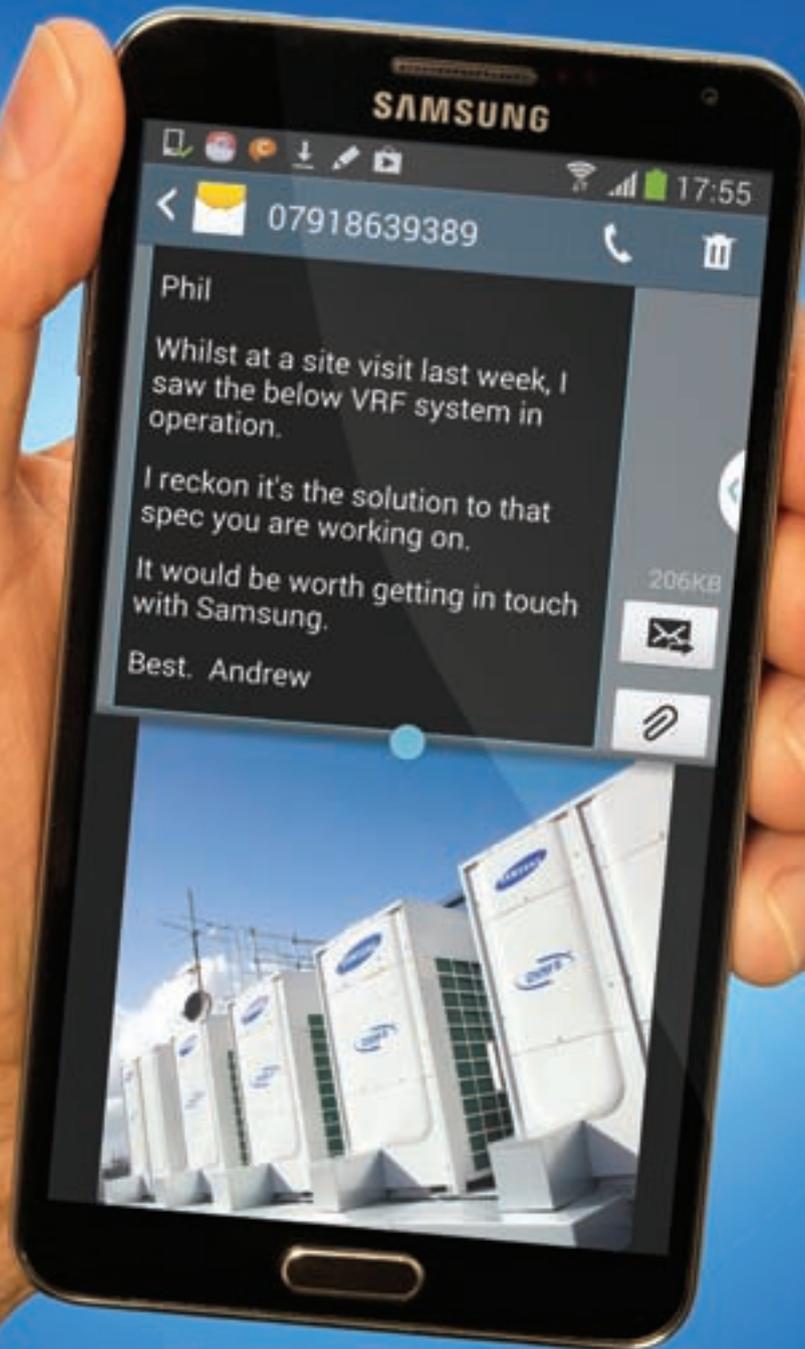
- Bespoke:**
- Colours
 - Fascias
 - Mounting options



T: +44 (0)1903 858656
E: sales@jsaircurtains.com
W: www.jsaircurtains.com

SAMSUNG

The solution doesn't always
come from where you'd expect



Whatever your application, our air or water cooled VRF systems offer an efficient solution with advanced control capability.

To find the perfect Samsung solution to your specification, email: businessUK@samsung.com

Air conditioning and
heating solutions

Your letters

This month: Why SMEs are in danger of being left behind by BIM and the risks of overstating carbon factors in CHP

District line

In regard to Thomas Briault's opinion on district heating (*CIBSE Journal*, May 2014), district heating based on gas-fired combined heat and power (CHP) is not a low carbon solution to heating. It has been encouraged – in the past – by the use of incorrect fuel factors in the building regulations, which are now finally being addressed by the SAP calculations, particularly the 15-year projections.

The fact is, the minor CHP carbon benefits have been massively overstated in the past, since the carbon benefit should be measured against a 'same fuel' source – as detailed in the European Directive on Co-Generation 2004/8/EC – and not against an average carbon factor for grid-supplied electricity.

To encourage the Department of Energy and Climate Change and the Department for Communities and Local Government to ignore the European Directive by arbitrarily choosing carbon factors that benefit CHP would be a retrograde step in reducing emissions in the UK.

District heating network suppliers



KN/SHUTTERSTOCK

need to base their networks on sustainable sources of zero-carbon heat supplies, not rely on inefficient fossil fuel powered technologies.

Dr James Thonger PhD CEng FIMechE

Don't let BIM leave SMEs behind

I fear that as an industry we are falling way behind on the BIM agenda when we should be doing the exact opposite.

My recent presentation to CIBSE Yorkshire 'BIM an opportunity for Unity' was well received, but it seems there is little real participation from

SMEs, who must easily constitute over 90% of our industry. We remain under-represented in the BIM world. Therefore, in order to help and promote BIM to the wider M&E community I am now a director of BIM4SME.

BIM4SME is a not-for-profit organisation formed to promote and guide smaller firms in the uptake of the technology. We have set out ambitious plans to extend our reach and expand activities in the coming year. Our aim is to be a one-stop-shop for SMEs – the website is being revamped to become the go-to place to learn all about BIM.

I really do believe BIM can (literally) change the way the industry sees M&E and this is an opportunity we need to take a firm hold of, sooner rather than later.

If we don't occupy this 3D space then someone else certainly will.

For more information visit

www.bim4sme.org

Janet T Beckett MCIBSE

CIBSE Journal welcomes readers' input, whether it be letters, opinions, news stories, events listings, humorous items, or ideas and proposals for articles.

Please send all material for possible publication to: editor@cibsejournal.com, or write to Alex Smith, editor, *CIBSE Journal*, CPL, 275 Newmarket Road, Cambridge, CB5 8JE, UK. We reserve the right to edit all letters.

The perfect combination..... P-Sensor and the CMR Velogrid



VELOGRID
Velocity Averaging Sensor



P-Sensor

CMR are the inventors and manufacturers of both the P-Sensor and the Velogrid. The Velogrids are made to measure to fit any ductsize up to 3m x 3m and the P-Sensor has a keyboard to easily enter : duct height - width - density - magnification factor and the scaling in m/s - m³/s - m³/h - l/s. It can even work out the Air Change rate. And the BMS gets three linear volume signal outputs of 0..10V 4..20mA and an addressable Modbus rtu bus.

CMR CONTROLS Ltd

22 Repton Court Repton Close
Basildon Essex SS13 1LN GB
www.cmr-controls.com

Tel +44 (0) 1268 287222
Fax +44 (0) 1268 287099
sales@cmr-controls.com





The Water Regulations Solution Specialist

Arrow Valves manufacture and distribute a wide range of innovative water associated products and services specifically designed to conform to the requirements of the Water Regulations



"Boost-A-Break" Break Tank & Booster Set



"Autofill" Pressurisation Unit



Automatic Flow Limiting Servicing Valve



"Conceal-A-Tap"

For Water Regulations advice, latest datasheets, specification clauses and more, visit our website

Tel: 01442 823 123 Email: enquiries@arrowvalves.co.uk

www.arrowvalves.co.uk

CPD
CERTIFIED
Construction CPD
Certification
Service

We know

BIOMASS



Delivering the complete solution

NEW CPD certified technical presentations and workshops available

Call 0203 1890654 to book

Design / Project Management / Distribution / Servicing / Training

Rural Energy

INSTALLING BIOMASS SINCE 2002



ruralenergy.co.uk

THE PERFECT COMBINATION

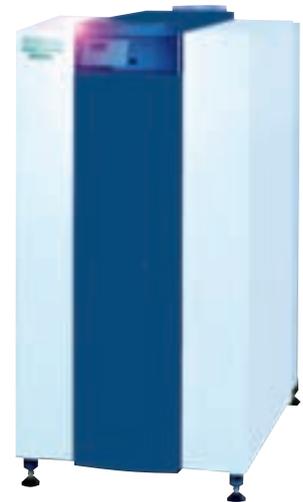
Econoplate plate heat exchangers combined with **Econoflame** fully modulating condensing boilers for maximum efficiency and system flexibility.

- Full modulation of boiler and plate exchanger loads
- Low water content of boiler and plate heat exchanger
- No losses from stored hot water and boiler cycling
- Low primary return temperatures from plate exchanger facilitating maximum condensing capability of boiler

Econoplate - comprehensive range of packaged plate heat exchangers



STOKVIS
ENERGY SYSTEMS



Econoflame 6000 and 3000, fully modulating condensing boilers - 16 models range from 142 to 1189KW

STOKVIS
ENERGY SYSTEMS

THE CONSULTANTS AND CONTRACTORS CHOICE.

For further information or to receive a technical guide tel: 0208 783 3050 or email: info@stokvisboilers.com

www.stokvisboilers.com

MODEL DATA

Central government is committed to introducing Level 2 BIM on all its construction contracts awarded from 2016. **Hywel Davies** considers what this may mean for the building services

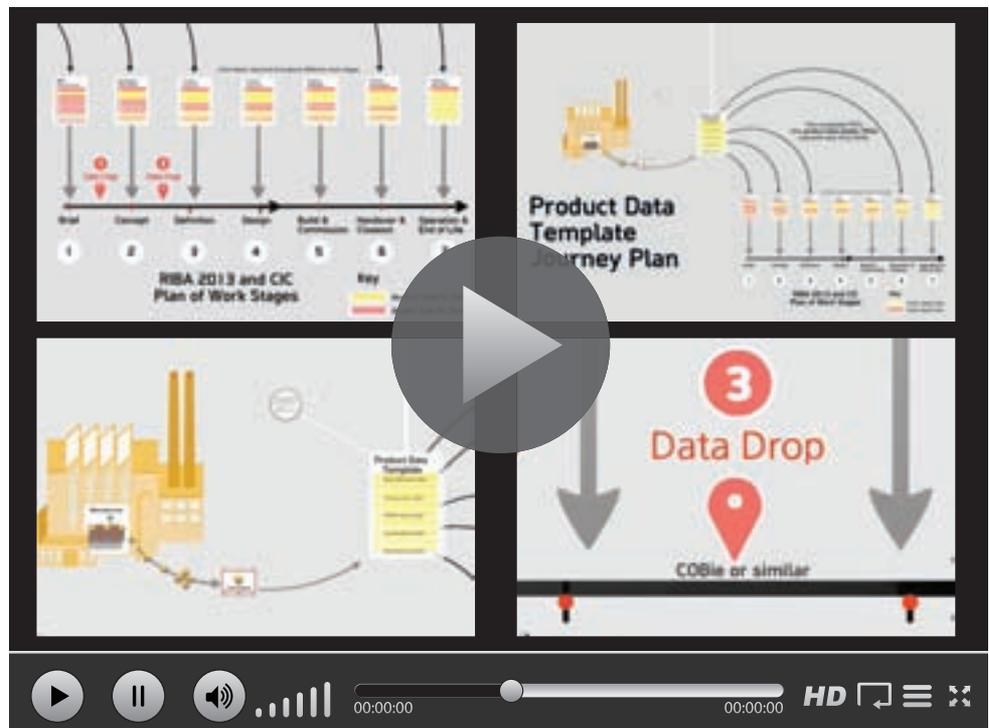
Policy makers are using building information modelling (BIM) to transform how its buildings are procured. This means they want a model to go with those structures – and not just any three-dimensional picture of the building. It wants a model that tells them what they have got, where it is, and how often it needs cleaning, or changing, or maintaining, or replacing.

They want the supply chain to collaborate to provide this model – as well as the building itself. They want information to be shared between the various parties involved in the design, construction, installation, commissioning and operation of the building. And for government as a client, it is the benefit of having the information available to the building operators that offers real benefits.

The BIM Task Force is already well on the way to developing many of the tools needed to enable the data sharing required. BS 1192 sets out the processes for structuring information, and PAS 1192-2 and 1192-3 set out detailed processes for the management of data at the design and operation stage.

The BIM protocol provides additional guidance on how the team should operate in this new environment. One tool that is still being built is BS 1192-4, which will be the UK standard for COBie. This will define the structure of the data that is required during the design, construction and operation of a building. It is due out in draft form for public comment in June – watch the CIBSE members' newsletter and website for more information.

BS1192-4 will set out the structure of the data that is required by the government as a client, for: the elements of the building; the various spaces within it; and the systems within it. It will also identify what the client wants to know at the various stages, from concept design through to operation.



Watch a video on product development templates at www.cibse.org/bim

Product data templates will not be the view of any individual consultant, manufacturer or end user, but will be a collective effort

What it will not do is identify all the levels of detail that the supply chain may need to specify a component or system, to: ensure compliance with various regulations; demonstrate that the system will deliver a specified performance; or to fully enable a maintenance engineer to identify exactly what parts might be required for routine servicing. And it will not provide all the detail that is needed to support full installation activity on site.

The supply chain will need to exchange considerable detail that is not included in the scope of BS 1192-4. One of the principles of the BIM initiative is that it will address the information needs of the client, which – in terms of public contracts – is the government. But they are not trying to tell the supply chain how to do everything. So, if the building services sector needs to exchange information about pumps, or air handlers, or boilers or power sockets, then nobody in Whitehall is going to tell

THE PDT DEVELOPMENT PROCESS

PDT creation and authoring is being overseen by a small sub group of the CIBSE BIM Steering Group. Work is already well underway on more than 25 different components, and is planned on a number of others. For more information, see bimtalk.co.uk. This process is supported by funding from CIBSE Patrons.

BS 1192-4: UK IMPLEMENTATION OF COBIE – DRAFT FOR PUBLIC COMMENT

This standard is due to be issued for public comment in early June – this will be advertised via the website and the CIBSE members' newsletter. It is expected to cover a 28-day period before the summer holidays begin.

LASHNO / SHUTTERSTOCK



us how to do that. It is up to us to sort out what we need to exchange and how.

And that is exactly what CIBSE is doing by working with a variety of other trade organisations and professional groups. We are developing a range of product data templates (PDTs) that identify what we need to know about the components of building services systems. They will set out what data is needed to specify, install, commission, operate and maintain a pump, right through the life of that component. The template will detail the various data fields that are required and the format of the information needed to complete that field.

This will not be the view of any individual consultant, manufacturer or end user, but will be a collective effort, with all those who regularly exchange information on that component involved in drafting the template, reviewing it, refining it and finally signing it off, in a collaborative effort between different members of the supply chain and different technical disciplines.

The resulting PDTs will also contain the data needed to populate the BS 1192-4 data set, providing integration with the wider suite of BIM tools. The PDTs will provide manufacturers, and others, with a single format for providing the information that is needed about their products to meet the BIM Level 2 targets. Once the PDT for a pump is complete, then pump manufacturers can proceed to populate the template with the data for their product, creating a family of specific product data sheets.

It really isn't rocket science, it's simple information structuring and organisation, and it is one of the essential tools of delivering Level 2 BIM in 2016.

● **HYWEL DAVIES** is technical director at CIBSE www.cibse.org

INFORMATION DUMPING CAUSES PROJECT CHAOS



Offloading 600-page tenders on the supply chain leads to costly mistakes, warns David Fitzpatrick

Never has the expression 'more haste, less speed' been truer than now as the construction market heats up. Construction teams are, literally, charging on site – whether they have a properly developed design or not. Builders put up a site office because they have an order, but only a sketchy idea of what they are actually going to build.

All-pervasive communication technology has been a great boon in many ways, but the downside is that it's far too easy to dump information down the supply chain. Never has there been more design information available

and never has it been more badly organised. Also, never have schedules been more compressed – meaning that not only are suppliers being asked to plough through more

and more irrelevant detail to find the nuggets of information they need, but they are also being asked to do it in record time.

The time it takes to work your way through a 600-page tender document is not costed; but if you try asking to be paid – effectively to do the design team's job – don't expect to be taken seriously.

I was recently involved in a tender where we had to make 26 variations in a month and still could not get the products out of the door. Contractors also regularly report that project schedules bear no resemblance to the specification.

If we make lots of changes, what actually gets built will

cost more – that's just simple economics – but clients get upset if the price changes. This leads to disputes and the inevitable involvement of lawyers.

Why are we making the same mistakes all over again? Many in our industry genuinely want to collaborate and feed into the design in a productive way so that we can add value, but some construction companies think having an order is the same as having a design. If they took the time to sift the data and show some consideration for detail, they would reduce the risk of vital information being missed that

leads to expensive problems on site.

After all, would you order a new car without giving the dealer any detail about make, model or performance specifications – and just stipulate it must be delivered in three weeks? No. So why

should that approach be any more sensible for a building?

Ruskin Air Management is a market leader in air distribution, and fire and smoke control. It combines the Actionair, Air Diffusion and Naco brands. The companies work together to provide complete HVAC solutions for the built environment.



SBEM AND THE GOVERNMENT'S RACE TO THE BOTTOM



Dynamic simulation modelling is being sidelined by the government's insistence that designers use SBEM to prove compliance with key regulations and codes, says **Andrew Cooper**

BRE – the Building Research Establishment – says the simplified building energy model (SBEM) and its interface, iSBEM, are compliance tools, not design tools. This statement can be extended to include any thermal-modelling software interfacing with SBEM. However, I think SBEM has become a strategic design tool embedded in the design process, a purpose for which it was never intended.

This has been amplified by the Department for Communities and Local Government's (DCLG's) requirement to tie dynamic simulation modelling (DSM) results to those of SBEM – with a tolerance of just 5 Asset Rating points – in an effort to get consistency across energy performance certificates (EPCs) and Building Regulations.

RIP DSM?

Design teams have, to date, been able to rely on the more detailed, accurate and expansive engineering capabilities of DSM. For compliance purposes, DSM is tied to the National Calculation Method (NCM), but it can take into

consideration shading from structures and vegetation; it allows engineers to undertake detailed analysis of the effect of sunlight and air-flow patterns for natural ventilation strategies; and it can model ventilation with enhanced thermal coupling to the structure and automatic blind control. It does not rely on monthly average calculations and is, therefore, a more accurate assessment of a building's design.

Most buildings are built speculatively by developers, who pay architects and engineers to design and construct properties that can be sold or leased. Buildings are designed to pass Building Regulations and – if the output of DSM is to be tied to SBEM – SBEM will increasingly be used on projects for which DSM is more suitable. After all, if design and performance optimisation were truly primary drivers for new-build properties and major refurbishments, the difference between predicted and operational energy consumption would not be so pronounced.

SBEM can be used to prepare energy statements, which are required for planning applications; it is the default

SBEM has become a strategic design tool embedded in the design process – a purpose for which it was never intended

tool for compliance with Building Regulations; and is used to help calculate BREEAM ratings. While it may not be suitable for HVAC sizing and engineering detail, the choice of system will be determined by SBEM and its modelled performance, not by predicted operational performance. Design and engineering solutions will first have to work in SBEM, and then operationally. To quote Chris Twinn, of Twinn Sustainability Innovation, from *CIBSE Journal* April 2014: 'Game Boy has taken over SBEM.'

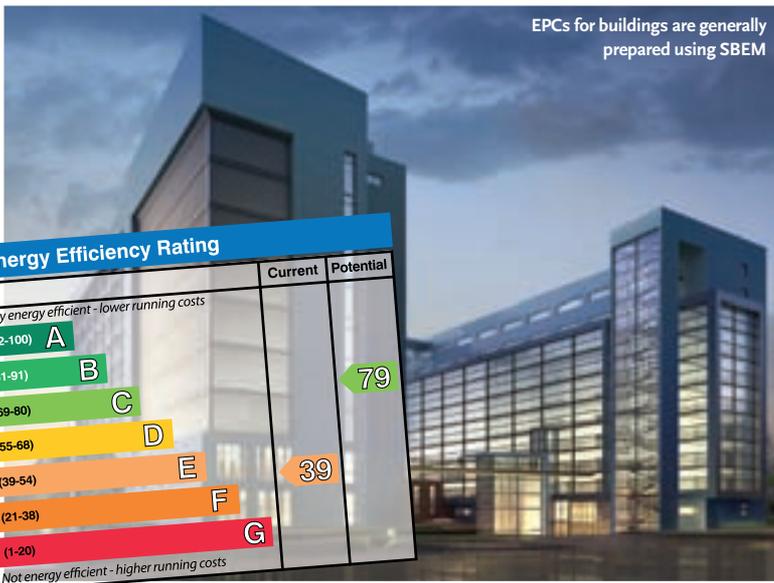
SBEM relentlessly marches on

The UK is legally bound to reduce its carbon emissions by 80% by 2050. Most of the buildings that will be standing then are already built, so meeting this target will mean reducing the energy consumption and CO₂ emissions of the existing built estate. The Energy Act 2011 legislates for minimum energy efficiency standards by 1 April 2018, and the Department of Energy & Climate Change (DECC) has stated that properties with F- or G-rated EPCs cannot then be let until a due process has been undertaken.

This means the influence of SBEM as a design tool will be extended to heavily influence the design of major refurbishments. This is because EPCs are generally prepared using SBEM. Compliance with legislation will be determined by the financial feasibility of energy conservation measures, which will be calculated using the Green Deal tool – a variation of SBEM.

EPCs determine the level of feed-in tariff, which affects viability – and, therefore, inclusion – in design. A Green Deal assessment is proposed, by DECC, as a route to compliance with the Energy Savings Opportunity Scheme for large UK organisations, a use for which it is wholly inappropriate. Now, if that's not a design tool, I'm not sure what is.

● **ANDREW COOPER** is an independent commercial property and energy consultant www.andrew-cooper.com



HANSHUTTING / SHUTTERSTOCK

Bosch inside.

Efficiency that works.



Generate power and heat in an efficient and environmentally friendly way with combined heat and power modules from Bosch Commercial and Industrial Heating.

- ▶ Bosch CHP modules has outputs of 19kWe to 400kWe
- ▶ Achieves a total efficiency of up to 94.2%
- ▶ Energy savings of around 30%, when compared with conventional heating systems
- ▶ Suitable for a wide range of applications such as hotels, schools, hospital and business parks.

Bosch is now included in the CIBSE directory of registered CPD course providers. Our half day course covers a multitude of topic areas and can be held at your company office, or at one of our training and assessment academies.

For more information on the course, please call **0330 123 0116** or email **training@uk.bosch.com**. More information on the Bosch CHP range can be found at **www.bosch-industrial.co.uk**.



BOSCH
Invented for life



Think global ACT LOCAL

CIBSE's influence worldwide is top of the agenda for Peter Kinsella – the first international president of the institution since its inception 117 years ago.

Liza Young speaks to the Stoke-on-Trent-born Australian

CIBSE's first international President, Peter Kinsella CEng FCIBSE, has called on members to make the most of global opportunities by tailoring their expertise to the requirements of local regions.

In his inaugural address, at the Royal Society in London last month, Kinsella said he wanted to develop CIBSE's influence worldwide, adding that to achieve greater relevance and recognition overseas, CIBSE and its many regions had to address the subjects that are of interest to regional members.

Also high on Kinsella's list of objectives in his Presidential year was the promotion of comprehensive feedback loops in the design and operation of buildings, and more benchmarking of energy use.

Global reach

Kinsella's view, as expressed to the *Journal*, is that a huge amount of CIBSE technical guidance is already relevant wherever you may be in the world, however with some tweaking, it would be even more suitable for overseas markets. 'The wider relevance of our knowledge can be a major catalyst in the growth of CIBSE internationally,' he emphasises, adding: 'As authorities around the world, particularly the developing nations, look for appropriate guidance for reference, the more relevant the CIBSE guidance is to their requirements, the more often it will be adopted, and the more international members will join.'

Kinsella, who is an associate at Lehr Consultants International (Australia), says that the CIBSE family would be enriched with a wider and more diverse range of people from around the world. 'We also need to continue our support of the younger engineers as they develop into the next generation of CIBSE leaders.'

The new President stresses the importance



of closing the feedback loop by engaging with Facility Managers (FMs) and occupants.

'Facilities Managers have a huge impact on the efficiency and effectiveness of a buildings' services and their effect on the internal environment, and they possess a wealth of information from all types of buildings and services,' he says.

'This information needs to be captured and turned into knowledge, which can then be shared far more widely to drive improved building performance.'

A closer interest needs to be taken in the way buildings perform over their whole life, adds Kinsella, reiterating that the operational requirements of a building need to be addressed at the design stage.

'There is a continuing need to nurture the

design intent. There are so many steps along the way that create the potential for items to slip through the cracks, and for part of the original design to be diluted.'

He says a lack of integration between all stages of building design and operation opens the door to elements being value-engineered out of designs, and replaced with cheaper and less sustainable alternatives.

The uptake of PPPs or PFIs in Australia, which have typical operational commitments of 25 to 35 years, has led to a more integrated approach to building design with a much greater involvement by the FM team.

He says: 'In the past, responsibilities for construction – and then the ongoing operation and maintenance of the building – were divorced from each other.'

'The financial incentive had been to deliver a project as cheaply as possible that would last as long as the defects liability period. It didn't concentrate on how that building was going to function for the rest of its life.'

But if contracts are written correctly, the focus will change solely from the upfront initial costs to those associated with operation, maintenance and performance over a 25-year period. He adds that soft landings, which encourage extended contact between designers, clients and operators, address some of the whole-life issues in building design.

Kinsella says that a large proportion of the buildings that will be here in 40 years' time have already been built, so we need to upgrade those that are performing poorly, not wait until they are knocked down.

'Industry relies on engineers to provide a true and fair view of all aspects of engineering. It is therefore critical that we deliver the promised benefits of low energy measures, incorporated into both existing and new buildings,' he says.

'If for some reason this doesn't happen, we must find out why not, and then share

There is a continuing need to nurture design intent – there is the potential for items to slip through the cracks and for the original design to be diluted

the lessons learnt to improve our collective knowledge base. We have an obligation to ensure continual improvement and to minimise repetition of the same mistakes.'

Kinsella says an improvement in building performance requires a mix of mandatory and voluntary measures to motivate both tenants and landlords. He has experience of two building rating schemes in Australia – the Green Building Council Green Star scheme and Nabers.

The voluntary Green Star scheme, used mainly as an office design rating tool, looks holistically at how a building impacts the environment, in the way it's both constructed and used.

Good Nabers

Nabers, which assesses the carbon emissions of existing stock, allows buildings to benchmark performance against similar properties. It became a mandatory requirement in 2012 for all office buildings above 2,000m² that are sold or leased.

'Information on how a building is performing gives an idea of where to make improvements,' says Kinsella.

Voluntary measures have worked well in Australia, resulting in a rise in performance of many new and existing buildings.

It is essential, however, that the mandatory requirements that exist in building codes and standards are periodically reviewed, and are clear and enforceable. 'There needs to be careful consideration on how this compliance is going to be monitored as self assessments stand the risk of weakening these levels.

'In the pursuit of greater levels of energy efficiency we must never lose sight of the main purpose of building services – to provide a healthy and productive environment,' he adds. **CJ**

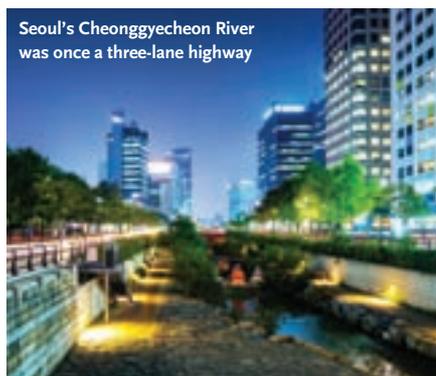


CAREER TO DATE

- 1961 Born Stoke-on-Trent
- 1979-1983 Attended South Bank Polytechnic
- 1983-1995 Joined family contracting business J. Kinsella & Co
- 1995 Moved to Melbourne, Australia
- 1995-1997 Worked for AG Coombs
- 1997-2013 Worked for AE Smith
- 1983 Joined CIBSE as a student member
- 2002-2008 Victorian Chapter chair (Part of ANZ Region)
- 2008-2013 ANZ regional chair
- 2009 CIBSE board member
- 2010-2013 CIBSE vice president
- 2013 Associate at Lehr Consultants International (LCI)
- 2013-2014 CIBSE president elect

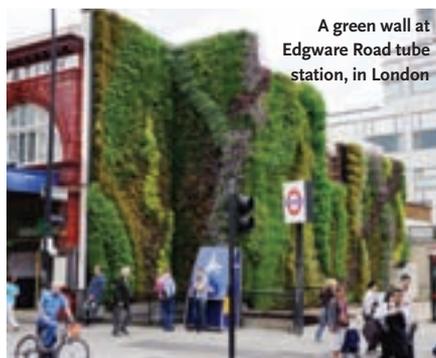
INTO THE BLUE

To mitigate the effects of climate change, and to accommodate the predicted rise in urban populations, experts say cities must come 'alive' by turning grey to green – and even blue. **Liza Young** reports



Seoul's Cheonggyecheon River was once a three-lane highway

LEUNGCHUAN / SHUTTERSTOCK



A green wall at Edgware Road tube station, in London

© THE BIOCTURE.UK.COM

By 2050, three-quarters of the world's population will live in cities, which makes it imperative that we find ways to make them healthier and more attractive places to be

For centuries, nature has been squeezed out of our urban landscapes, as green space has struggled to compete with growing land values, and increasing development and infrastructure. However, it is becoming abundantly clear that we need to rethink 'green and blue infrastructure' – vegetation and water – not simply as an optional extra, but as a fundamental part of urban design.

'Landscape is not a sticking plaster to make things a little bit better – it's actually a key part of the treatment,' Land Institute president Sue Illman told the CIBSE ASHRAE Technical Symposium in April. Illman added that radical and bold decisions in urban design – such as the transformation of a three-lane highway in South Korea into a river park – serve as interesting examples of what 'we could and should be doing, and how radical the changes to our environment can be'.

So what effects can green and blue infrastructure have on our cities, and what radical initiatives can we expect to see?

The power of green

It is predicted that, by 2050, three-quarters of the world's population will live in cities, which makes it imperative that we find ways to make these areas healthier and more attractive places to live and work.

A report by the Intergovernmental Panel on Climate Change (IPCC), released in April, stresses that land use in urban areas is key to mitigating and limiting the effects of climate change. The IPCC says that increasing green



London's Olympic Park: an industrial area transformed into a biodiverse oasis

space and urban 'carbon sinks' can absorb CO₂, regulate stormwater, and reduce energy consumption for cooling.

There is a growing body of research into the effect of climate change on urban areas, and the role of green and blue infrastructure in combating it. Arup's *Cities Alive* – supported by the Landscape Institute and the Royal Botanic Gardens, Kew – is one such report. 'The power of nature and the natural environment could be used to offset a lot of effects,' says Tom Armour, Arup's director of global landscape architecture. 'We need to raise awareness of what the natural environment does, because it is often taken for granted.'

Armour says that increasingly sophisticated technology (see CIBSE *Green Roof Guide* box) will allow roofs, walls and building façades to be 'greened', creating a filter for pollution, to enhance air quality for city dwellers. Increasing urban tree cover can also absorb carbon dioxide by acting as a carbon



ATKINS COPYRIGHT



The proposed Garden Bridge across the Thames in London

© ARUP

‘sink’, as well as providing natural cooling and insulation.

Research by the University of Manchester has suggested that tree cover and the presence of large bodies of water can dramatically reduce the urban heat island (UHI) effect (see Figure 1). A UHI is a metropolitan area that is significantly warmer than its rural

surroundings because of human activity. Trees and water can help to alleviate this through shading and evapotranspiration – the transfer of water to the atmosphere by evaporation from soil and other surfaces, and by transpiration from plants. This reduces demand for air conditioning and increases the effectiveness of natural ventilation.

In Figure 1, the UHI intensity – represented by the blue line – drops significantly at four miles from Manchester city centre because of the presence of a large park at that distance.

The effects of urban greening aren’t only climatic, however. Armour says people who live in greener environments are more likely to do physical exercise, and have lower levels of mental stress. In hospitals, patients recover faster in rooms from which they can see greenery outside. ‘The power of nature is probably much bigger and more significant than most people realise,’ says Armour. ‘You can take as many drugs as you like, but the simplest solution is to make cities greener – create better cycleways and footpaths, while reducing the health bill.’

New-world cities

There are few better examples of this than Copenhagen, in Denmark, which was named European Green Capital 2014 by the European Commission. It has experienced a 60% surge ➤



© COMPAGNIE DES TRANSPORTS STRASBOURGEOIS

Vegetation in Strasbourg converts the 'grey' to 'green'



RAMBOLL

Hans Tavsens Plad, north of Copenhagen city centre



in people cycling to work after investment in a network of cycle 'superhighways', and this has saved the city the equivalent of £12m on healthcare costs annually. Copenhagen now plans to invest €1bn (about £0.8bn) in urban restructuring to safeguard it against future extreme weather.

The Cloudburst Management Plan – which forms part of this ambitious climate-adaptation project – focuses on creating 'blue' and 'green' areas to divert and absorb large volumes of water. By combining these with strategically placed 'water boulevards', excess water can be channelled into the harbour to avoid the risk of flooding. Copenhagen also plans to transform one of its three inner-city lakes into a rain park, to store water.

'It's not just about using water in urban design – it's about considering the whole water cycle,' says Simon Price, head of environment at Ramboll, which has contributed to Copenhagen's planning framework. 'If you want people to feel safe and secure, you need to be resilient.'

Ramboll's Liveable Cities initiative explores what makes some cities better places to live

than others. 'Sometimes, there's not enough regard for the fact that what makes a city are the people within it,' says Price. 'Copenhagen aims to be a city for its people, and a city in which people will choose to stay as they go through different stages of their life.'

Copenhagen is not the only city seeking to transform its approach to green and blue infrastructure. Pioneering projects such as the remediation of the Queen Elizabeth Olympic Park, in London, and the High Line, in New York, have revamped former industrial spaces into biodiverse oases.

Illman, of the Land Institute, says the Olympic Park set the standard for sustainable technologies for ground remediation. 'They took it from being that fantastic venue and moved it into legacy, which is giving it a whole new life and ethos. The bowl that takes water during flood events has already been used nine times this year. That takes 5,000 houses out of flooding, which was part of its remit.'

The most radical of such projects has been the restoration of the Cheonggyecheon River, in Seoul, South Korea. The concrete remains of a three-lane highway still stand as

a reminder of what used to be one the most polluted areas of the city, but which is now transformed into a healthy river park. The new landscape has reduced temperatures in the area by 3°C – illustrating how nature can be harnessed to tackle the UHI effect.

Hamburg, in Germany, has gone one step further by announcing plans for its centre to become car-free by 2030. Under the city's urban development scheme, Green Network, vehicles will be banned from entering much of the centre, while better pedestrian and cycle paths will connect its existing green spaces, to provide safer and healthier commuter routes.

London's future

The growing significance of green and blue infrastructure to major developments is evident at the King's Cross regeneration project in London. About 40% of the 67-acre estate will be dedicated to leafy squares, parks, gardens, and new streets flanked with rows of plane trees. The development will also include more than 1,000 choreographed fountains, and 9,000m² of green or brown roofs.

'Development, particularly in large cities, is about creating places for people,' says Ken Trew, senior project director at Argent, and asset manager for King's Cross. 'The sound of water and the reflection of light in a high-density development creates sound and movement, and brings the sky down into spaces between tall buildings.'

Trew says the King's Cross team has already exceeded a planning condition that requires 15% of roofs to be green and blue, while ivy and Virginia creepers reclothe bare walls along Regent's Canal. 'We're squeezing water and vertical greenery into whatever we can, to make public space more convivial and beneficial for people who live and work there.'

Urban heat island effect in Greater Manchester

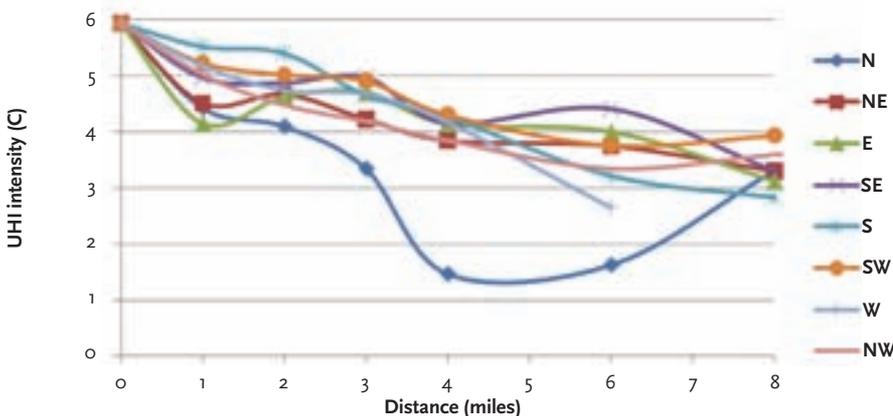


Fig 1: UHI intensity, against distance from the city, on clear-sky, low-wind nights from May to August 2010



ALISON HANCOCK / SHUTTERSTOCK

Cities and towns are being urged to embrace roof gardens

How to specify a green roof

Cities and towns need to embrace green roofs to help negate humans' impact on the environment, and to achieve liveable, sustainable built spaces. CIBSE's *Guidelines for the Design and Application of Green Roof Systems* aims to promote awareness of green roofs, to facilitate effective planning, design and implementation, and to stimulate an increase in the uptake of green roofs on new developments and existing buildings.

When planning a green roof, establish its objectives and functions, says lead author Dr Sam Hui. For example, will it be used for environmental and green building benefits, or will it also be a recreational amenity? Design factors include: the load-bearing capacity of the roof construction; the accessibility of the roof; the waterproofing; and the choice of appropriate green roof build-up.

In many countries, green roofs contribute to the credit rating provided under the green-building assessment scheme. They can also be a visible way to draw attention to a development's environmental or sustainability 'credentials', which may increase the property's value.

Careful thought should be given to the design and selection of the growing medium, irrigation

systems, and plantings, as well as the construction methods and maintenance issues.

When the proposed location and size of the green roofs have been determined, the building services requirements – such as water supply and drainage, electricity and lighting – and space limitations should be considered. For example, green roofs are well suited to commercial buildings, where there will often already be air-conditioning plant, water-storage tanks, lift-machine rooms, or gondola lifts on the roof. Attention must be paid to detailing around the mechanical plant, and to access.

The integration of renewable energy systems – such as solar photovoltaic and wind energy – can lead to a better use of roof space, and higher efficiency of the solar-energy systems. The power generated can be used to supply the roof's lighting, emergency exit signs, and water pumps.

Green roofs retain a high amount of rainwater, so are perfect for harvesting, thus reducing the amount of water reaching urban sewage systems. It is also possible to achieve clear run-off water if special substrates are used for the filtration.

Guide available at www.cibse.org/knowledge

The site is on impermeable London clay, which creates a risk of flooding in heavy rain. To safeguard against this, water roofs are being used to attenuate stormwater flows, before releasing it into soft landscape areas.

By working with nature, we can make our cities more resilient to the changing climate, while reducing greenhouse gases through natural carbon 'sinks'. It's time to plant the seed and let nature take its course. **CJ**

Save up to 30% on commercial gas bills



Ideal for upgrading your existing system or for new build properties, the Vitocrossal 200 CM2 features a high efficiency of up to 98% and has a maximum operating pressure of 6 bar.

- Vitocrossal CM2 floor standing condensing boiler
- Output range 87 to 620 kW
- Cascade up to 4 boilers to 2480 kW
- Suitable for natural gas or LPG at higher outputs
- Large water content - no minimum flow rate - 60% reduced pump power consumption
- Modulating range of 33 to 100%
- Self cleaning stainless steel Inox-Crossal heating surface
- Very quiet - down to 48 dB(A) part load

Available now, for more information please see our website or email us at, info-uk@viessmann.com
www.viessmann.co.uk

Viessmann Limited • Telford • Telephone 01952 675000



Effizienz Plus

VIESSMANN

climate of innovation

TESCO'S *finest*

Tesco's new store in Wisbech is piloting a host of low-energy technologies that could transform the retail giant's estate, and help to cut store emissions by half by 2020. **Andy Pearson** reports



Engineering project manager Rob Redfern CEng MCIBSE was able to affect the store's design at an early stage

Visitors doing their weekly shop in Tesco's new Wisbech store will be blissfully unaware that they are shopping in one of the most advanced and energy, efficient supermarkets in the UK.

The 5,600m² building cost no more than a standard Tesco, yet it incorporates a host of new technologies, including the UK's first store-based CO₂ refrigeration heat-reclaim system. 'We set out to push the technology, to achieve as much as we could within the confines of a standard store build cost,' says Rob Redfern CEng MCIBSE, engineering project manager at Tesco's UK property development and engineering arm.

Four weeks after opening, the Cambridgeshire shop is on target to emit 15% less carbon than a standard store.

Tesco's Wisbech branch is another small step towards the company's aim of halving emissions per square foot from its stores and distribution centres by 2020, compared to a 2006 baseline. By 2050, the retail giant is aiming to be a zero-carbon business. 'Our focus on being more energy efficient will serve to further progress our carbon targets and to reduce our exposure to rising energy costs,' says Redfern.

Electricity consumption is the largest source of carbon emitted from a standard Tesco store. Refrigeration accounts for about 40% of total electricity usage, and lighting for another 25%; the actual proportions vary slightly from store to store, depending on the shop's design, and the efficiency and effectiveness of the technologies installed.

According to Redfern, Tesco is 'always



striving to find new technologies with a smaller carbon impact than our existing equipment'. Before any technologies can be installed in a store, however, they have to pass Tesco's engineering and maintenance trials. This assessment is based on customer experience, and on an evaluation of how they impact on the look and shopping experience for customers.

Trial lengths vary depending on the technology; however – because building services technologies often have to operate under changing seasonal conditions – this can mean a minimum of a year's operation before approval is granted. 'Our governance process, which considers maintenance, energy, carbon, capital cost and impact on customers and colleagues, ensures that any proposed new equipment has a robust business case for it,' Redfern explains.

In terms of construction and layout, the Wisbech store is not significantly different from any other Tesco Extra. It was selected as the venue for the retailer's latest batch of technology trials because the lead time was long enough for the engineering team to establish which technologies should be trialled, and to obtain the necessary approvals. 'This store gave me the opportunity to affect its design at an early stage,' says Redfern.

'From around 100 initial suggestions for



CONSTRUCTION TEAM

- Consultants – URS
- Main contractor – Bowmer & Kirkland Ltd
- HVAC contractor – Neville Tucker
- Electrical contractor – Halsall Electrical
- Refrigeration contractor – Space Engineering



An air curtain without heating maintains positive air pressure in the store

possible technologies, we whittled the list down to 15 that we felt were achievable and would give a good return on investment.'

The Wisbech store opened its doors in February, and is part of a larger retail development, which includes a cinema, restaurants and a gym. The single-storey building is raised above the ground on a steel-framed podium, which accommodates a shared car park beneath. The supermarket is supported on a steel structural frame, which supports both the roof and a rooftop

plant well, tucked out of sight at the rear of the store. The plant well is home to four air handling units (AHUs) and two refrigeration packs. These packs include compressors, heat exchangers, controls and the electrical panel, and are connected to the condensers. The majority of the heating, cooling and refrigeration services distribution takes place at high level above the sales floor.

From a carbon-saving perspective, the most significant technological change at Wisbech is the addition of a heat-reclaim

From a carbon-saving perspective, the most significant technological change at Wisbech is the addition of a heat-reclaim system on the CO₂ refrigeration circuit

system on the CO₂ refrigeration circuit. All of Tesco's new Superstores, Extra stores and Metro stores use CO₂ as a refrigerant for the freezers and chilled food cabinets. However, Wisbech is the first UK supermarket to take advantage of the relatively high temperature of the CO₂ system by capturing this heat. As a result, in winter, instead of dumping the waste heat to atmosphere, a heat-reclaim system will extract the heat using a series of heat exchangers for use in the store.

CO₂ heat exchanger technology has not been trialed in a retail store until now because of the challenge of dealing with the high system pressures required in CO₂. However, Redfern says Tesco has learned from the experience of dealing with CO₂ since it was first introduced in 2009. This, he says, has given Tesco the confidence to trial the heat-reclaim system at Wisbech.

'I would like to think that the use of natural refrigerants by the retail industry – and the increased demand for them – will help to make natural refrigerant-based systems more competitive, and available for all future applications, not just retail,' says Redfern.

Tesco's calculations show that the refrigeration heat-reclaim system has the potential to deliver a peak duty of 400kW heat when running transcritical, which – according to Redfern – is when the refrigeration cycle passes through the critical point (see CPD, *CIBSE Journal*, December 2012). At the same time, the retailer's calculations show that the peak heat demand for the store is 600kW in winter. To make up the 200kW shortfall when the system is running transcritical, Redfern



A radiant heating panel warms the store's checkout areas, and its performance is monitored by a heat meter below



► says it will be possible to boost pressure in the CO₂ system to enable more heat to be extracted. However, this option will increase the system's electricity consumption. For this trial, the additional 200kW will be supplied by five wall-hung, gas-fired condensing boilers.

With the store in operation, Tesco will monitor the system to establish whether – and at what point – it is beneficial to increase electricity use to enable the system to provide additional heat, or whether it is more cost effective to use the boilers. 'In the first four weeks since the store opened, the boilers have not run – other than for testing – no gas has been used, and the refrigeration system has not needed to be run transcritical,' Redfern says.

The CO₂ heat exchangers transfer the captured heat to the low temperature hot water (LTHW) system, which supplies both the AHU heater batteries and a higher temperature circuit servicing the hot-water system calorifier and radiant panels. A ducted air system supplies the reclaimed heat to the retail floor.

The Wisbech store also incorporates a radiant heating system to provide additional heat to the checkout areas and customer service desk. The technology was introduced in response to comments – from customers and staff at other stores – about the need for more heat in areas where people are likely to be stationary. 'Every comment from customers and colleagues helps us to make improvements,' says Redfern. 'The changes at this store are in response to comments – made in 2012/13 – that informed us we

“We set out to push the technology, to achieve as much as we could within the confines of a standard store build cost – Rob Redfern



Movement sensors control back-of-house lighting

needed to make our stores warmer.' He says feedback on the new addition at Wisbech has been 'very positive'.

In summer, the store uses Tesco's standard 'free cooling' solution to cool the retail floor. This is based on chilled air – drawn from the chilled food aisles at about 10-14°C – which is then supplied as cooled air to the warmer ambient areas of the shop floor, a process Redfern refers to as 'cold air retrieval'. 'We don't usually need additional cooling coils in the retrieved cold air,' he says. The system is being trialled in reverse mode, too, at Wisbech, so that heat from the heat-recovery system can be used to warm the air supplied to the cold aisles if required.

Improved internal environmental conditions have also been achieved with the installation of a new main-entrance door air curtain. 'There is a misconception that our design-standard, over-door air curtain should provide heating for the store,' says Redfern.

At Wisbech, a new model of air curtain without heating is being trialled. It is hoped it will provide an improved curtain of air over the entrance-door opening, to help maintain the positive air pressure within the store, but without adding to the heat load on the heat-recovery system.

Alongside its innovative heat-recovery system, lighting is the other main area in which the Wisbech store differs from the Tesco norm.

Externally, the store and undercroft car park are lit using low-energy LED technology, and LEDs are a significant feature internally, too. At Wisbech, they are used for



HOW THE HEAT RECLAIM REFRIGERATION SYSTEM WORKS

The system was introduced at Wisbech to demonstrate the viability of using waste heat from the CO₂-charged refrigeration plant as the base heat source for domestic hot-water systems (DHWS) and the air handling unit (AHU) heater batteries.

The DHWS and radiant heat load is 100 kW. The store heating requirement is 500 kW. The store has two dual-temperature refrigeration packs, each fitted with two heat exchangers: a 65 kW heat exchanger for the 80°C DHWS and radiant heating header, and a 140 kW heat exchanger for the AHU's 50°C header. The heat

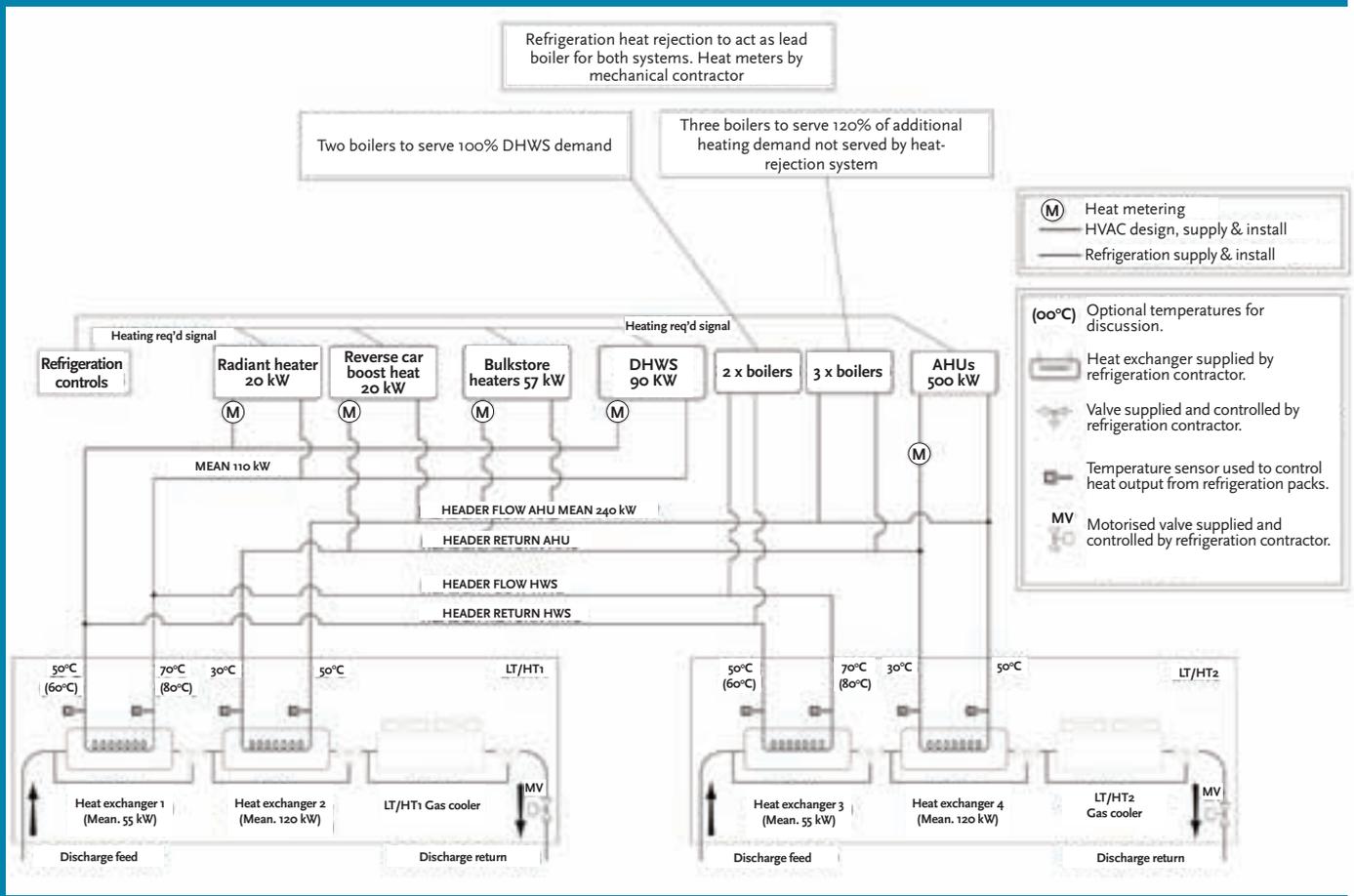
exchangers are treated as the primary boilers for water circulation.

The DHWS is supported by two condensing, gas-fired boilers. The AHU system is supported by three condensing gas-fired boilers sized for 66% of the total load. Each heat exchanger CO₂ circuit is fitted with a three-port bypass valve in the return flow. The gas cooler, sized at 110% and fitted with fan speed control, has a three-port bypass in the return. This configuration provides seven possible configurations of gas cooling:

- Gas cooling alone
- DHWS

- DHWS + gas cooling
- AHU
- AHU + gas cooling
- DHWS + AHU
- DHWS + AHU + gas cooling.

The combined heat rejection is sufficient for some periods of the year, but during peak heat loads – or periods of low refrigeration duty – the plant must run transcritical to meet the heat requirement. This condition can be forced using the modulating valve in the return from the gas cooler, which can raise the head pressures from the normal 50 bar to a maximum of 80 bar.



all store accent lighting, with the exception of the clothing area which – at the time – was not ready to switch to LED technology. In addition to it being more energy efficient – by using elongation lenses on the LEDs that illuminate signage – Tesco has also been able to focus the light accurately where it is needed, which, in turn, has reduced the number of accent lights required.

‘The biggest challenge with the change to LED is the increased capital cost of the lamps,’ says Redfern. Nevertheless, despite their increased cost, LEDs will be used by Tesco to light the interior of all its new

Superstore and Extra supermarkets this year. The additional capital cost will come from Tesco’s annual energy-reduction budget.

To further reduce lighting loads at the Wisbech store, rows of roof lights allow daylight to reach the sales floor. A DALI lighting control system – which is standard in all of Tesco’s larger store formats – controls illuminance levels, day and night, to maximise energy efficiency. The lighting panel will also self-test the emergency lighting system.

While lighting for back-of-house areas is controlled using movement sensors; sales-

floor lights are dimmed based on daylight control, with additional time-clock control to take account of the varying trading times.

All key energy-consuming assets are measured and monitored at Wisbech using Tesco’s remote system house, based in India. Here, a team keeps a constant watch on the energy consumption of all the UK stores. ‘We are able to monitor voltage, current, power, kWh in half-hourly data, and more,’ says Redfern. This will enable Tesco to monitor the Wisbech store’s history of energy use, keep track of energy consumption, spot exceptional or excessive

► use of energy – and, if necessary, mobilise Tesco’s 1,000-strong UK maintenance team to fix any problems.

A further eight team members at the system house analyse energy consumption in stores. They identify hotspots and long-term trends to help Tesco focus its energy-saving efforts. ‘We have a team of data analysts who will compare the performance of the Wisbech store with others in the estate to benchmark its performance,’ says Redfern.

A typical Tesco Extra store emits about 2,000 tonnes of CO₂e a year. ‘We have calculated the savings to be in excess of 350 tonnes of CO₂e, based on electricity and gas use,’ Redfern explains.

More impressive – given the savings in CO₂ – is that the capital cost of the new technologies is 3% less than for a standard store. According to Redfern, the over-door air curtain resulted in the biggest capital cost saving ‘due to the reduction in pipework needed’. However, he anticipates the largest energy saving will come from the heat-reclaim system.

Redfern is monitoring the new technologies will help the supermarket in discussions with Building Control. At the

moment, heat reclaim from the chilled-food refrigeration system – and free cooling using cooled air from the chilled aisles – are considered process loads by Building Control; as such, they are not fully recognised in the Part L compliance calculations. ‘It is an issue that needs to be addressed,’ he says. He might have a point because, at Wisbech, such technologies are contributing to a 15% reduction in carbon emissions. **CJ**



LED lights with daylight sensors are used in the car park, while plant is positioned on the roof (right)



Rinnai

infinity LOW NOx

Introducing the Infinity 1600 condensing Low NOx water heater

The gold standard in water heating

Advanced condensing heat exchangers combined with innovative down firing pre-mix burner technology ensures every cubic metre of natural gas or LPG is utilised to the maximum.

The units are renewables-ready and suitable for use as a temperature booster for solar thermal and heat-pump installations. The HDC1600 range is also future-proofed against future regulatory and legislative changes.

- Condensing technology up to 107% efficiency
- Ultra Low Nox - less than 20 ppm
- Expansive modulation range 54kW - 4kW
- High Flow rates - 37 Ltr/min
- Extended warranty
- Eco-label ready



Eco-label ready!

Contact Rinnai today for more information:
 General enquiries 01928 531 870 Rinnai London 0208 622 3500
www.rinnaiuk.com

Recognising the people
that are driving the agenda
for building performance

CALL FOR ENTRIES

ENTER NOW FOR:

- » Building Services Consultancy (up to 100 employees)
- » Building Services Consultancy (over 100 employees)
- » Building Performance Training Programme
- » Collaborative Working Partnership
- » Facilities Management Operations

ENTRY DEADLINE: THURSDAY 11 SEPTEMBER 2014



*Kevin Shepherd,
Project Director
at Norland*

Collaborative Working
Award Winner 2014

“It’s amazing
to win the award,
for Norland and our
customer (EE) it’s a
recognition of what
we’ve done as a
partnership”



FIND OUT MORE AT:
www.cibse.org/bpa

 @CIBSEAwards

Headline sponsor:



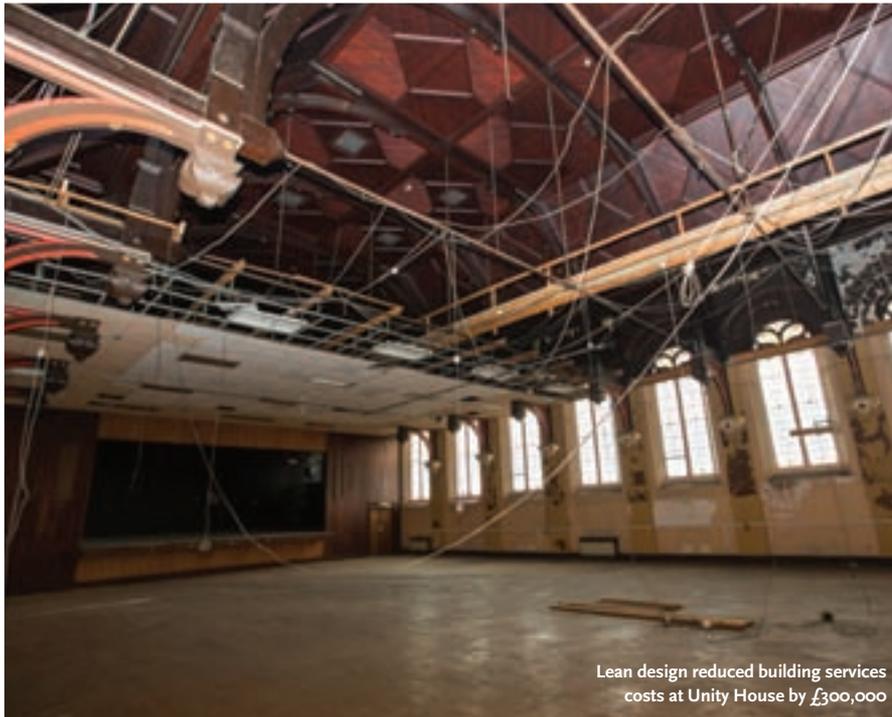
In association with:



Sponsored by:



For sponsorship enquiries please contact jim.folley@redactive.co.uk or 020 7324 2786



Lean design reduced building services costs at Unity House by £300,000



Trimming THE FAT

Leeds consultant LEDA uses the principles of lean construction to minimise materials and resources on its projects. **Matthew Hall** explains how the approach cut services costs by a third on one refurbishment

The principle of lean construction has existed since the 1990s, but it has not really broken into the mainstream. Put simply, it maximises value for the customer while employing fewer resources and minimising waste.

John Egan took up the baton for the principle in his seminal 1998 report *Rethinking Construction*, in which he advocated lean thinking as a means of 'sustaining performance improvement.'

LEDA developed an approach to 'lean design' at around the same time as 'lean construction' got its first airing. We see it as a way of avoiding excess, but not at the cost of under-performance.

One of the oft-repeated waste-reduction methods Toyota used was: 'Making only

what is needed, when it is needed, and in the amount needed.' Translating this into a design principle meant, for us, forsaking the traditional 'belt and braces' approach to services design for a more holistic strategy.

Elements of lean thinking tie in with the concept of resource efficiency, covered in CIBSE's recently published TM56. It considers the impact of services engineering on the environment throughout the lifetime of a building. Both concepts share the philosophy of using only what you need.

LEDA collaborates with the rest of the design team to create buildings that provide good natural ventilation, daylighting, and comfortable internal climate, with the minimum input from mechanical and electrical services. After nearly two decades of providing advice on creating low-energy buildings – we are still surprised by the lack of understanding of lean thinking.

LEDA has established lean design – the principle of not oversizing electricity, gas, and water supplies to buildings, and avoiding the waste and inefficiency of oversizing pipework pumps, ductwork and associated items – by using standards from other countries and the knowledge of specialists in particular fields.

While organisations such as CIBSE provide a wealth of design criteria for engineers, some criteria can leave wide margins for interpretation. Examples are diversity



The Heart arts and enterprise centre was originally a Victorian school

allowances when calculating maximum electrical demand in a building; simultaneous use of water outlets – hot or cold; and ventilation rates for intermittently used spaces.

The design criteria for community and district heating systems is a good example of when assumptions about diversity play a role in the design. We have adhered to Danish Standard DS439:2009 for housing schemes when using interface units with hot-water heat-exchangers for 15 years without problems, but have had this approach rejected by consultants because it has a ‘DS’ rather than ‘BS’ prefix.

Although a diversity factor of 0.15 for simultaneous hot-water demand from a block of 50 flats may seem low, experience shows it works well in practice. Conversely, the use of conservative diversity factors will lead to lower system efficiencies – because of larger pipework and boilers – as well as higher costs.

We are developing our ideas about lean design and how best to put it into practice, and are finding many interested contractors – which is important in a world where contractor design is increasingly dominant.

LEDA is carrying out feasibility studies on several district heating schemes for existing dwellings, and views this as an ideal area in which to use lean design principles. 

MATTHEW HALL CEng MCIBSE is a consulting engineer and company director at LEDA



Heart, Headingly, Leeds

Heart is a community-owned and run arts and enterprise centre. The client’s brief was to transform a disused Victorian primary school into a welcoming space in the most environmentally sustainable way.

The building had to be refurbished to a very tight budget without compromising functionality. Our design incorporated the use of a single boiler because – although multiple-boiler installation is standard for commercial buildings – it is only one of many plantroom items likely to fail, and we don’t use two BMS

panels or two pressurisation units, for example. We also reused a relatively new fire alarm and distribution boards.

An effective, passive ventilation strategy for the open-plan offices was agreed with the architect, and cost no more than adding north-facing, opening skylights, which eliminated the need for air conditioning.

Grant funding was obtained for photovoltaic panel and solar hot-water installations. Ongoing monitoring of the building shows good internal climate and below-benchmark energy use.



Unity House, Wakefield

Unity House is a Grade 2 listed building in Wakefield, built in 1867 as the Co-operative headquarters. It has been derelict for 10 years, but Unity House (Wakefield) Limited has been campaigning to restore the building since 2011, and has attracted funds from various sources.

The refurbishment project provides for a multi-use, 600-seater hall, catering kitchen, offices, exhibition and meeting spaces. This was initially tendered as a design-and-build project in mid-2013, and came in 50% over budget, with a best tender return of more than £900,000 for building services installations.

LEDA was appointed to prepare re-tender documents to bring in the mechanical and electrical services costs to less than £600,000, while still achieving a BREEAM ‘very good’ rating. The redesign included:

- **Heating and hot water:** The original performance specification called for four boilers, two hot-water cylinders, and a standard hot-water secondary circulation system. This was changed to a twin-boiler installation with direct compensation for heating and point-of-use water heaters, which replaced the central hot-water plant and distribution pipework
- **Cold Water:** A check on local mains water pressure showed that the cold-water booster set and tank in the original specification was not really required

■ **Ventilation:** The main hall has the remains of a patented Victorian natural ventilation system, including original ductwork, in the roof void. This is being re-used to create a passive-assisted extract ventilation system, with additional dampers and fan

■ **Electrical supply:** The requirements were pared down to the absolute essentials – with low-energy catering equipment, lighting, fans and pumps – and the overall energy requirements for the building were reduced. This, plus some sensible diversity calculations, has reduced the electricity connection costs by 90% – by avoiding the cost of a substation – and is expected to reduce the contractor’s builders work requirement by a similar margin

■ **Lighting:** Clear specification of carefully selected quality lighting and lighting control – with detailed design and quantities on the drawings – has halved the installed cost of the lighting, while retaining quality and energy efficiency.

More than one re-tender quotation for M&E came back at less than £600,000, and the refurbishment is now well under way. Because our performance specification laid down clear guidance on items such as lighting layouts and boiler capacity – and provided a coherent design strategy – the risks associated with pricing the job before detailed design were reduced.



FIVE THINGS TO CONSIDER WHEN USING LEAN DESIGN

- Explain the concept to the client, and say how lean design can benefit them
- Work with the design team at an early stage
- Look at *all* possible servicing options
- Always review the design factors used in calculations
- Avoid unnecessary overcapacity – break away from the ‘belt and braces’ mentality

WE BRING BETTER AIR TO LIFE

by Fläkt Woods

At Fläkt Woods we pride ourselves on our strong values of quality, sustainability and customer satisfaction. By developing and evolving for our customers' needs we provide the perfect solution. Encompassing our Air Comfort and Fire Safety philosophy, Fläkt Woods brings a fresh approach to all your ventilation requirements.

» www.flaktwoods.co.uk

#afreshapproach



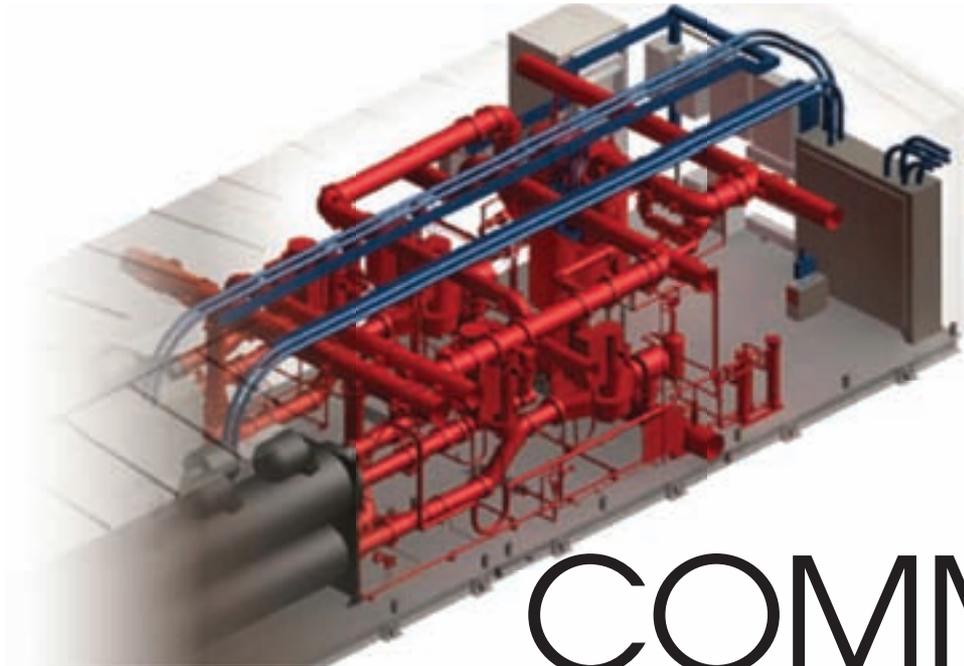
Air Comfort



Fire Safety



This month: Using intelligent controls in chilled water systems to make big energy savings; and how John Lewis used modelling to reduce energy use of the chiller by 25% in a York store



COMMAND AND CONQUER

Optimising chilled water systems with intelligent controls can result in energy reductions of up to 45%, according to Armstrong's **Andrew Harrop**

6 PID control does not have the flexibility to continuously adapt to varying loads in HVAC applications. It is an analogue-era technology trying to cope in a digital age

Recent advances in chilled water systems offer significant potential to improve energy efficiency during a building's operation.

The latest BMS technology provides sophisticated data collection and display, and makes it possible to manipulate this data to create statistical reports on efficiency.

Alongside this, there have been significant developments in equipment for variable speed operation, enabling engineers to make the crucial step from capacity-based to demand-based operation.

Importantly, however, they do not – in themselves – ensure that these opportunities for efficiency are maximised on a day-to-day basis, across the differing climactic conditions and changing patterns of occupancy in the building.

This article assumes the presence of BMS technology and all-variable speed equipment in an application. It examines how these can be harnessed to optimise system performance and drive maximum return on capital investment through improved

control strategies. First, it is important to consider the shortcomings of conventional approaches to chilled water system design.

The majority of chiller plants use technology based on independent control loops with proportional-integral-derivative (PID) feedback control. PID feedback loops are able to control a single device effectively, regulating a single variable – such as pressure or temperature – that is on a single control loop. Any process changing conditions would be too complex for PID control, however. As part of a network communicating and controlling a number of varying devices, it does not have the flexibility to continuously adapt to varying loads that are encountered in HVAC applications.

It is an analogue-era technology trying to cope in a digital age. The resulting annual average system coefficient of performance (COP – between 3.2 and 2.2) is insufficient to meet today's carbon-reduction targets. These shortcomings in control strategy explain why so many chilled water systems

are under-performing – even those that have been installed over the past few years, incorporating sophisticated BMS and variable speed capability.

A solution is to use digital relational control technology – for example, the Hartman Loop (see box out) – which is capable of treating the system ‘holistically’, rather than as individual sub-systems. This provides a number of benefits.

Natural curve sequencing

It is widely understood that when a variable frequency drive (VFD) is added to a compressor, pump or fan, the energy-saving potential is significant because power is proportional to rotary speed cubed. For these devices to operate at their highest efficiencies, they need to maintain this relationship – between flow and pressure – for all load conditions, and must be free to operate along their ideal curve.

In most chilled water systems, however, a fixed or minimum differential pressure is maintained across the pump supply and return headers, so that the pump operates along its fixed differential pressure (DP) curve rather than its natural curve. As a result, the pump requires much more power to maintain the differential-pressure set point, and will not be free to operate along its natural curve or ‘sweet point’. In contrast, a natural curve sequencing approach will sequence variable speed chillers to operate along their natural curve for all load conditions. See Figure 1.

Equal marginal performance principle

Relational control methodologies can also calculate the best power relationship between the chiller, condenser pump and tower fan. This achieves optimal power relationships across each system, with equipment loading in one device traded off to pick up more load on another, thereby achieving the same net ‘tonnage’ for a lower kW input (potentially a COP of greater than 7.0 compared to previous averages of between 3.2 and 2.2).

It replaces conventional, inefficient, capacity-based sequencing, whereby devices are run at full speeds before the next one is sequenced, on or off, to match varying demand. Instead, components are sequenced to operate at their peak efficiency during part-load operation, along their natural curves.

This may result in a greater number of devices being operated at lower speeds to take advantage of the affinity laws. This

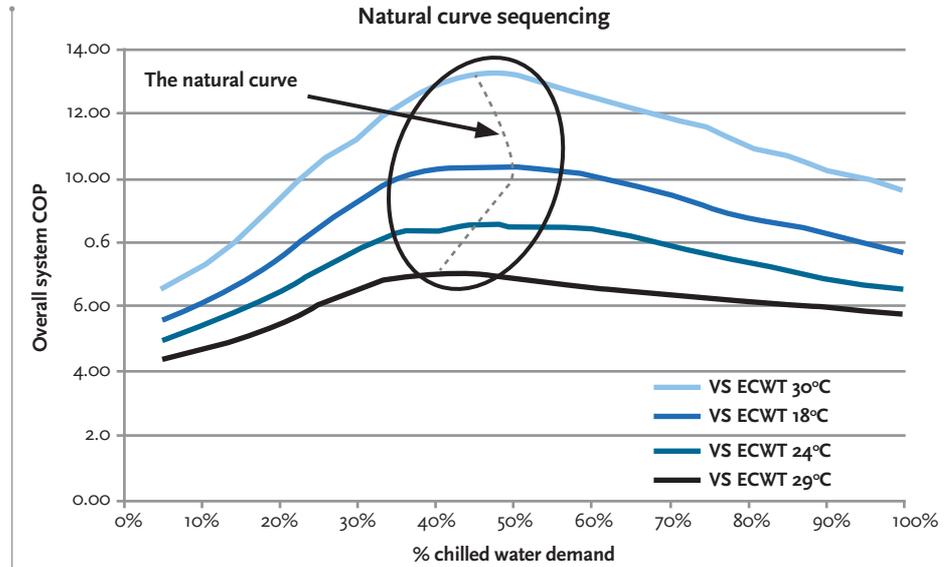


Figure 1

slowing – rather than shedding – of towers at low loads improves performance in that the approach of cooling towers, at lower bulb temperatures, rises because of the reduced moisture capacity of cooler air.

When fans and pumps are slowed at lower loads, greater air and water volumes pass over larger surface areas per unit of energy expended. This improves part-load approach temperatures, and provides the opportunity to operate the chillers more efficiently.

New builds and retrofit

When installing new chilled water systems, a solution is to specify, from the outset, an off-site manufactured, fully integrated chilled water plant package – such as that shown in the image on page 37 – which incorporates relational control technology.

What is the Hartman Loop?

The Hartman Loop is a patented, advanced control methodology for all-variable speed chiller plants.

It is, in effect, an operating system that produces large energy and cost savings by optimising – as an entire system – the operation of chillers, cooling towers, and pumps, in response to the requirements of the load served by the plant.

Improving the efficiency of chiller plant is usually seen as a matter of tweaking the peak efficiency of individual components of the system. But, with the Hartman Loop, chilled water plant is viewed as an integrated system – and the load to be served by this system is kept to the fore when it is designed.

A custom control system for the equipment configuration – including remote sensors that ‘speak’ to the entire system – is created to ensure the load is met most efficiently at all times. In other words, that it only gives what is required.

Chiller plants that provide comfort cooling mostly operate at low loads, so the Hartman Loop’s improved use of variable-speed technologies is said to result in annual energy savings – for all-variable speed plants – of between 25% and 45%.

The network-based system also allows plant size to be smaller by 20% or more, while retaining the same capacity and redundancy capabilities as larger, conventional plants.

A NEW CONCEPT OF EFFICIENCY

How is it possible to combine internal comfort, efficiency, reliability and accelerated ROI? The answer is a new concept of efficiency that takes the name of i-FX (1+i): the chiller with a screw inverter compressor that shows EER and ESEER values never achieved before, both at full and partial loads. The result is a Class A efficiency unit, with an ESEER of 4,8 and a IPLV of 5,4.

This solution, the first of its kind available on the market, presents the combination of a screw compressor with fixed speed, with a screw compressor that is inverter driven. Both compressors have been specifically designed with Climaveneta's requirements and for the exclusive use of the company.

Featuring advanced logic that enhances the working operation, they always work together synergistically ensuring the highest efficiency and overcoming the limitations traditionally imposed by the full inverter system on full loads and the fixed speed screw compressors on partial loads. The result is a unit continuously working at the highest efficiency, in every load condition and in all seasons, ensuring a reduction of the energy expenses by 21% and a reduction of CO₂ emissions by up to 15% compared to other class A chillers.

But sustainability is more than this. Not only does it involve offering high-performance and low consumption units, but it also implies that technology and innovation must be affordable through a quick return on the investment. The incomparable efficiency of i-FX (1+i) in all operating

conditions turns the initial investment into a 2-year payback, making this cutting-edge technology the best choice in economical terms.

Now available from 566 to 1273 kW, also in silent version, all the units are Eurovent certified and meet the most challenging environmental standards established by the LEED protocol and further major green certifications schemes.

(1+i) represents the best solution following a sustainable approach that ensures great energy savings and a quick return on investment. Few other solutions are able to combine such an innovative approach to heating and cooling with vast experience displayed by the great number of projects signed by the most important European HVAC designers.

The (1+i) technology is now also adopted on water cooled chillers, creating the new i-FX-W (1+i) range for indoor installation. The new range is available with a cooling capacity from

610 to 1637 kW, in Eurovent class A, with an ESEER of 8.3. Highest energy efficiency both at full and partial loads. The latest i-FX-W (1+i) units represent the perfect solution for those applications where flexibility, efficiency and minimum environmental impact are the main project requirements. FX-W (1+i) features an efficiency level that is much higher than a traditional class A chiller. The EER increased efficiency at full load is around 13%, while the advantages in terms of seasonal efficiency (ESEER) are around 36%.

As a result the water cooled chiller, thanks to the innovative 1+i technology, is the ideal solution for applications with different needs of both comfort and process cooling type.

For more information go to
www.climaveneta.com

 **CLIMAVENETA**



i-FX (1+i)



FX-W (1+i) unit

Savings achieved with relational control solution

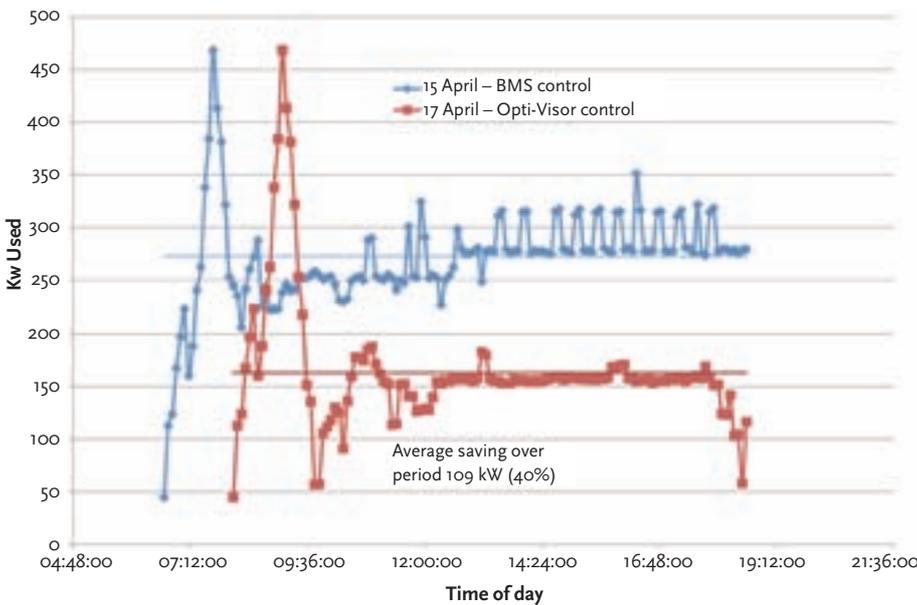


Figure 2

Alternatively, a chilled water, integrated plant-control system can be assimilated into the design. It is also possible for optimisation of chilled water systems to be undertaken on a retrofit basis. These can add relational control solutions, and a 'bolt-on' optimisation level for all-variable speed systems.

Designed to interface with the existing building automation system, the controller holistically manages the key energy-using components of the chiller plant.

Technology of this type is ideal for retrofit in buildings with chiller plant that is less than five years old, with more than 3m ton-hours of operation per year (1,000 tons at 3,000 run-hours per year).

Each solution can automatically and continuously optimise the chilled water system, closing the gap between theoretical and actual energy savings. **CJ**



A relational control solution such as the Opti-Visor can communicate optimum operating parameters to the BMS

ANDREW HARROP is building performance technical manager at Armstrong Fluid Technology



MAKING A CASE

A retrofit relational control solution (Armstrong Opti-Visor), installed in a central government building in London, achieved an immediate 42% reduction in energy usage from existing plant. (See Figure 2) It is expected to deliver a 5% reduction in total-building carbon emissions, and a reduction in running costs of £32,500 per year.

The site had been extensively refurbished to bring together civil servants from two offices into a single, reconfigured building. The cooling load was split during the refurbishment because of the segregation of the datacentre cooling requirement. The installed capacity of the plant remained the same, however, making it extremely inefficient because of the now 'oversized' equipment. An investment of around £200,000 in variable speed drives was made to improve performance, but the energy efficiency of the site – as measured for its Display Energy Certificate (DEC) rating – was still lower than anticipated.

To improve efficiency, an Armstrong Opti-Visor was integrated with the site's BMS. Its control panel links to the BMS, enabling it to receive data on plant and to determine the optimal plant-operating conditions – quantity of equipment to sequence, speed of pumps and fans – using Hartman Loop control methodology. Opti-Visor determines the plant's optimum operating parameters, and communicates this to the BMS for its plant-automation module to implement.

Controlled 'holistically' – rather than as three independent loops – the system benefits from faster response, better stability, VFDs on the circulating water pump, optimisation of thermodynamic effects at the equipment level, and lower risk of equipment failure through cycling stress. The Opti-Visor provides more analysis and tuning of the plant's operations, monitors and adjusts component operation to achieve peak efficiency, and adjusts for changes as components age.



Get more from Munters

Munters are experts in creating the ideal climate; whilst lowering energy consumption and environmental impact.

Munters specialise in:

- Food processing & packaging
- **Recreational facilities: Ice Rinks, Swimming Pools, Sports Halls**
- Data Centres
- CIBSE accredited CPD seminars

www.munters.co.uk/cibse

08708 505 202

dryair@munters.co.uk



Young Engineers Award 2014



The Challenge

In peri-urban areas of developing cities, the use of decentralised wastewater treatment systems, such as baffled reactors and small-bore sewers, can be threatened by flooding, occurring increasingly frequently due to climate change. Can you find ways to adapt such systems for flood-prone areas?

Submissions

Demonstrate your idea on one A1 poster. Please refer to the SoPHE website

Entrants

Teams of up to 3 people aged 18-35

The Award

An in-country trip to verify the applicability of the design

in association with



www.cibse.org/sophe



design efficiency

your comfort. our world.

360° efficiency

Our new VRV IV heat recovery system sets pioneering standards in all-round climate control efficiency.

Total design simplicity, rapid installation, full post-commissioning flexibility. All with Variable Refrigerant Temperature control for absolute operational efficiency.

Maximum comfort can now be delivered with all-round maximum efficiency: 360° efficiency.

Efficiency redefined.

daikin.co.uk/vrviv

installation efficiency

operational efficiency

VRV IV

+

HEAT
recovery

FAST
design

+

QUICK
installation

+

MORE
free heat

+

MAX
comfort



Say goodbye to flanging, threading, pipe grooving and welding with:



Axilock-S

Join plain end pipe with Teekay Axilock-S
Seals and locks the pipes together
Two Pipes... Two Screws... Two Minutes

tel: +44 (0)1494 679500

www.teekaycouplings.com

Vibration Isolation

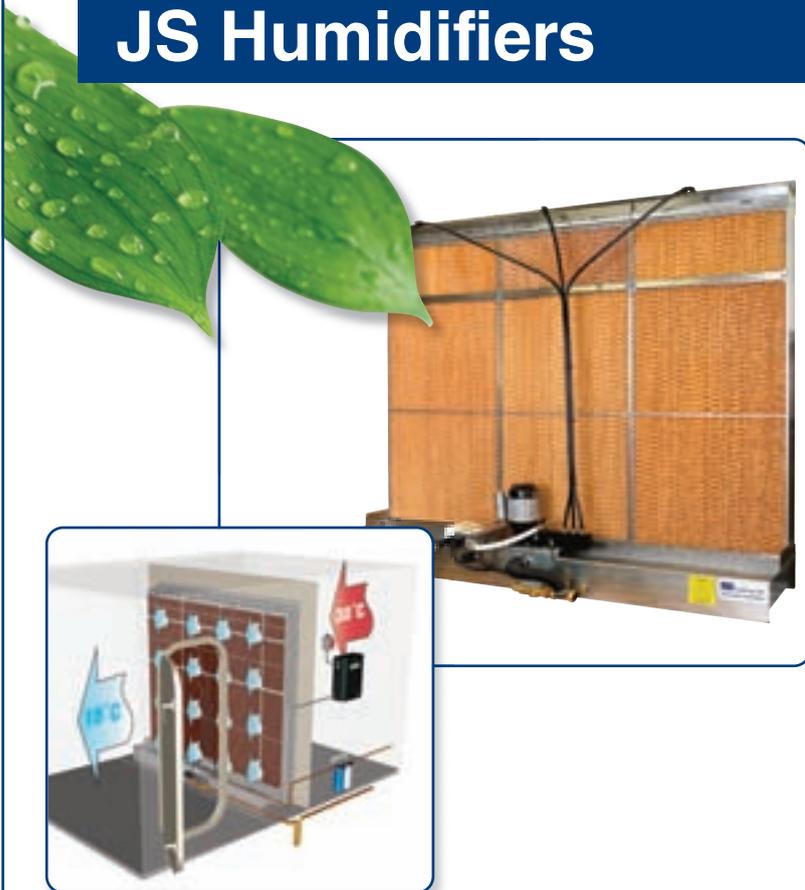
Goodwood House, 86 Holmehorpe Avenue,
Redhill, Surrey, RH12NL

Neoprene Turret Mounts	Inertia Bases
Neoprene Hangers	Noise & Vibration
Spring Mounts	Surveys
Spring Hangers	Ex Stock Delivery
Flexible Connectors	Selection Service
Floating Floors	Special Design Service

Eurovib Acoustics Products Ltd

Telephone (01737) 779577
Fax (01737) 779537
sales@eurovib.co.uk
www.eurovib.co.uk

JS Humidifiers



HumEvap MC3 Humidifier & Evaporative Cooler

- Very low energy consumption
- Very hygienic design
- Instant evaporation
- Minimal maintenance



T: +44 (0)1903 850200
E: sales@jshumidifiers.com
W: www.jshumidifiers.com

CLOSING THE PREDICTION GAP

The chiller at a new John Lewis in York uses 25% less energy than those at other branches, thanks to accurate predictions of the store's cooling needs, says **Alex Smith**



Data from the John Lewis store is being fed back into the design model using IES-Scan

Using dynamic simulation modelling to accurately predict performance has enabled the building services designer to cut energy use

significantly at a new John Lewis store in York.

Detailed modelling of the store – which is situated in the Vangarde Shopping Park – has helped to cut carbon emissions by 30%. Key to these CO₂ savings was the chiller, which requires 25% less energy than those used in equivalent stores. It was specified by Lateral Technologies, which used IES modelling tools to predict the building's performance.

Paul Paterson, sustainability design manager, says the IES Apache HVAC tool gives Lateral a good prediction of a building's energy requirements, because it integrates building controls into the design model. 'Most designers can't model with actual building controls, so end up having bigger chillers than they need, which cost more to run at lower loads,' he says. 'The sizing of large central chillers tended to be based on 'steady state calculations', where the impact of controls had not been taken into account.'

Using the software, Lateral calculated that the store would require a 550kW chiller, but only for nine hours – or 0.1% – of the year. The designers modelled the store's thermal conditions with a 450kW chiller, and



Lateral calculated that a 450kW chiller was sufficient

discovered it was possible to downsize without affecting the comfort of customers and staff.

'The impact of allowing the internal temperature to drift very slightly upwards at those times – in the peak of summer – made next to no difference to comfort levels, allowing us to justify putting in a 450kW chiller, requiring 25% less energy than those used in other stores.' Paterson's team took into account that customers are likely to wear lightweight clothes on warmer days, making it possible to allow internal temperatures to edge towards 26°C at their summer peak.

While the Apache software allowed Lateral to improve energy forecasting and close the prediction gap, the use of another IES tool is helping to close gaps in performance. IES-Scan allows Paterson to import actual building data into the model, enabling the team to identify any issues with the systems, and to adjust the equipment accordingly.

'Instead of waiting months for a higher-than-expected energy bill to flag up a problem, we wanted to find a way of continually analysing the building to identify any problem areas from day one,' says Paterson.

This is the first time John Lewis has used IES-Scan to enable a soft landing, adds Paterson. 'Everything is metered – from the HVAC and escalators to the catering equipment – and it's fed back into the model.'

By constantly refining the design model, Lateral can better predict the design needs for future John Lewis stores, so they can ensure equipment is not oversized – which means lower capital costs and minimal material use. 'We can make savings because we know what the demands are – we will be able to reduce central plant and pipe sizes,' says Paterson.

IES-Scan also includes data profiles for occupancy, which could be plugged into future stores. 'Measuring occupancy is useful for hot water,' says Paterson, 'as it means you can predict how much storage you need.'

Mark Gifford, consultancy development manager at IES, believes the use of tools such as IES-Scan will become commonplace as more contracts demand performance guarantees. 'It's all about visibility. A contractor might guarantee it will make you savings, so you need to find out whether their energy saving device is delivering.'

For a property owner such as John Lewis, being able to model its buildings accurately offers significant benefits, which are already being seen by the amount of CO₂ saved at the York store. After setting out to achieve a carbon reduction of 30% – compared to the 2010/11 baseline – the shop is expected to deliver an impressive 35-40% reduction. **CJ**

FRENGER[®] Accredited CPD Provider by CIBSE for Chilled Beam Technology

Did you know **FRENGER** have all the necessary testing laboratories under one roof at their UK Technical Facility to underpin their **Multiservice Chilled Beam** design, supply and manufacture (3 x Climatic Test Labs, 2 x Photometric Labs, 1 x Acoustic Sound Lab and Thermal Imaging), and provided the following projects...



55 Baker Street

"The World's Largest Multiservice Chilled Beam Project"
Consisting of in excess of 4,500 Active MSCB's operating with 1.2 ltr/sec/m² fresh air supply and providing up to 127 W/m² cooling.



40-54 Grosvenor Hill

"Radiant" Passive MSCB's operating with ground source heat pumps to provide sustainable and renewable cooling which achieved **BREAM "Excellent"** and won the BCO award for London and the South East.



Anglia Ruskin University

"Radiant" Passive MSCBs reduce energy consumption by upto 7% when compared to convective only passive MSCBs.



65 Southwark Street

The shallowest depth **"Active"** MSCBs on the market (only 133mm Deep) and LED continuous lighting options.

FRENGER[®]

systems



www.frenger.co.uk sales@frenger.co.uk



Frenger[®] Systems is an FTF Group[®] Company

Professional development



The CIBSE Journal CPD Programme

Members of the Chartered Institution of Building Services Engineers (CIBSE) and other professional bodies are required to maintain their professional competence throughout their careers.

Continuing professional development (CPD) means the systematic maintenance, improvement and broadening of your knowledge and skills, and is therefore a long-term commitment to enhancing your competence. CPD is a requirement of both CIBSE and the Register of the Engineering Council (UK).

CIBSE Journal is pleased to offer this module in its CPD programme. The programme is free and can be used by any reader. This module will help you to meet CIBSE's requirement for CPD. It will equally assist members of other institutions, who should record CPD activities in accordance with their institution's guidance.

Simply study the module and complete the questionnaire on the final page, following the instructions for its submission. Modules will be available online at www.cibsejournal.com/cpd while the information they contain remains current.

You can also complete the questionnaire online, and receive your results by return email.

Applying chilled beams to reduce building total carbon footprint

This module considers designs and applications of chilled beams for energy and carbon reduction

Chilled beams deliver cooling to rooms primarily by using cool water in coils that exchange heat with room air, so reducing the air dry-bulb temperature. The principal advantage of using a chilled beam – as opposed to an 'all air' air system – is that moving heat around a building can be undertaken far more efficiently by pumping cool water in pipes than by moving the same amount of heat in ducted air. This is, of course, the advantage of any distributed hydronic 'terminal unit' system, including fan coils, induction units, convectors and radiators. The simplicity of the premise that underpins the fundamental advantage of such systems potentially obfuscates other – for the most part – equally simple design and operational characteristics that can provide significant life-cycle energy and carbon savings. This CPD will explore some of these designs and applications for chilled beams.

A brief outline of chilled beam technology

Chilled beams are mounted at high level in the conditioned space (principally in commercial buildings), and can be fully encased and suspended from the soffit or integrated into a false ceiling. Known as 'passive' or 'active', both types have coils that carry cool (or chilled) water that exchanges sensible heat with warm room air, as the air passes across and between the cooler coils (and their extended surfaces).

In all cases, the temperature of the surfaces of the beam must not fall below the dew-point temperature of the surrounding air, otherwise condensation is likely – any dehumidification (or latent cooling) must be undertaken with an associated air supply system.

Passive chilled beams (Figure 1) rely on natural convection currents in the room, driven by denser cool air being drawn downwards by gravity, so displacing the less dense warmer air to a high level, where it meets the cool coils of the chilled beam.

Active chilled beams (Figure 2) are supplied with ducted 'primary' air from a centralised

system that will often be used to meet the 'fresh' air requirement in the space. This air will also provide any dehumidification required for the conditioned space by having a supply air moisture content set at a level to offset the latent loads in the space. To prevent condensation, the resulting room air dew-point temperature must be lower than the temperature of the surfaces of the chilled beam.

The primary air is supplied through nozzles directed towards the outlet of the beam casing that induce room air up from the room (possibly via a ceiling void) and through the cool coils, to be entrained into the stream of



Multi-service chilled beams

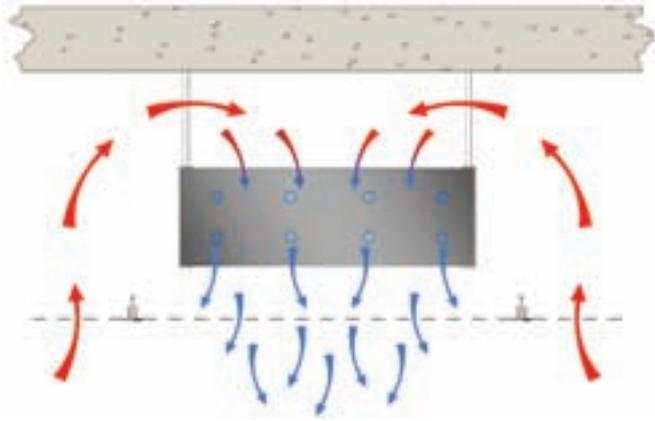


Figure 1: Simplified passive chilled beam mounted above perforated ceiling'

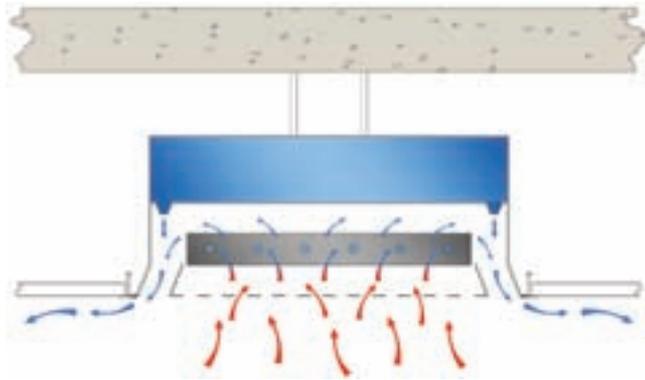


Figure 2: Simplified example of two-way active chilled beam'

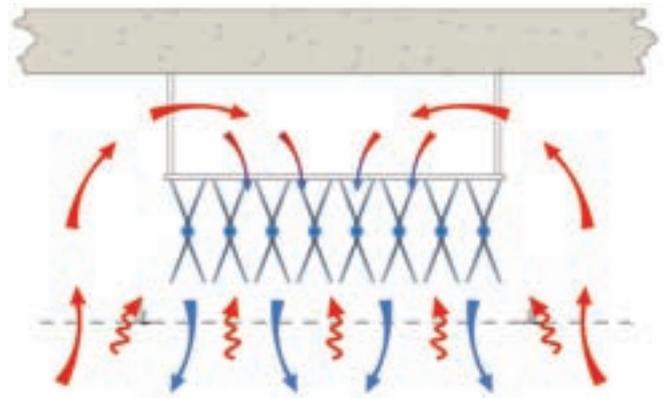


Figure 3: Hybrid passive beam incorporating significant radiant output'

fast moving supply air. The induction acts to increase significantly the velocity of the room air (as well as its volume flow rate) passing across the coils, so improving the heat transfer to the room air. The diffusion is enhanced by employing the Coanda effect to move the air across the room, so ensuring reasonable throws. The recommended supply air volumes for cooling can be up to $23 \text{ L} \cdot \text{s}^{-1}$ for each active metre for two-way throw beams ($11.5 \text{ L} \cdot \text{s}^{-1} \cdot \text{m}^{-1}$ for one-way throws).¹

Active 'chilled' beams may also be used as heating sources when supplied with low temperature hot water (water temperature less than 50°C , to moderate air stratification) in place of cool water, and utilising warm primary air.

Multi-service chilled beams (MSCBs) integrate other services into the chilled beam casing – such as ducts, lighting, cabling, audio equipment and sensors. As shown in the photograph on the previous page, they can provide an alternative to using additional trunking, or possibly alleviate the need for a ceiling service void, and may be fitted directly to the soffit, typically to provide complete lighting and ventilation supply.

There are hybrid systems (Figure 3) that also incorporate a room-facing cooled surface to provide radiant heat exchange to the room, in addition to the conducted heat exchange to the air passing through the coils and across the extended surfaces.

The performance of a particular chilled

beam will be determined by the coil-to-air heat transfer; the free area for room air flow; the temperature and flow rate of the coil water; and, in the case of an active unit, the quality, volume flow and induction capability of the primary air supply, and the resulting throw/diffusion of the air. The radiation characteristics and exposure of the hybrid beams will determine the radiant heat transfer. The amount of air supplied into the space – whether through an active beam or via a separate system – will provide the fresh air requirement, as well as latent cooling, and may well supplement the sensible cooling provided by the chilled beam.

To deliver best operational energy performance, a fundamental rule when designing chilled beam cooling systems is to ensure that the beams deliver the majority of the cooling via the water circuit. The primary air flowrate is determined to meet the air quality requirements, as well as cope with the space latent gains. Optimising the primary air requirements will improve energy efficiency while ensuring indoor thermal comfort. Performance of hybrid radiant beams will depend on the radiant 'view factor' to the surfaces and occupants.

Dedicated chillers and free-cooling circuits

Since chilled beams only provide sensible cooling, any latent cooling is supplied through the primary air. To maintain a reasonable room

dew-point temperature – and so percentage saturation – the cooling coil in the central air conditioning plant (supplying the primary air) will need to be at a temperature somewhat lower than that of the coils in the chilled beams. Historically, it has been common for the system to be designed with the same chiller providing chilled water to the air handling unit (for fresh air supply dehumidification) and, using a mixing circuit, to maintain a higher supply water temperature – typically 14°C to 18°C – to the chilled beam circuit.

If these two systems are partially or completely separated, there are opportunities to produce higher temperature chilled water for the chilled beams. Using a dedicated chiller for the chilled beams will improve its operating coefficient of performance (COP), as the evaporator temperature will rise. By using separated cooling circuits, there may also be opportunities to use 'free cooling' during mid-season and colder seasons by simply circulating the chilled beam water through external coils, or employing evaporative cooling on that external circuit to bring the chilled beam water supply temperature down to approach the external wet-bulb temperature.

Weather-compensated chilled beams

Modern chilled beams can provide higher cooling levels compared with earlier models, so it is possible – and beneficial in energy terms – to increase the summer design chilled water flow temperature while still maintaining cooling capacity. Results from a recent modelling exercise², based on four office building types located both in London and Birmingham (Figure 4), indicated that there was significant reduction in annual energy costs by allowing the flow water temperature to rise while still maintaining internal design conditions.

By using weather compensation control, the chilled water flow temperature can be set based partly on the outdoor conditions. This will allow the temperature to rise (above that required at

peak design) for the majority of its operational life. This will, of course, lead to higher refrigeration system COPs and additional opportunities for free cooling.

Raising the acceptable room dry-bulb temperature by lowering the radiant temperature

There may be energy savings if hybrid radiant chilled beams systems are used. These can provide 40% radiant cooling (60% convective) that will affect the mode of heat transfer to the room air, surfaces (and occupants), and so alter the constituent components of the environmental and operative (comfort) temperatures.

In a typical commercial office, the operative temperature = 0.5 x (dry-bulb air temperature + mean radiant temperature). So, by providing a low temperature surface, the hybrid chilled beam will reduce the room mean radiant temperature, so allowing an increase in room air dry-bulb temperature while maintaining constant operative temperature. This will allow the supply air temperature to rise – with a consequent potential improvement in COP – and will affect the balance of cooling loads in the space. The actual effect on the overall room-cooling load will be dependent on the particular room design and ventilation rate.

Maximising usable building volume by applying multiservice chilled beams

Since MSCBs can be used directly on the structural soffit, they can negate the need for a dedicated ceiling void. Traditional construction would typically employ a floor-to-floor height of 3.7m. This allows for a 300mm deep floor

slab, 100mm floor void and a 500mm deep ceiling void for services, while maintaining a minimum 2.8m floor-to-ceiling height. Taking a very simplistic example, a 40-storey building would have a height of 148m, whereas with MSCBs, a proportion of the space allowed for the 500mm ceiling void could be removed. At the extreme case, this could reduce the overall building height by 20m or allow an extra six floors within the same overall construction height. This would significantly reduce the relative carbon impact of the building.

Accessing ‘thermal mass’ with hybrid radiant beams

If a hybrid radiant beam system is installed with access to exposed thermal mass – such as

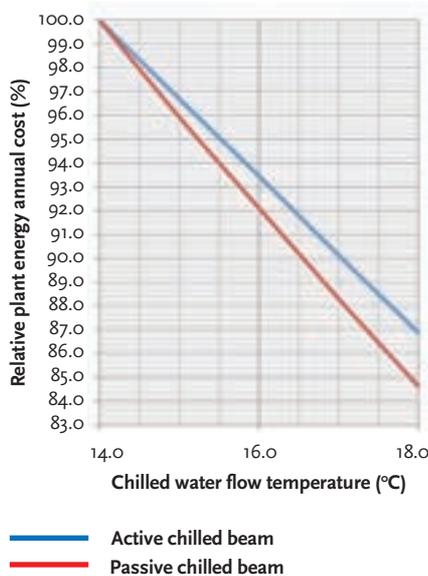


Figure 4: The effect of flow water temperature on total energy consumption of a modelled chilled beam installation for a constant load

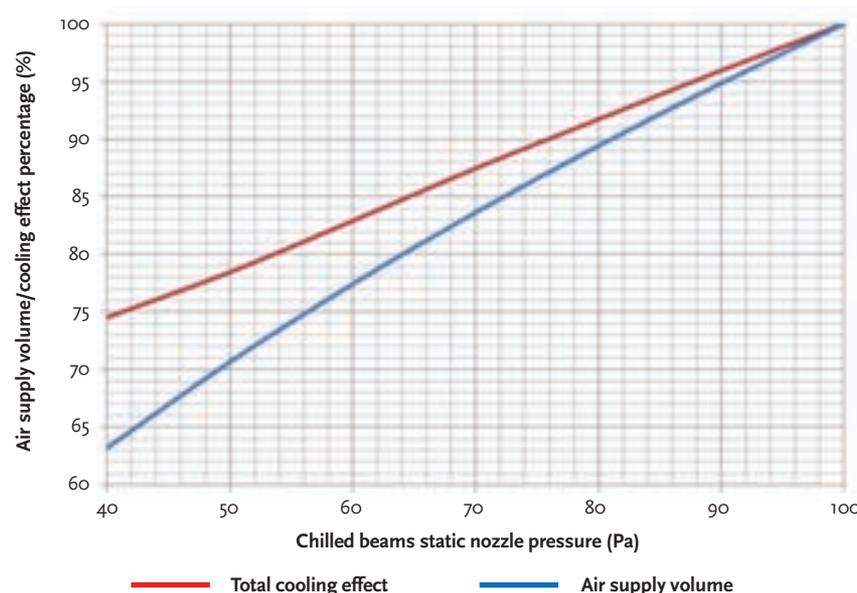


Figure 5: Relationship between the primary air static nozzle pressure to air supply volume (%) and total (airside + waterside) cooling effect (%), based on constant chilled water mass flow rate

a concrete soffit – the structure can be cooled, particularly at times of reduced room cooling load, while, at times of peak cooling demand, the thermal structure can contribute to cooling the occupied space.

The beam manufacturers report that – based on completed and occupied buildings, monitored by clients – coupling thermal mass with hybrid radiant passive beams can reduce the peak cooling load by between 20 and 30 W · m². This can reduce installed plant sizes, as well as shifting energy use to off-peak lower carbon electricity consumption by the chillers.

Demand-controlled ventilation

It is possible to utilise demand-controlled ventilation (DCV), where the primary air supply to the beam is reduced, if areas are unoccupied or occupancy density is lower than the design condition. This can be controlled using either passive infrared (PIR) sensors to determine whether the space is occupied, or CO₂ sensors to enable reduced air supply during periods of partial occupation. The control system can modulate the supply air volume by actuating motorised dampers in each main duct supply to the separate control zones, reducing the pressure on the inlet to a bank of chilled beams’ air supply nozzles, and modulating the supplied air volume flowrate and cooling capacity, as shown in Figure 5.

For occupied reduced air volume conditions, it is important that the active beam is correctly selected to ensure both adequate fresh air supply and proper air distribution in the room. Recent improvements in chilled beam induction technology make it possible to reduce the supply air volume to approximately 60% of the normal design condition and still maintain appropriate diffusion. This is achieved without any need for moving parts or motorised dampers directly on the chilled beams, with a correctly designed DCV chilled beam system only requiring a single duct-mounted control damper to service a zone of multiple chilled beams.

Properly considering both the application of chilled-beam technology and options that extend the ‘normal’ can provide significant lifetime carbon savings, but it is important that the design and operation are considered along with that of the whole building and its systems.

© Tim Dwyer, 2014.

References:

- 1 CBCA Design Guide – An Introduction to Chilled Beams, Chilled beam and ceiling association, HEVAC, 2012.
- 2 Gaskell, A.J. CBCA Technical Fact Sheet 2, EDSL TAS Energy Study Findings, CBSA June 2013.

Turn over page to complete module ➔

Module 65

June 2014



1. What is the provision that stops condensation forming on the surfaces of a chilled beam?

- A High flow rate of air passing across extended surfaces
- B Maintaining temperature of surfaces of chilled beam higher than room operative temperature
- C Allowing increased fresh air into the ventilation air
- D Ensuring that the temperature of all chilled beam surfaces is above the entering dew-point temperature of air passing across those surfaces
- E Using materials that absorb any condensation on coil and extended surfaces

2. How much supply air is recommended as the maximum per active metre run of beam for a two-way throw beam?

- A 11.5 L·s⁻¹·m⁻¹
- B 14 L·s⁻¹·m⁻¹
- C 18 L·s⁻¹·m⁻¹
- D 23 L·s⁻¹·m⁻¹
- E 50 L·s⁻¹·m⁻¹

3. From the modelling undertaken on the chilled beam performance, what percentage saving in total annual energy consumption is expected if the chilled water is supplied at 18°C rather than 14°C for an active beam?

- A 11%
- B 12%
- C 13%
- D 14%
- E 15%

4. Theoretically, what office dry-bulb air temperature would provide an operative (comfort) temperature of 23°C if the office mean radiant temperature at a particular point was 21.5°C?

- A 20°C
- B 21.5°C
- C 23.0°C
- D 24.5°C
- E 26.0°C

5. By how much can modern active chilled beams reduce the supply air flow while still maintaining appropriate air diffusion?

- A To 60% of design flow rate
- B To 65% of design flow rate
- C To 70% of design flow rate
- D To 75% of design flow rate
- E To 80% of design flow rate

Name (please print)

Job title

Organisation

Address

Postcode

Email

Are you a member of:

CIBSE

If so, please state your membership number

(if available)

Other institution

(please state)

To help us develop future CPD modules, please indicate your primary job activity:

Building services engineer

Mechanical engineer

Electrical engineer

Commissioning engineer

Energy manager

Facilities manager

Other (please give details)

If you do NOT want to receive information about Frenger Systems, the sponsor of this CPD module, please tick here:

By entering your details above, you agree that CIBSE may contact you from time to time with information about CPD and other training or professional development programmes, and about membership of CIBSE if you are not currently a member.

Please go to www.cibsejournal.com/cpd to complete this questionnaire online. You will receive notification by email of successful completion, which can then be used to validate your CPD records in accordance with your institution's guidance.

Alternatively, you can fill in this page and post it to:

N Hurley, CIBSE, 222 Balham High Road, London, SW12 9BS

We have it covered

2 year warranty on all commercial condensing boilers



EVOMAX

30 - 150 kW (30 - 80 kW LPG)

- Aluminium silicon alloy heat exchanger
- Low NOx emissions <40mg/kWh for all natural gas models
- Upto 110% part load efficiency
- High 5:1 turndown ratio
- Comprehensive control interface
- ECA listed



IMAX XTRA

80 - 560 kW

- Aluminium silicon alloy heat exchanger
- Low NOx emissions <40mg/kWh
- Upto 107.5% part load efficiency
- High 5:1 turndown ratio
- Comprehensive control interface
- Compact size - small footprint



EVOMOD

250 - 1000 kW

- Stainless Steel heat exchanger
- Low NOx emissions <40mg/kWh
- Upto 108.5% part load efficiency
- Upto 20:1 turndown ratio
- Comprehensive control interface
- Small footprint
- ECA listed



For more information contact Ideal Commercial Boilers: T: 01482 492251 E: commercial@idealheating.com

Lighting up the King's Road with KNX



The Sloane Stanley Estate, one of the most prestigious landowning estates in Chelsea, owns and manages hundreds of commercial and residential properties. The estate is proactive, and always puts the needs of its tenants and residents first. This has been underlined by a lighting project for a parade of retail outlets at 300-348 King's Road, where KNX lighting-control technology –

developed by KNX Consultants – has been used as the backbone of a highly innovative façade-lighting scheme.

● Call 0845 869 5908 or 01635 521103, email admin@knxuk.org, fax 01635 521098 or visit www.knxuk.org

Static Systems supports designers and installers with guide to BS 5839

A pocket-sized guide – published by Static Systems Group, in conjunction with Apollo Fire Detectors Ltd – is a handy reference booklet for designers and installers of fire-detection systems, explaining the key points in



BS 5839 Part 1:2013. Valuable information on the positioning and mounting of audible alarms, manual call points and detection devices is given in the 20-page guide, which uses simple and clear graphics to illustrate various sections of the standard.

● Call 01902 895551, email sales@staticsystems.co.uk or fax 01902 324969

Hospital project set to break records with Grundfos

A new hospital in Aarhus is set to break a number of records, within and outside of Denmark. The facility – due to be fully operational by 2019 – will treat 100,000 inpatients and 900,000 outpatients annually, making it one of the largest hospitals in northern Europe. With 223,000 m² of new buildings merging with the 157,000 m² of existing hospital, this is a major investment, which promises to deliver a range of leading medical services, and place patient care at its core.

The project is still a long way from completion, but some important decisions have already been made. These include selecting pumps from the Grundfos MAGNA3 circulator family. These innovative, energy-efficient circulators have proved to be very popular since they were launched in 2012.

● Call 01525 850000, email grundfosuk@grundfos.com or visit www.grundfos.co.uk



ABEC wins London school's BEMS contract

Energy and building controls specialist, ABEC, has been employed by Imtech Aqua Building Services – part of



the Imtech group – to install a new Trend building energy management system (BEMS) at the Nightingale Academy, in north London. The project involves the installation of a BEMS for the new buildings on site, while – at the same time – integrating and upgrading the BEMS within the existing school buildings. Based in Edmonton, the Nightingale Academy is part of the London Academies Enterprise Trust, providing learning for students up to sixth form.

● Visit www.abec.co.uk or follow the Twitter feed @ABEC_UK

Water website aims to make a splash

Saint-Gobain PAM UK has launched Watershed Issues, a website to enable discussion about the challenges facing the water and building industries.

The first topic is 'whether the water industry is at risk of stagnating if more emphasis isn't placed on innovation', and visitors to the site can add their thoughts to a comments section.

Mark Esling, business development director at Saint-Gobain, said: 'We hope this will reveal a richer and well-rounded look at each issue.'

● Visit www.watershedissues.co.uk or follow the Twitter feed @Watershedissues



FDS Consult meets the grade at Littlehampton academy

One of the UK's leading experts in fire engineering, FDS Consult, has lent its expertise to the construction of a new academy in Littlehampton, West



Sussex. The company was tasked with creating a bespoke fire-engineering solution for a floor area of 5,600 m² – well above the maximum 2,000 m² compartment size detailed in the *Building Bulletin 100 (BB100): Design for fire safety in schools*.

The team recommended a combination of systems, including a sprinkler system – commonly found in schools with areas of more than 800 m² – and a natural smoke-ventilation system.

● Visit www.fdsconsult.com

Toshiba distributor AMP expands sales team to support strong growth in air conditioning

AMP, one of the UK's longest established – and most successful – independent air conditioning distributors is expanding its sales team to support continued growth.

The Toshiba distributor has taken on three new area sales engineers – Andy Coleman, Andy Wilks and Rob Woods – to

increase its sales team to 15 external, and five internal, staff. The company's recruitment drive is ongoing, to support strong year-on-year growth. Polly McConachie, AMP director, said: 'The new appointments significantly extend the company's ability to support existing and new customers.'

● Call 01707 378670, email sales@ampair.co.uk, or visit www.ampair.co.uk





Mikrofill at Watermoor House

Watermoor House was built in 1825 as a private residence by well-known architect of the day, William Jay. It was converted into a residential home in 1949. The original heating and hot-water systems were run separately, but have now been reconfigured to run from a central plantroom. A Mikrofill Ethos condensing boiler – coupled with 2No Rapide Extreme hot water loading cylinders – provides a healthier operating system for the residents, and a more fuel-efficient plant for the owners.

● Call 03452 606020 or visit www.mikrofill.com

Luxury development benefits from flue-free, silent heating solution

Atlantic Boilers has installed its super-efficient electric boilers in a new development of a period building. Breakspear House, in Harefield, Middlesex, is a Grade I listed building, and work to convert it into apartments and luxury houses was carried out by Clancy Developments. Phase one of the development consisted of converting the main building into nine apartments. Ideal for each of these highly insulated rooms was the Atlantic Multi-Elec Compacte boiler, rated at 36 kW.

● Call 0161 621 5960, email info@atlanticboilers.com or visit www.atlanticboilers.com



Frese looks to recruit as turnover soars by more than 40%

The turnover of Burscough-based dynamic valve manufacturer, Frese, has soared by more than 40%. The company's turnover has risen from

£2.4m to £3.4m in

the past 12 months, and – as a result – Frese wants to recruit two new sales staff. The valve manufacturer got off to a successful start last year by securing projects installing and supplying valves to major landmark schemes, such as The Shard, in London, and De Vere Gardens, in Kensington. Managing director Stephen Hart (above) says Frese has since worked on key projects, such as London's luxury apartment scheme at 3 Merchant Square, at London's Hyde Park.

● Call 01704 896012 or email info@frese.co.uk

Gilberts responds efficiently to energy efficiency queries

Energy efficiency goes beyond product performance for one of the UK's leading natural ventilation supplier, Gilberts, of Blackpool. The company has implemented a culture of accessibility, so clients can achieve enhanced use of the firm's time. 'Every natural ventilation solution is different,' said managing director Jonathan Haslam. 'As a result, there are inevitably questions and queries to be addressed. Time and effort



spent trying to get answers can add a significant cost to the job. We believe in excellence of service, where clients talk to people – not machines – and get the answers. It's about being efficient and achieving value in all aspects.'

● Call 01253 766911 or email info@gilbertsblackpool.com



Prysmian safeguards the City's newest recruit

The enhanced, damage-resistant, dressable fire-resistant cable FP Plus by Prysmian, installed throughout 6 Bevis Marks, has been the latest addition to the City of London's skyline. The 16-storey building offers 160,000 ft² of office space, along with two roof gardens. More than 30,000 m of FP Plus cable has been commissioned for use in the emergency lighting and fire alarm systems. George Wright, electrical construction manager at Skanska, said: 'The natural brand choice

was Prysmian, as it's a company we know and trust. The cables had to be of the highest quality to ensure maximum fire safety.'

● Call 023 8029 5029, fax 023 8029 5437 or email cables.marketing.uk@prysmian.com

New Sentinel website makes best-practice water treatment easier than ever

Sentinel – an expert in cleaning, protecting and maintaining heating systems – has launched a website designed to make best-practice water treatment as easy as possible for everyone, from domestic and commercial installers to specifiers and homeowners. Packed with advanced features, the new site, at www.sentinelprotects.com, offers easy-to-use functions that give people access to product help, retailer sourcing, FAQs, downloads, 'how to' guides, videos, water-quality sample checking, and much more.

● Visit www.sentinelprotects.com



Education package for Flir E6 and E60 cameras

Schools and training centres can now purchase Flir E6 and E60 thermal-imaging cameras for a 50% discount.

Tomorrow's electricians, maintenance specialists and building inspectors need access to the most modern equipment during their training. To make sure that as many schools and training centres as possible are using thermal-imaging cameras in their educational programmes, Flir Systems is offering the Flir E6 and E60 at a 50% discount. This special offer is available now and is valid until 31 December 2014.

● Call 01732 220011, fax 01732 843707, email sales@flir.uk.com or visit www.flir.com



Vent-Axia wins Outstanding Company award

Sussex-based Vent-Axia has been named as an Outstanding Company for 2014 by independent industry analysts, Plimsoll Publishing. This prestigious award is the result of Plimsoll's latest business analysis of Vent-Axia's published accounts, which concluded that the UK's leading ventilation manufacturer has demonstrated excellent commercial performance over the past 12 months. Vent-Axia has been recognised because – based on Plimsoll's assessment of its overall performance in the past year – the company has improved its financial performance, while, at the same time, demonstrating solid sales growth.

● Call 0844 856 0590



Dumfries and Galloway College's new sports facility opts for Rada Outlook

A new sport and fitness facility at Dumfries and Galloway College – providing first-class facilities for students, staff and the community – has benefited from the installation of a range of Rada's market-leading washroom products, as part of a major investment in the site. The college appointed consultants, SC Collective, to undertake the planning and development work, ensuring that the sports and fitness facility would be 'fit for purpose' for 2014 and beyond.

● Call 0844 571 1777 or visit www.radacontrols.com

Environment and sustainability research institute discovers outstanding performance with Kingspan

When plans were drawn up for a new multimillion pound institute to lead cutting-edge research into environmental change, minimising the building's CO₂ emissions and environmental impact were key design considerations. A wide range of Kingspan insulation products have, therefore, been installed on the walls, floor and roof of the University of Exeter's Environment and Sustainability Institute, at the Penryn Campus, in Cornwall, helping it to achieve a BREEAM Outstanding rating, with an interim score of 91.57.

● Call 01625 429522, email info.uk@kingspanintarec.co.uk or visit www.kingspaninsulation.co.uk



'Game changing' Thames-heated development wins further acclaim

A renewable heating project – described as 'a game changer' by the Secretary of State for Energy and Climate Change, Edward Davey – has won the Renewable Project of the Year Award at the annual H&V News Awards, which recognise the best of the UK's heating and ventilating industry.



Kingston Heights is a £70 m mixed-use development in Kingston upon Thames, in Surrey. It uses Mitsubishi Electric's Ecodan heat-pump technology – and solar energy naturally stored in the Thames – to provide heating and hot water for 137 apartments. From the end of 2014, it will also provide the heating and cooling for a new 142-bedroom hotel and conference centre.

● Visit www.zerocarbonpartnership.com



Top-class performance from Panasonic's new heat pumps

Panasonic's new Ethea QKE heat pump range delivers energy savings of up to 38% and provides optimum cooling and heating all year round. The latest models achieve an impressive SCOP of 4.80 → A++ and SEER of 7.60 → A++. The Ethea XE-QKE (silver) is available in 2.2 kW, 2.8 kW, 3.2 kW and 5.0 kW, while the E-QKE (white) has eight models, ranging from 2.2 kW to 8.0 kW. One of the main features of the Panasonic Ethea heat pump is its Nanoe-G air-purifying and filtering system, which ensures the fast cleaning of air and neutralises odours.

● Visit www.panasonic.eu

Volusion acquires German ventilation manufacturer inVENTer



Volusion Holdings has acquired Öko-Haustechnik inVENTer, a leading manufacturer of decentralised, residential heat-recovery ventilation products in Germany. Based

in Löberschütz, Thuringia, inVENTer has a significant share of the German market. It also sells its products across Europe. Volusion has secured the continued involvement of inVENTer's key senior management to ensure business continuity. 'inVENTer marks the next stage of our strategic growth,' said Volusion chief executive Ronnie George (above).

● Call 01293 441662 or visit www.volusionholdings.com



Evinox simplifies underfloor heating control for communal schemes

Evinox has launched a underfloor heating (UFH) control kit for its ModuSat heat interface unit (HIU) system, to simplify underfloor heating control for communal/district installations. The Evinox UFH control system connects to the ModuSat Heat Interface Unit and the ViewSmart room controller, which then operates as the time programmer. The UFH control system sends a run signal to the ModuSat when there is a demand for heat from any of the room thermostats, or a run signal from the ViewSmart controller during the timed period.

● Call 01372 722277, email info@evinox.co.uk or visit www.evinox.co.uk

Jody Lees heads LG air conditioning and energy solutions business

LG has appointed Jody Lees (right) as head of air conditioning and energy solutions. Lees' promotion follows the successful launch of LG's technologically advanced Multi V IV variable refrigerant flow (VRF) solution: he played a large part in bringing the product to the UK market. 'I look forward to the many challenges the new position offers, and will be working hard to strengthen and extend the company's reputation as a provider of quality VRF-led air conditioning solutions,' said Lees.

● Visit partner.lge.com/uk



Kingspan Tarec CPD gets CIBSE approval

A new CIBSE-approved continuing professional development (CPD) seminar has been introduced by Kingspan Tarec, examining how high-performance, insulated pipework systems can benefit the design, construction and maintenance of energy-efficient buildings. The CPD looks at the HVAC/building services insulation options, and on phenolic systems, which offer enhanced fire performance, with the lowest lambda of any regularly used solution. The desired thermal performance can thus be met with a minimal product thickness.

● Call 0808 168 7363 or visit www.kingspantarec.co.uk

Remeha boilers offer a warm welcome at Bath hotel

The Grade II listed Abbey Hotel, in Bath, has refurbished its boiler plantroom with four Remeha Gas 210 Eco Pro 5-section boilers. Annual energy savings of up to 40% – equating to £10,000 – are anticipated. The compact dimensions and back-to-back installation design of the high-efficiency boilers, meant Glenn Fry, of Neptune Building Services in Gloucester, was able to accommodate them in the restricted space during a period of 95% hotel occupancy, with no discomfort to guests.

● Call 0118 978 3434, email boilers@remeha.co.uk or visit www.remeha.co.uk



Metsec Cable Management powers on

The compliant provision of power and services to one of the UK's most important power stations has been made possible with the support of Metsec Cable Management. Its BES 6001 accreditation was vital in the specification of its cable ladder, tray and trunking products at Drax power station, in North Yorkshire. The project at Drax required the on-site availability – very quickly – of a large volume of cable management products. The work is part of the plant's transformation from a coal-fired power station into a predominantly biomass-fuelled generator.

● Visit www.metsec.com or follow the Twitter feed @MetsecPlc



FDS appointed to prestigious development on London's South Bank

Award-winning fire safety design and installation contractors, Fire Design Solutions (FDS), will work with property developer St James on the exclusive Riverlight development on London's South Bank. The FDS team will design and install residential sprinkler, mechanical smoke venting and fire alarm systems for three of the development's blocks, which will be between 12 and 20 storeys high. Gerard Sheridan, chairman of FDS, said: 'This is a large project, but we're well placed to deliver the appropriate levels of protection for the residential elements of the project.'

● Visit www.fdsconsult.com

Wieland makes the right connection at The Walbrook Building

The Metalynx structured wiring system, from Wieland Electric, has been used for the connection of power and lighting in The Walbrook Building, in London. The prestigious new, purpose-built office – situated near to the Bank of England and directly opposite Cannon Street station – is occupied by a number of blue chip companies. The Metalynx system was the preferred choice because it has been designed for efficient installation of lighting circuits and other power requirements located above ceilings.

● Visit www.wieland.co.uk



Remeha Commercial launches Fusion Hybrid range

Fusion Hybrid is Remeha's new, unique bespoke bivalent heating and hot-water system. It combines high-performance gas absorption heat pumps with high-efficiency condensing technology and a fully integrated, scalable building management control system, to maximise heating efficiencies for greater energy, carbon and operating cost reductions. Fusion Hybrid (outputs 100-1,000 kW) offers reliable heat delivery, exceptional seasonal efficiencies (120-130% net calorific value – NCV) and accurate, tailored matching of heat output demand.

The specially configured building management control system, which has an integrated touchscreen control panel, is easily integrated into an existing BMS, making Fusion Hybrid suitable for retrofit, as well as new-build projects.

● Call 0118 978 3434, email heatpumps@remeha.co.uk or visit www.remeha.co.uk

PRODUCTS & SERVICES

Telephone: 020 7880 7614 Email: Patrick.Lynn@redactive.co.uk

Hitachi Air Conditioning Europe launches new Yutaki air source heat pump

The latest addition to the Yutaki family of air source heat pumps (ASHP) from Hitachi Air Conditioning Europe SAS has been launched, extending the Yutaki-S split system product line-up. The new Yutaki-ST is an all-in-one, compact indoor unit, which provides heating and domestic hot water up to 60°C, plus comfort cooling – perfect for European summer weather conditions. It is available from 2 HP to 6 HP (single- and three-phase) with capacities from 2.3 kW to 17.8 kW – with either a 200 L or 260 L integrated stainless steel hot-water tank.

● Call 01628 585 394, email aircon.enquiries@hitachi-eu.com or visit www.hitachiaircon.com



Titan Products expands TPZ-Net Zigbee wireless range

With the release of the TPZ-PIR occupancy sensor, Titan Products continues to develop its TPZ-Net range of wireless sensors. Designed to detect movement in a space, the battery-powered sensor transmits a wireless signal to the TPZ-Net coordinator when it senses movement. The coordinator then communicates this information over a BACnet network, which allows applications – such as lighting and HVAC equipment – to be controlled when occupants enter a room.

● Call 0161 406 6480, email admin@titanproducts.com or visit www.titanproducts.com



Responsive heating for Leadenhall Building

Three Stokvis 1.5 MW boilers – fitted with Riello modulating burners – have been supplied to The Leadenhall Building, in the City of London, to provide space heating throughout the building. Designed by Rogers Stirk Harbour & Partners, the 224 m high, 52-storey building has a distinct tapering shape. It is being constructed by Laing O'Rourke using building information modelling (BIM) techniques, and will incorporate retail outlets, a restaurant, two reception levels and 41 floors of offices. Plantrooms are located above the offices, from levels 46 to 52.

● Call 01480 432144, fax 01480 432191, email info@rielloburners.co.uk or visit www.rielloburners.co.uk

DIRECTORY Your guide to building services suppliers

Telephone: 020 7880 7633 Email: adam.dickinson@redactive.co.uk

Air Conditioning

Air Conditioning

EUROPE'S LARGEST INDEPENDENT DAIKIN DISTRIBUTOR

Nobody knows Daikin better

Space Air has been supplying Daikin finished goods and spare parts since 1980.

Call now for the best prices and availability!

01483 504 883

www.spaceair.co.uk

Air Handling

Manufacturer of high quality bespoke AHU's.

Specialists in refurbishment and site assembly projects.

Rapid delivery service available.

Aircraft Air Handling Ltd
Unit 20, Moorfield Ind Est,
Cotes Heath, Stafford, ST21 6QY
Tel: 01782 791545 Fax: 01782 791283

Email: info@aircraftairhandling.com Web: www.aircraftairhandling.com

Controls/BMS/Controllability

Birling Consulting Ltd
Professional Services:

- BMS Design & Specification
- System design for controllable energy efficient operation
- Integration of Low Carbon Technologies
- Controllability Reviews
- PM, Reports, Guides, Advice, etc.

See website for latest publications.

Graham P Smith CEng FCIBSE MInstMC
T: 01548 830672
E: grahambirling@aol.com
W: www.birlingconsulting.co.uk

LST Radiators

Range of Low Surface Temperature radiator models to suit all budgets & applications

- Easy installation – ready assembled
- Attractive functional design
- BSRIA tested outputs and surface temperatures
- SteriTouch® antimicrobial surfaces as standard
- Energy efficient copper aluminium emitters

BSRIA

Call 01787 274135
www.autron.co.uk

Pump Packages

LEADERS IN FLUID PUMPING EQUIPMENT AND CONTROLS

- Water Pressure Booster Sets
- Tank Level & Temperature Controls
- Sealed System Pressurisation Units
- Bespoke Design Service
- Water Storage
- Energy Efficient
- Hydraulic Shock Control

Head Office: 01206 215121
Manchester: 0161 226 4727
www.aquatechpressmain.co.uk

COMING SOON!

For year long coverage on cibsejournal.com, contact: adam.dickinson@redactive.co.uk 020 7880 7633



Mechanical Design Engineer | Birmingham | to £50K | ref: 5140

Exceptional opportunity to join a diverse multi-disciplinary consultancy operating in the design, management and infrastructure sectors. Our client is currently seeking an ambitious Building Services engineer to work on signature high rise buildings, hospitals, airports and major international developments. Exceptional opportunity for self-development and progression.

BIM Coordinator | London | to 50K + Car + Bens | ref: 5570

Due to substantial project wins we have an opportunity for a BIM/Revit Co-ordinator to join one of the leading M+E specialist contractors. You will be required to assist in the development on 3D and Revit MEP into current designs and produce 3D Revit Models. Fantastic opportunity for an enthusiastic individual.

Intermediate Electrical Engineer | London | to £35K + Bens | ref: 5125

Following an exceptional start to 2014, an admired multi-disciplinary consultancy are seeking a dynamic Building Services Engineer. With unrivalled project exposure and career development this is a unique opportunity for an engineer to work alongside signature Architects.

Senior Electrical Engineer | Avon | to £40K + Bens | ref: 4700

Exciting opportunity to join a world class multi-disciplinary engineering consultancy, renowned for bespoke design solutions. You will gain experience in a variety of sectors including, sports, aviation and commercial. Fantastic chance for an ambitious engineer to progress.

Electrical Design Engineer | Birmingham | to £45K + Bens | ref: 5577

A leading, international, multi-disciplinary consultancy, is seeking to appoint across all levels within their Electrical team. These are exceptional opportunities for dynamic individuals to develop and receive Revit MEP training.

t: 02392 603030

e: cv@blueprintrecruit.com

www.blueprintrecruit.com

**Technical Manager
£50-55k pa, plus benefits**



The Chartered Institution of Building Services Engineers (CIBSE), located in south-west London, is a professional membership organisation with over 20,000 members. An exciting opportunity has arisen for a Technical Manager to manage the various activities of the department and deputise in the absence of the Technical Director.

Key tasks will include:

- Managing the various technical activities of the Technical Department, to provide a high quality of technical input to internal and external stakeholders in a timely manner.
- Managing CIBSE technical input to regulatory, legislative and parliamentary activity.
- Providing technical input to CIBSE publications in support of the Knowledge Management Committee.
- Supporting CIBSE participation in standardisation in BSI, CEN and ISO

You will have a relevant engineering, science or environmental degree, excellent oral and written communication skills, experience of managing a small team, the ability to summarise complex documents effectively and experience of working in the construction sector.

To apply, please send a copy of your CV with a covering letter detailing current package and notice period to Emmanuela Oblitey at recruit@cibse.org.

No recruitment agencies please. Closing date: 22nd June 2014, with first interviews scheduled for 8th or 10th July 2014.

CIBSE is committed to equality and diversity.



For further information and to apply, please call us on **+44 (0)203 176 2666** or email cv@b-a-r.com

Mechanical Building Services Design Engineer

North London, £30k - £47k + Benefits

This is an exciting time for a company with an imminent office move. Their determined and dynamic team of directors are driving the practice forward, and they have a significant pipeline of work within the residential and commercial sector. This is a key vacancy for my client; level of experience is secondary to finding an engineer with drive, passion, and an ambition to progress. BAR 1746/JA

Senior Electrical Design Engineer

London, £30 - £35 p/h

We are working in partnership with an independent, multi-disciplined consultancy in their search for a Senior Electrical Engineer for a minimum 6 month contract. To be considered for this role applicants must possess a building services background and be a chartered engineer. BAR 1840/WS

Public Health Engineer

Hertfordshire, Circa £39 p/h

A leading multidisciplinary consultancy seeks a Public Health Design Engineer (building services) to join their busy and growing team. Successful candidate should possess a minimum of 8 years industry experience with a desire to be involved in some of world's most iconic projects. BAR1852/MA

Principal Electrical Engineer

London, £45k - £55K + Car + Benefits

A top 10 Building Services consultancy is strengthening their electrical team in London. You will ideally be CEng with 10 years' experience and have led projects from inception to completion. Projects will vary across the education, healthcare, commercial, culture, and leisure sectors. This is a great opportunity for someone who is looking to take on the challenge of senior management and progress towards Partner level. BAR1816/CB

Senior Electrical Engineer

London, £33ph - £36 p/h

This is a fantastic opportunity for a Senior Electrical Design Engineer to join an international consultancy with an outstanding reputation specializing in the healthcare, commercial, and high end residential sectors on a long term rolling contract. With continuous project wins they need an engineer that is committed to run projects through till completion. BAR1846/NA

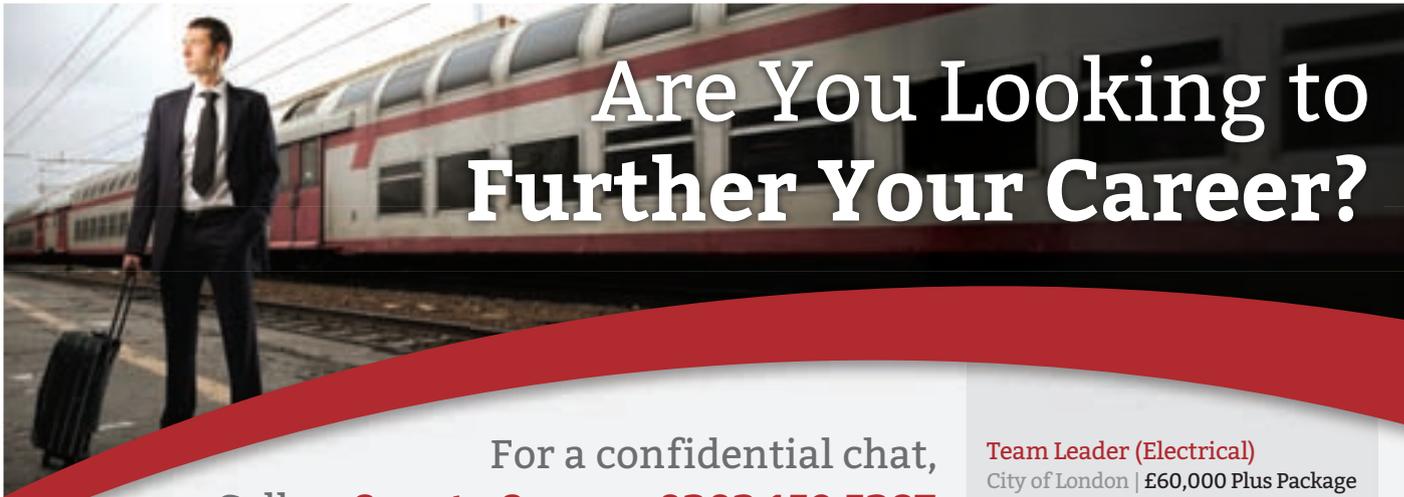
Senior Mechanical Design Engineer

Bangkok, 2,000,000 Baht p/annum

An exciting opportunity has arisen for a Mechanical Design Engineer to join an established UK consultancy with a global footprint. As a result they are looking to further develop their existing team of design specialists within the Thailand office. Successful candidates must be Degree qualified (BSc or MSc), minimum of 8 years' experience within industrial and high-rise projects in the Middle East or Asia. BAR1843/PA

Thinking of your future

www.b-a-r.com



Are You Looking to Further Your Career?

For a confidential chat,
Call us **8am to 8pm** on **0203 159 5387**

Principal Building Services Consultant (Mechanical) | Manchester
£43,000-£45,000 Plus Benefits Package

We have joined forces with one of the UKs largest and most successful multi-disciplinary engineering consultancies, to help them find a leader for their specialist mechanical services team. Having built up and maintained an excellent reputation, they are in high demand from clients. With projects including impressive shopping complexes, well-known football stadiums and a highly recognised residential project amongst many others, this is a varied and exciting role working on pioneering new projects.

Principal Electrical Design Leader | Leeds
£44,000-£46,000 Plus Benefits Package

A diverse, multi-disciplinary Consultancy is currently looking for an experienced Design leader. As Principal Engineer your role will include chairing client meetings, co-ordinating teams of engineers and technicians and overseeing smooth running of large projects. With a string of globally recognised awards behind them, this company travels the world to deliver an outstanding service to their well know clients on highly publicised projects.

Senior Electrical Design Engineer - Data Centre & Commercial Projects
London | £50,000 Plus Benefits & Bonus

A Senior Electrical Design Engineer is urgently required to join an internationally acclaimed firm of Consulting Engineers, to deliver highly innovative design solutions for projects in the data centre and commercial sector. Candidates will be highly motivated with experience leading teams, and have a natural talent for producing detail designs on services-dependant buildings. An excellent opportunity to further your career in a professional and fast-paced consultancy.

Get that job... call us today!

- + CV Consultations
- + Best Industry Advice
- + Nationwide Service
- + Open 8am to 8pm for confidentiality

Principal Mechanical Design Engineer
London Bridge
£50,000 Plus Car Allowance & Benefits

A Principal Mechanical Design Engineer is required to join an established engineering consultancy in London, whose recent succession of project wins have exposed them to the most lucrative commercial and hotel developments in the city. Candidates will be responsible for their own team of dedicated engineers, maintaining existing client and business relationships and overseeing projects from inception to completion.

Associate FM Consultant
Central London
£50,000 Plus Benefits & Bonus

A national property consultancy/ developer with a large engineering department is currently looking for an Associate FM Consultant to lead a team of engineers, to focus on maintenance management services contracts for large international companies. You will be expected to tender new M&E maintenance contracts, auditing such contracts and providing day to day advice to the building management team. Great opportunity for career progression due to the expansion.

Senior Mechanical Design Engineer
Nottingham
£40,000-£45,000 Plus Benefits & Pension

An award-winning, industry leading consultancy is currently offering an exciting opportunity to a driven and passionate design engineer. With huge progression and promotion opportunities, this role is ideal for someone with aspirations to lead their own team with the chance to become an Associate Director in the near future. Internationally acclaimed, they have an outstanding reputation for their work on high profile hotel & leisure complexes, mixed use projects and heritage assignments making this a challenging and varied role.

Contract Senior Electrical & Mechanical Design Engineers | London
£37 per hour

An internationally acclaimed Building Services Consultancy requires both an experienced Senior Electrical and a Senior Mechanical Design Engineer. Completing global projects, such as well-known arenas/stadiums and commercial assignments, our client has just secured a new win, securing work for the team for the next 12 months.

Team Leader (Electrical)
City of London | £60,000 Plus Package

A multi-disciplinary engineering consultancy in London requires a passionate team leader to oversee their very own electrical design division, in an "up-beat" and contemporary working environment. Collaborating mainly on large commercial and residential projects across the UK, Europe and Asia, you will become part of a globally successful organisation known for valuing their staff; providing top industry training and development opportunities.

Director of Building Services
Central London
£70,000 Plus Benefits & Bonus

A medium sized property consultancy with a multi-disciplined City of London office is looking for a Director to lead their building services design team. This consultancy who work for some of the finest architects and developers, require a Director to manage delivery and provide strategic support to facilitate the expansion of this office. Fantastic potential become an equity partner for the successful candidate.

Senior PH Engineer | London
£37 per hour

A large international consultancy requires a PH Engineer for a 1 year contract working on hotels and commercial developments.

Find more jobs online at:
www.conradconsulting.co.uk

Specialists in Technical Recruitment, supplying high quality personnel at all levels on both a permanent and contract basis



The UK's national synchrotron science facility, Diamond Light Source, conducts world-class research in virtually all fields of science. Located 20 minutes from Oxford, it sits in a designated Area of Outstanding Natural Beauty and offers rewarding career opportunities.

Senior Building Services Engineer

Ref: DIA0909/NH

Salary: Circa £43k – Full-time, Permanent

We are looking to appoint a new Senior Building Services Engineer to provide support for the Diamond Mechanical Services Infrastructure within the Installation & Facilities Management Group.

The role covers all elements of building services including technical report production & evaluation, specification production & tender analysis and construction management. Liaison and supervision of external consultants, contractors, service engineers and suppliers. Commissioning management of new and refurbishment projects. Ongoing general operational support.

Minimum of HNC qualification in Building Services Engineering.

For further information on these vacancies see www.diamond.ac.uk

This position offers comprehensive benefits, competitive salary, dependent on qualifications and relevant experience, and a relocation package where applicable.

This is an open vacancy until filled.

www.diamond.ac.uk



Diamond Light Source Ltd, Diamond House, Harwell Science and Innovation Campus, Didcot, Oxfordshire OX11 0DE

CAN YOU CRACK A CHALLENGE?



EXPERTISE. PASSION. AGILITY. ATTENTION TO DETAIL.

These are just some of the reasons why clients in pharmaceuticals and other industries choose to work with our process engineering team.

That's why our books are full and we're recruiting Building Services Engineers at all levels to join our Midlands and other offices.

You may be a recent graduate or an experienced engineer. In our team you'll be designing and delivering HVAC and Utility services with sustainability and performance in mind.

If you think that you can crack a challenge, we'd like to hear from you.

Visit www.wspgroup.co.uk/careers

#brainstopick



Constructing Relationships
Engineering Careers

Tailored recruitment for the Construction and Engineering industry.

Senior Electrical Design Engineer (Building Services)
London | £40-50k | Ref: 14446

Our Client
Our client has been established since the early 1980's. The company ensure they differentiate themselves in the market by the service which they provide. All Senior Engineers are given responsibility with client facing roles; furthermore our client is at the forefront of technology in terms of the advances and keeping up to date with rapid changes in the market.

Job Purpose:
To lead feasibility reports, project surveys, design, specification and on-site supervision and management of mechanical/electrical services installations under guidance from your Director. To be responsible for following Quality Assurance procedures and working with support staff towards meeting the company's long term objectives. Our client offers attractive packages and the opportunity to develop and grow with the company.

For further information on this position and all other vacancies not listed within Building Services Engineering and the Built Environment, please contact Michael Vieira on 01483 768600 or michael.vieira@bsvrecruitment.co.uk

Senior Mechanical Design Engineer (Building Services)
London | £45-50k | Ref: 14489

I have been approached by a thriving, and vibrant practice of Mechanical and Electrical Consulting Engineers to recruit a Senior Mechanical Design Engineer. This expansion is due to an influx of work and the growth of the practice in commercial and residential sectors. The ideal candidate must have a flexible attitude and be comfortable working on a number of projects simultaneously, from Stage A to Stage L. Candidates must have good working design knowledge, and be confident, with a natural grasp of engineering concepts, British Standards and CIBSE Guidelines. Clear written and verbal communication skills are essential. This role provides an excellent salary based on qualifications, skills and experience.

For further information on this position and all other vacancies not listed within Building Services Engineering and the Built Environment, please contact Matthew Baker on 01483 768600.

For more vacancies please visit www.bsvrecruitment.co.uk or call today.

T +44 (0) 1483 768600 E info@bsvrecruitment.com www.bsvrecruitment.co.uk

Associate / Director Level Building Services Consulting Engineer London

We are an established North of England based firm of Building Services Consulting Engineers. During the last seventeen years we have built up a range of clients in both the public and private sectors.

The public sector commissions relate to existing frameworks with established clients. Private sector clients range from firms of architects to many national companies.

This exciting new role involves establishing a London office. This office will service existing clients. However this role also relates to establishing new clients within the M25.

The ideal candidate will be a Chartered Engineer with significant experience in a Consultancy environment; with several years' at Senior level carrying out a similar client facing role and able to demonstrate a track record in developing new business and exceeding clients' expectations.

The remuneration package will comprise of an excellent salary reflecting this important role.

To apply in the first instance, send your CV and covering letter to martin@iy-s.co.uk.

All applications will be treated in the strictest confidence.

No Agencies please

Events & training

NATIONAL EVENTS AND CONFERENCES

CIBSE Building Performance Awards 2015 Launch

18 June, London
Event hosted by 2014 CIBSE Carbon Champion Marks & Spencer
www.cibse.org/bpa

Leadership in Building Performance conference 28-29 October

A major new conference and exhibition, looking at the efficient design, construction maintenance and operation of buildings, and the systems that support them.
www.cibse.org/events

CIBSE GROUPS, REGIONS AND SOCIETIES

For more information, visit www.cibse.org/events

ANZ Region: Got The Time? Effective Time Management 3 June, Sydney

The latest in a series of monthly seminars arranged by the NSW chapter of the ANZ Region.
www.cibse.org/events

Future Homes for Changing Climates 3 June, London

A free, topical debate, organised by the Homes for the Future group.
www.cibse.org/hfg

Avoiding the 'performance gap' between building design predictions and operational energy use 4 June, London

CIBSE and London South Bank University are supporting a second professional development day, which puts into practice *TM54: Evaluating operational energy performance of buildings at the design stage*.
www.colinlillcrapassociates.co.uk

ILEVE AGM 5 June, Birmingham

Event open to ILEVE members only.
www.cibse.org/events

Merseyside & North Wales Region: Annual Golf Day 2014 6 June, Liverpool

This year's event will be held at Formby Hall Golf Club, one of the finest resorts on England's Golf Coast.
www.cibse.org/events

Southern Region: 50th Anniversary Dinner 7 June, Portsmouth

Join the regional chair and Southern Region

committee to celebrate this occasion on *HMS Warrior*, Portsmouth Dockyard. For more information visit www.cibse.org/events or contact doug@dpconsultants.co.uk

WiBSE London Role Model series

10 June, London
With speaker Gay Lawrence Race, CIBSE Fellow.
www.cibse.org/events

ANZ Region: GBCA Update 10 June, Perth

The latest in a series of bi-monthly seminars arranged by the WA chapter of the ANZ Region.
www.cibse.org/events

ANZ Region: Phase Changing Materials 12 June, Adelaide

An evening seminar presented by Professor Frank Bruno. The latest in a series of monthly seminars arranged by the SA chapter of the ANZ Region.
www.cibse.org/events

YEN: North West site visit to Birley Fields Energy Centre 12 June, Manchester

Visit to the newly constructed energy centre of the academic building of Manchester Metropolitan University. Event open to all.
Cibse.yen.nw@gmail.com

Casting Light on Sound 17 June, London

How to boost health, stimulate learning, and achieve better behavioural outcomes through sound and lighting design. A joint SLL and IoA event. For further details and to book contact: linda.canty@ioa.org.uk

Society of Façade Engineering city walk 19 June

The annual Society of Façade Engineering's city walk.
www.cibse.org/sfe

WiBSE London Confidence Workshops: Dealing with difficult people 25 June, London

Continuing the WiBSE workshop series.
www.cibse.org/events

Hong Kong Region: Anhui - Hong Kong Joint Symposium 2014 27-28 June, Anhui, China

A two-day symposium - arranged by ASHRAE, CIBSE, HKIE, and the Polytechnic University of Hong Kong - to facilitate experience sharing, and to promote development on building services engineering between the Mainland and Hong Kong SAR. The theme of the symposium is 'High Performance Building - New Development & Technology'.
www.cibse.org/hk/event.php

SoPHE AGM 2 July, London

SoPHE AGM, plus domestic hot water load diversity, and an update on LUNA.

CPD TRAINING

For more information, visit www.cibsetraining.co.uk or call 020 8772 3660

25 Ways to save energy in your building 3 June, London

WRAS Water Regulations 4 June, London

Building Electrics: Physical distribution within buildings 6 June, London

Lighting Design: Principles and application 6 June, London

The Commissioning Process (building services) 10 June, London

Power System Harmonics 10 June, London

EPC Training 10-11 June, Birmingham

Electrical Services explained (3 days) 10-12 June, Manchester

Fire Sprinkler Systems: Design to BS EN 12845 11 June, London

Energy Strategy Reports 11 June, Manchester

Preparing FM and Maintenance Contracts 13 June, London

Running projects effectively 13 June, London

Writing a Comprehensive and Compliant A/C Report 16 June, Birmingham

Mechanical Services Explained 17 June, Newcastle

Electricity at Work regulations explained 17 June, London

Energy Efficiency Façade Design 18 June, London

Best Practice in Energy Management: ISO50001 18 June, London

Overview of current Fire Legislation and Guidance 19 June, London

Emergency Lighting to comply with Fire Safety Requirements 19 June, London

Security System Design and Implementation 20 June, London

iSBEM Training 24 June, London

Understanding and Application of Psychrometric Charts 24 June, London

Mechanical Services Explained (3 days) 24-26 June, London

LCC Design Scotland 25 June, Edinburgh

Energy Surveys 25 June, London

Low & Zero Carbon Energy Technologies 25 June, Manchester

Fire Safety in Purpose-Built Blocks of Flats 26 June, London

Building Electrics 4: Final Outlets and Component Selection 27 June, London

Lighting Legislation (including daylight) 27 June, London

FACILITIES SHOW

Facilities Show 2014, on 17 June, will give you the opportunity to: connect with peers and colleagues; see solutions from more than 400 suppliers; gain insight and inspiration from influential industry experts; and seek advice from fellow FMs who have adopted highly successful facilities management strategies.

Now in its 15th year, this is the only facilities management exhibition in the UK that is supported by BIFM. Attendees to the show - at ExCel London - can benefit from the seminar sessions, with this year's programme bringing innovations, inspiration and guidance to effectively manage your organisation's facilities and energy use. www.cibse.org/bpa





CIBSE BUILDING
PERFORMANCE
CONFERENCE AND EXHIBITION



www.cibse.org/conference

LEADERSHIP IN BUILDING PERFORMANCE CONFERENCE & EXHIBITION

Call for exhibitors

New conference & exhibition focused on the efficient design, construction, maintenance and operation of buildings and the systems that support them.

- Limited number of exhibitor packages remaining, which include:
- up to 12m² of exhibition space
 - a presentation slot in the exhibition workshops
 - extensive brand promotion across the event
 - valuable networking opportunities with over 300 visitors (per day)
 - complimentary conference places
 - a place on the conference advisory committee

For more information call Steve Webb on 01892 518877 or visit www.cibse.org/conference

@CIBSE #CIBSEconf

ORGANISED BY:

**Step
PLACE**

QEI, Westminster, London.
28-29 October 2014

CMR

in complete control

CMR Controls manufactures low air pressure and air volume measurement sensors and control systems for standard air conditioning, clean rooms, sterile laboratories, containment facilities, and fume cupboard extract systems.

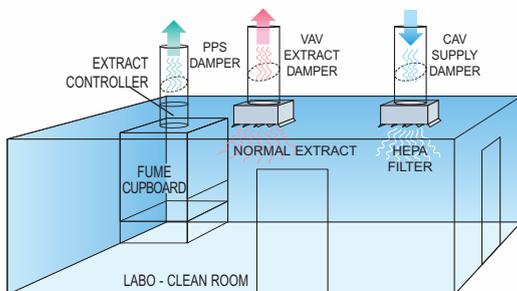


DPM PRESSURE SENSOR

Panel Mount Pressure or Velocity Transducers with remote alarms, analogue and digital interfaces. Traceable calibration certificates supplied as standard.

AIR MANAGEMENT SYSTEM

A complete turn-key system to control room pressure to $\pm 1\text{Pa}$. Fume cupboard face velocity to 0.5m/s at high speed and provide constant air changes into the labo - clean room.



PRECISION COMPONENTS FOR VENTILATION AND PROCESS CONTROL

CMR CONTROLS

A Division of C. M. RICHTER (EUROPE) LTD

22 Repton Court, Repton Close,
Basildon, Essex SS13 1LN. GB
Website: <http://www.cmr.co.uk>

Tel: +44 (0)1268 287222
Fax: +44 (0)1268 287099
E-mail: sales@cmr.co.uk



DPC CONTROLLER

Fast and accurate controls to drive high speed dampers or invertors. Full PID stand alone controls with BMS interface.

CAV AND VAV DAMPERS

Accurate air flow measurement with the unique CMR Venturi built into the airtight shut-off damper to control room pressure or constant volume.

Metal Damper



PPS EXTRACT DAMPER

Poly-propylene control and shut off valve incorporating the CMR Venturi Nozzle. This is essential when dealing with corrosive extract air especially from fume cupboard systems.

PPS Damper

