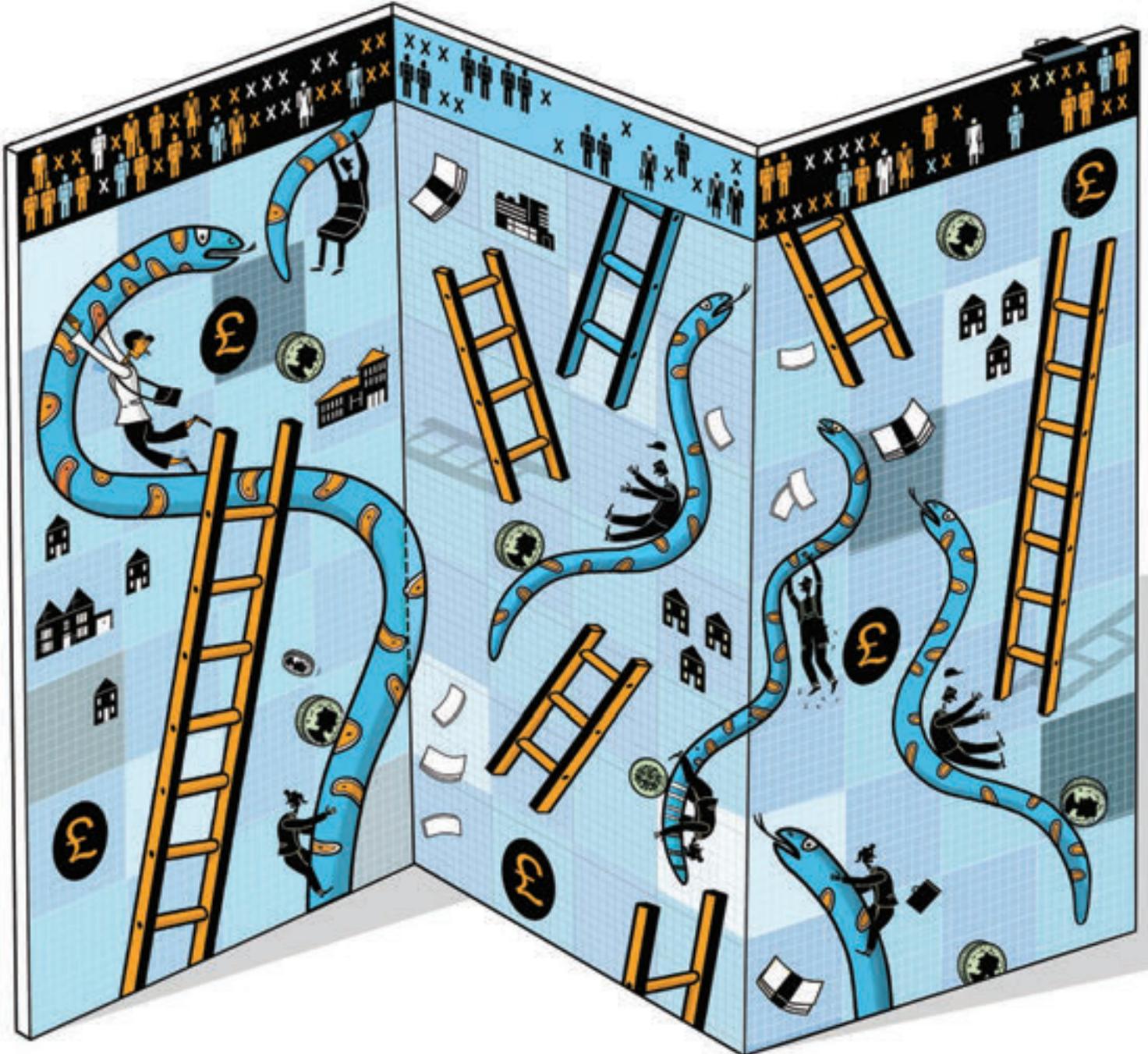


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May 2009



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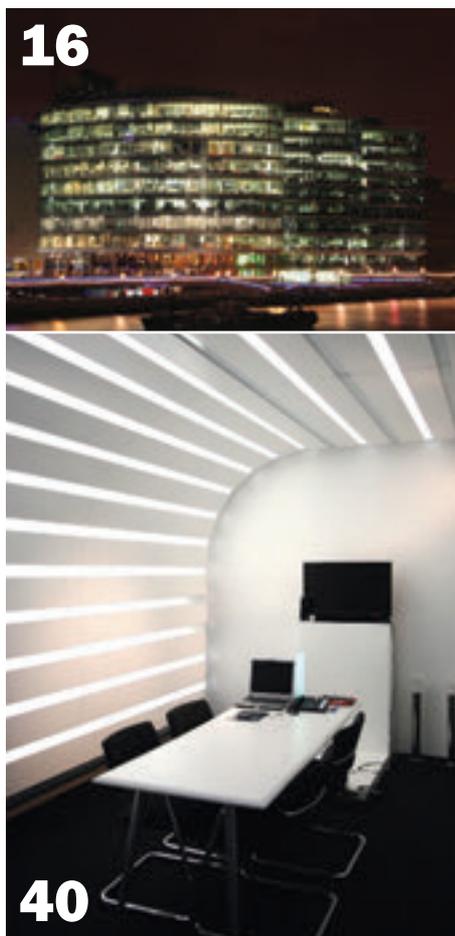
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From the editor



White-hot regulations

Harold Wilson, the British prime minister of the 1960s and 1970s, noted that a week is a very long time in politics. If he'd been a building services engineer he would probably still have coined the phrase "the white heat" of technology, but he might also have suggested that four years is a very short time in Building Regulations.

It was in 2006 that we saw the arrival of key changes to Part L of the regulations. Now, barely four years later, the industry faces another major shift – to Part L 2010. The past few years have highlighted key issues from 2006; and

we now know how these concerns are likely to be fed into the changes due next year (see page 7 of this issue).

At this year's CIBSE national conference, which took place as the *Journal* went to press, an official from the Department for Communities and Local Government, Paul DeCort, laid out the department's thinking on how targets should be set for cutting carbon emissions from buildings. It now looks likely that a further 25 per cent cut in emissions will be required. The technicalities of this, and other requirements, will be contained in a 600-page consultation document that, at time of writing, was with ministers.

The broader question, though, is whether the changes will be workable and effective. The immediate responses to the proposals among conference delegates were welcoming. The proposed 25 per cent cut in emissions is not unexpected, but the way the target is likely to be applied is: the reduction is to be an aggregated

one, enabling some buildings of a certain type (such as hotels) to meet a lower target, while others will be expected to reach a higher target – say, 30 per cent. This takes a realistic view of the different energy performances of buildings in the same category; it also raises the bar for buildings that can do a lot better than the overall target.

But, from the building services professional's viewpoint, another of the likely proposals goes to the very heart of the design process and could bring in significant improvements in outcomes. What a designer specifies in terms of, for example, a building's materials can end

up being something very different once the work has been done. Under Part L 2010, however, building inspectors will be able to check that specified materials are actually being used during construction. This won't overcome all the communication gaps that exist between designer

and contractor, but it could go a long way to ensuring that the engineer's intentions are fulfilled.

We'll see when the 600-page tome is published, but it is already clear from the conference presentation that the DCLG has undertaken a huge amount of work in a short space of time to make Part L a set of regulations that really does cut emissions. Whether it will actually take us to the (current) ultimate goal of "net zero carbon" new builds by 2016 remains to be seen. One thing's for sure, it will be a very short six years.

Bob Cervi, Editor
bcervi@cibsejournal.com

The new aggregate target takes a realistic view of the energy performances of buildings

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Part L revisions would seek further 25% cut in emissions

A revamp of Part L of the Building Regulations is likely to require a further cut of 25 per cent in carbon emissions compared with the 2006 rules, it has emerged.

The change was revealed at the CIBSE national conference, ahead of the long-awaited release of the consultation on the revised Part L document, which is expected to be published shortly.

Paul DeCort, an official at the Department of Communities and Local Government (DCLG), gave delegates a summary of the proposed revisions, stressing that the government intends to keep the same overall regulatory and compliance framework.

Currently Part L requires a uniform emissions reduction to be made on each new building, regardless of whether it is a school, hospital, hotel or office. For 2010 the government is looking to achieve the additional 25 per cent target overall by using an aggregate approach – which would, for example, allow a 20 per cent reduction to be made in one type of building, while a 30 per cent reduction could be made more easily in another.

DeCort said: “Ministers are sympathetic to this aggregate approach and welcome feedback when it hits the street.”

This aggregate approach would satisfy the different energy loads found in different types of building. For example, reducing the lighting load in an office by 25 per cent is much easier than in a hotel because an office uses more lighting –



Paul DeCort lays out the government's thinking at the CIBSE national conference

whereas a hotel's biggest energy load is hot water, which is much more difficult to cut.

If passed, the proposals would mean currently planned targets could be set for each different type of building.

DeCort also suggested that the implementation date may have to be delayed by six months to October 2010, with timescales “becoming increasingly challenging”.

Other important changes of emphasis include a change to the calculation tools – but not to the calculation approach – and ensuring the industry maintains health standards in new energy efficient buildings and new homes.

When Part L is changed, DeCort said, revisions would also be made to Part F, which covers ventilation. Air tightness of new homes is improving, he said, so ventilation needs to be maintained.

The revisions are also expected to require a new build's specifications

to be submitted with the plans to help building inspectors check that the specified materials are being used during construction. This will ensure that a design to achieve a 25 per cent reduction in energy on paper can still be achieved in reality.

Hywel Davies, technical director of CIBSE, said: “What this is doing is saying that in some of the buildings it will be harder to make the savings compared to others. What this does is to say, ‘You, Mr Engineer, give us your engineering skills, be innovative, solve the problem’, which is much better for engineers to work to.”

Rob Manning, CIBSE president-elect for 2010, agreed with the aggregated approach: “It's a much more flexible system for designers to work with. The challenge for the industry is to start again to climb the learning curve whilst the results of the Part L 2006 requirements are still being measured.”

PART L 2010

The thinking behind the move towards a flat-rate 25% cut in building emissions

- Previous UK government thinking was to keep the same regulatory and compliance framework, but the key issue to consider was the mechanism for target setting.
- There was an option to retain a 2002 notional building plus further improvement factor – a flat 25% improvement for each building.
- But, while this had familiarity, it took no account of difficulties or opportunities for improving performance in different types of building.
- So the Department for Communities and Local Government (DCLG) developed an alternative option to provide 25% on aggregate overall, rather than per building.
- This is because some buildings are more able to deliver more than 25%. The aim in Part L 2010 is to deliver a national target of 25% when applied across the build mix – with separate aggregates for domestic and non-domestic buildings. This, says, DCLG, maximises CO₂ reduction.
- The detailed proposals will be laid out in a 600-page consultation paper soon.

Source: DCLG

Pyramid that holds secret of zero carbon

Engineers got a step closer to learning what the definition of ‘net zero carbon’ for homes should be, at the CIBSE national conference.

Paul DeCort, principal building services professional at the Department of Communities and Local Government (DCLG), told delegates that it is expected to be based on the zero carbon ‘pyramid’ and should involve three steps in a prioritised, hierarchical approach.

The first is energy efficiency, where energy demand is reduced to begin with. The second is carbon compliance – the industry's target emission rate – and looks at which on-site zero carbon technologies and connected heat can be used. The third is allowable solutions.

“We're not suggesting at this stage that we can reach net zero carbon purely through building regulations,” DeCort said. “There



Bordass attacks bureaucratic approach

are a number of other ways, but the jury's out and we'll be publishing the analysis of that consultation later this year.”

Bill Bordass of the Useable Buildings Trust said: “I compare the consultation document, which is 100 rather obscure pages, with a US definition [of zero carbon], which is three sentences – this illustrates the huge over-bureaucracy we've got around these things.”

International

Safer water for Vietnam

WSP Finland has won a water and sanitation project in Vietnam. The project aims to provide a safe drinking water supply plus waste water services to meet the needs of the urban population and their economic activities in eight provinces in northern Vietnam. Works are scheduled to start in July.

Light shed on Saudi railway

Four railway stations are to be designed by Foster + Partners and Buro Happold in Saudi Arabia. The public areas of the Haramain high-speed railway line – including platforms – will be environmentally controlled to enhance comfort and will have filtered natural daylight throughout.

Green revamp for US icon

The Clinton Climate Initiative (CCI) has coordinated a green refit of the Empire State Building in New York. The multi-million dollar project is expected to save 105 metric tonnes of carbon dioxide over the next 15 years to transform it into an icon of sustainability.

Dutch team bridges gap

Arup Amsterdam and Bentheim Crouwel Architecten have produced a winning bridge design for the 'Ponte Palazzo' footbridge in Den Bosch in the Netherlands. Designed as a park above the city, the footbridge connects the Paleiskwartier and the old city centre.

Arup comes top in China

Arup has received the Zhan Tianyou Civil Engineering Award for its work on the Bird's Nest, the Water Cube, Beijing Capital International Airport Terminal 3 and the Fencing Hall/ National Convention Centre projects.

Eastern Europe initiative

Multidisciplinary consultant WYG has been appointed to provide support services for important socio-economic initiatives in Poland, Tajikistan and the Kyrgyz Republic. The works will help to improve education, business and civil services.

'Green' Budget falls short of sector's carbon hopes

Plans in last month's UK Budget for a green stimulus package and cutting carbon have been broadly welcomed by the building services industry.

However, some in the industry have expressed reservations over whether the proposals go far enough.

Alistair Darling, Chancellor of the Exchequer, committed Britain to reducing carbon emissions by 34 per cent by 2020 – in line with recommendations from the independent Committee on Climate Change.

An extra £435m is also to be earmarked for boosting energy efficiency measures in homes, businesses and the public sector.

In addition, £45m is going towards encouraging small-scale renewable electricity and heat technologies – mainly via the Low-Carbon Buildings Programme – while £25m is earmarked for supporting low-carbon community heating schemes.

The troubled Building Colleges for the Future programme will receive an extra £300m to help kick-start some 71 projects that were halted this year because of a funding crisis.

A further £500m is also being earmarked for stalled public housing projects, while councils will receive £100m towards building more energy efficient homes.

A £405m package aimed at boosting green manufacturing and technology was also announced. CIBSE chief executive Stephen



Matthews: green industry growth vital

Matthews said: "Funding an expanded green industry is vital to ensure Britain can meet these new targets [for a 34 per cent carbon cut]."

"We need to deliver the manufacturing capacity and skills if we are to deliver on these goals."

But Paul King, chief executive of the UK Green Building Council, said: "More could have been done to really make green refurbishment affordable and attractive to homeowners, businesses and the public sector, in order both to cut carbon emissions and create green-collar jobs."

"This is a wasted opportunity to map a truly low-carbon route out of this recession."

Philip Wolfe, director general of the Renewable Energy Association, was similarly critical. "We are allocating substantially less to sustainable energy during the global downturn than other countries, and this will leave our world-class renewables businesses at a



King: a wasted opportunity for change

competitive disadvantage," he said.

John Piggott, of the Arup consultancy, argued that the £525m cash injection for wind farms announced in the Budget was a redistribution of an existing budget, rather than new money.

Alasdair Young of Buro Happold welcomed the Budget announcement that ushered in an exemption from the climate change levy for combined heat and power plants (CHP).

But he added that further financial incentives were needed "to encourage the use of CHP in the urban environment".

The president of the Royal Institute of British Architects, Sunand Prasad, criticised the Budget packages.

He said: "Regrettably, in the current economic climate, the government has found it impossible to make a significant investment in the long-term future, either in housing or infrastructure."

Guide offers link to climate change projections

A new CIBSE document to help building services engineers make use of the latest climate change projections is now available.

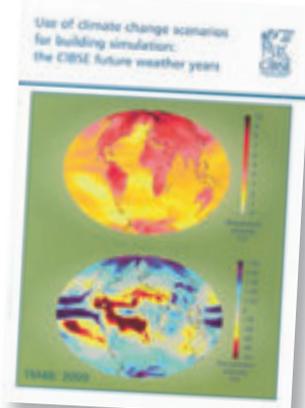
The booklet, *TM48: Use of Climate Change Scenarios for Building Simulation: the CIBSE Future Weather Years*, aims to provide guidance for anyone interested in climate change and its impact upon building design.

It describes the new weather series and the methodology used to generate them. It also provides guidance on their use in building design for increasing the resilience of

buildings to the impacts of climate change.

The information in the *TM48* guide is also featured in CIBSE's online Design Compass and weather data tool (www.cibsedesigncompass.org.uk). The compass provides easy access to various areas of CIBSE guidance using comprehensive signposting.

The *TM48* publication costs £25 for members and £50 for non-members, and can be purchased by calling 020 8772 3618 or online at www.cibse.org/publications



MEPs push for ramp-up of renewables in drive for buildings efficiency

New buildings should be able to produce as much energy as they use in a bid to boost energy efficiency, according to MEPs.

The European Parliament is calling for the 2002 Energy Performance of Buildings Directive to be changed to improve the energy efficiency of buildings. From 2019, all new buildings should produce as much energy as they consume on-site via renewable sources, such as solar panels or heat pumps, says a report drawn up by MEP Silvia-Adriana Ticau from Romania, which was backed by the European Parliament. The parliament also wants EU member states to set intermediate national targets for existing buildings, for example to fix minimum percentages of buildings

that should be zero-energy by 2015 and by 2020 respectively.

MEPs are also calling for more public investments in energy-efficient buildings; national action plans to be drawn up by mid-2011 setting out financial tools to help implement energy efficient methods; and for a common methodology for calculating the energy performance of buildings across Europe to be established by the European Commission by 31 March 2010.

The European Partnership for Energy and the Environment's (EPEE) director general, Friedrich Busch, said: "This vote is a clear indication of the political willingness in the EU to achieve its efficiency targets."

Separately, a report on boosting

the energy efficiency of buildings internationally calls for an "immediate, major, coordinated and global effort" to slash energy consumption. New modelling in the \$15m Efficiency in Buildings project by the World Business Council for Sustainable Development (WBCSD) shows how energy use in buildings can be cut by 60 per cent by 2050 – but action must be taken by governments now and not left to market forces, it says.

WBCSD president Björn Stigson, said: "Unless there's immediate action, thousands of new buildings will be built without any concern for energy efficiency, and millions of existing, inefficient buildings will still be standing in 2050."

www.wbcscd.org



Hospital aims to become carbon free

Green technologies are being used in the redevelopment of Great Ormond Street Hospital (GOSH) to help it become one of the greenest buildings in London. The work, due to start before the summer, will aim to make the site carbon free and able to supply around 20 per cent green energy to other parts of the hospital. Bill McGill, director of redevelopment, said: "We believe this is as green as it is possible to get for a central London building." The redevelopment, designed by Llewelyn Davies Yeang, is being used as an example to other developers, and the energy assessment is being used by the Greater London Authority as a guide to best practice.

Sector has lots of 'bright spots' amid recession

A former Labour construction minister has insisted there are several "bright spots" for the industry despite the impact of the recession.

In a speech to the CIBSE Patrons annual lunch at the House of Lords, Nick Raynsford, MP for Greenwich and Woolwich and deputy chairman of the Construction Industry Council, said the impact of the downturn on the sector had been "severe" but there were many examples of success.

He pointed to the positive report given by members of the International Olympic Committee about progress on the London 2012 Games building projects; the launch of the long-awaited Crossrail project; the Building Schools for the Future programme; and the housing regeneration work being carried out by the Homes and Communities Agency as examples of how the industry was delivering in tough times.

He said the biggest challenge was to improve the existing building stock, which would require major input from the building services industry. He also called for increased use of post-occupancy evaluations to analyse why some buildings "look good in theory, but fail in use".

Some CIBSE awards now 'open to all'

The categories for next year's CIBSE Low Carbon Performance Awards have been announced. For the first time, entry is open to all in many categories.

The awards celebrate proven achievements in delivering carbon savings in buildings. Last year they were only open to LCEAs and LCCs (low carbon energy assessors/low carbon consultants). Now, all but three categories are open to all.

- The 2010 categories are:
- New build project of the year;
 - Refurbishment project of the year;
 - Design/technical innovation of the year;
 - Product innovation of the year;
 - Low carbon consultant of the year (only open to CIBSE LCCs);
 - Low carbon energy assessor of the year – EPC (only open to CIBSE LCEAs);
 - Low carbon energy assessor of the year – DEC (only open to CIBSE LCEAs);
 - Client of the year – energy performance;
 - Client of the year – low carbon operation; and
 - Low carbon manager of the year.

Tories would scrap HIPs if elected

The Conservatives have pledged to scrap Home Information Packs (HIPs) if the party gains power at the next general election, leaving energy performance certificates (EPCs) to the end of the sale process.

The Tories outlined their intention in the party's recent housing green paper, *Strong Foundations*. The paper says: "We will scrap the discredited HIPs, liberating EPCs to genuinely help people improve the environmental standing of their property."

EPCs will play a significant role in helping to cut carbon dioxide emissions, but the certificates should not inhibit a property's marketing process, the paper says, adding: "Energy performance certificates should be required only by the end of the sale process, rather than being a legal requirement as the house is placed on the market."

News in brief

Olympic stadium progress praised by inspectors

Work on London's development plans for the 2012 Olympics received praise from international inspectors. The International Olympics Committee inspectors said they were impressed with progress on building the stadium, which is about one third of the way to completion.

Flexible working right extended for parents

New rights on flexible working for UK employees came into effect last month. Parents can now request flexible working patterns if they have children up to the age of 16. Automatic penalties for employers who underpay on the National Minimum Wage have also been introduced, as have simpler dispute-resolution rules to help workers and employers deal with workplace disputes.

www.berr.gov.uk

New CPD course provider

Commercial air humidification system provider HygroMatik has received certification as a recognised CIBSE continuous professional development (CPD) course provider. Attendance at a CPD course can count towards an individual's CIBSE CPD requirement. For details of the course, contact ac@hygromatik.co.uk

Radiant heating gets CPD treatment

A CIBSE-recognised CPD presentation on radiant heating has been launched by manufacturer SAS International. Contact cpd@sasint.co.uk

Fire CPD seminars launched by firm

Engineering services provider Hilson Moran has launched two new CPD seminars aimed at helping design teams evaluate fire safety needs for new projects and ensure legislative compliance. The courses are approved by the Royal Institute of British Architects.

Plan for carbon-critical design gains momentum

An industry-wide plan to put carbon consumption at the centre of the building design process is gaining momentum, according to bodies involved.

The Construction Industry Council, the forum for professionals in all sectors of the built environment, has been developing the idea of 'carbon-critical' design.

The plan, led by CIC chairman Keith Clarke, aims to 'embed' questions about a project's carbon footprint in the initial stages of the design process.

CIBSE has now joined forces with the British Institute of Facilities Management to work with the CIC on developing one strand of the plan – focusing on building operation and performance.

Other strands include carbon costing, low carbon design and infrastructure, with CIBSE also actively involved in the low-carbon design strand.

"We will not crack the carbon emission reduction nut without addressing the existing built environment," said John Armstrong, CIBSE past president who, along with Gordon Ludlow



istock/photograndia, inc

Designers are urged to put carbon at the centre of the design process

of BIFM, is leading the building-operation strand.

The aim of this strand, he said, is to develop and promote:

- A specific set of publications and downloadable services in support of the carbon-critical mission;
- A flexible learning module within the CIBSE scheme;
- "Low-carbon consultant" competences – specifically to help building operators to understand more about design, and designers, to understand more about building operation; and
- Practical delivery of improvements identified in energy performance and display energy

certificate recommendations or advisory reports.

Speaking at a seminar last May, Clarke urged the construction industry to take on the challenge of responding to a "carbon-critical economy".

Clarke, who is chief executive of building services provider Atkins, said this entailed changing the "design question" so that minimising carbon is at the heart of every building project.

"If that requirement is not factored in, then the assets or the infrastructure we are creating today will not be sustainable," Clarke said.



Cambridge building gains BREEAM Excellent

Cambridge University's new Alan Reece building for the Institute for Manufacturing has received a BREEAM Excellent rating. The building, developed by consultancy AECOM (formerly Faber Maunsell AECOM), was found to have cut energy consumption by using natural daylight and natural ventilation as far as possible, as well as a biomass boiler for low-carbon energy.

Five companies bid for Tube works

Five construction firms have been shortlisted for the multi-million pound Tottenham Court Road Underground redevelopment in central London.

The ticket hall will be expanded and the station will have twice the capacity once works are complete. The plans also include a Crossrail station and piazza.

The station is currently used by about 150,000 people a day. That figure is expected to grow to 200,000 when Crossrail opens in 2017. The shortlisted companies are: Balfour Beatty; Morgan Est; Taylor Woodrow; joint venture – Skanska & Mace; and joint venture – Costain, Laing O'Rourke and Bachy.

The contract is expected to be awarded in November 2009.

Engineers 'can learn from nature' to cope with climate change

Building services engineers should use the laws of nature to help them overcome the challenges of climate change, according to a leading expert in the science of biomimetics, which considers how technology can learn from nature.

Professor George Jeronimidis, from the University of Reading, told a meeting of the Rumford Club last month that building services engineers tend to take an "additive approach" where they add technical systems on top of the building design rather than using the structure of the building to mitigate environmental impacts.

"It is not a case of trying to imitate nature, but to take inspiration from it – simple physics can lead to smart engineering," he said.

He urged engineers to look at how nature overcomes changes in climate and shortages of resources.

"Trees have a lot in common with buildings," he said. "They are rooted to the ground so, in order to survive, they have to produce their own solutions. In nature, if you are wasteful you will not survive."

Jeronimidis told Rumford Club members that architects often try to mimic the shapes of nature,



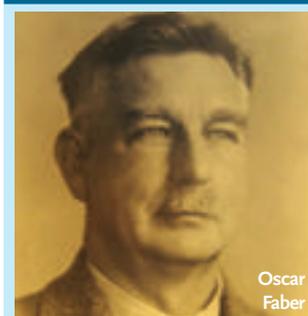
Engineering inspiration: termite nests have an amazing ability to regulate temperature

but the real benefits would come from looking at their functional attributes. Termite nests are often regarded as amazing architectural feats, but it is their ability to regulate temperature that should provide the greatest inspiration to engineers.

Lotus plants have developed self-cleaning leaves, which are vital to their survival as they are solar collectors and, to remain efficient, must be clear of dirt. The leaf wax they have developed can

be adapted for use in building façades to stop dirt clinging to their surfaces, according to Jeronimidis. The same science is being applied to aircraft skins to reduce drag, and can also reduce fuel consumption.

The ability of natural fibres to deal with forces and stresses has also inspired the structural design of buildings. "It is all about having the right structure," he said. "We have to change our approach and learn how to do the things that biology does effectively."



Oscar Faber

Faber fades under AECOM rebrand

Leading building services engineering consultancy Faber Maunsell | AECOM has officially changed its name to that of its parent company, AECOM.

The multi-disciplinary consultancy has been owned by the largest provider of professional, technical and management services in the world since 2001, when it was still known as Oscar Faber. In March 2002, Oscar Faber was merged with Maunsell. The brand alignment is expected to create a "more agile and client-focused company", AECOM said.

Ant Wilson, an AECOM director, said: "It's the right time to do it because everybody is focused on international markets.

"We'll be one company going under one brand, which gives our staff in the UK [more] opportunities." The AECOM group currently employs more than 43,000 people in over 100 countries, with more than 3,500 people working across Europe.

Member wins Queen's award for enterprise

A small company in the UK has won a Queen's Award for Enterprise for its patented ventilation controls.

The controls automatically turn on a fan when a cooker or shower is being used.

Nottingham-based West Energy Saving Technologies Ltd, set up by CIBSE member Phil West, won the award in the Innovation category. The company developed the Ventmiser CSM automatic ventilation controller to provide precise control over fans or central ventilation systems by responding to the usage of electric

cooking appliances, electric and conventional showers. By reducing dampness, condensation and cooking odours, the controllers protect the fabric of dwellings from damage as well as improving indoor air quality in an increasing number of properties, according to the company.

West said: "We are delighted to receive this Queen's Award, which we are sure will further legitimise our technology both in the UK and overseas."

Some major fan manufacturers have already taken up the technology, he added.



Phil West: the award will "further legitimise" the technology in the UK and overseas

Tel: 020 8675 5211 Fax: 020 8675 5449 Email: secretary@cibse.org

President: Mike Simpson FCIBSE, FSLL, FILE, FIET Chief executive and secretary: Stephen Matthews



CIBSE bursaries 2009



Mike McNally, business director of Hays Construction and Property, award winner Nicole Jean, and her tutor at Heriot Watt University, Roy Webb

London South Bank CIBSE Bursary Awards

On 4 March the Faculty of Engineering Sciences and the Built Environment held its fifth annual prize-giving ceremony at London South Bank University (LSBU).

The annual event celebrates the achievements and successes of engineering students for exceptional work, contributions to the industry and bursaries for the academic year 2008-2009.

The five CIBSE bursary holders were presented with £1,650 cheques to help and encourage them in their studies and progress within the BS industry. This was helped made possible by three of CIBSE's facilitated bursary sponsors: the AG Manly Charitable Trust; Modern Building Services; and the Worshipful Company of Fan Makers, who present contributions to the studies and progression of five LSBU students every year. The London South Bank University CIBSE facilitated bursary holders for 2008-2009 are:

CIBSE – The Modern Building Services Engineering Bursary

Awarded to: Alpha Soire (continued from last year), studying HND Building Services Engineering.

Alpha made excellent use of the bursary during his first year, attending the CIBSE National Conference and other CIBSE events.

He has been a model recipient of a bursary and we look forward to his report on year activities.

CIBSE – The AG Manly Charitable Trust Bursary x3

Awarded to: Benjamin Darko, new holder for 2009, studying BEng Building Services Engineering.

Benjamin is in his first year and has a natural talent in art and design and has always been interested in buildings and the facilities associated with buildings.

Awarded to: Ehsan Sattar, (continued from last year), studying HND Building Services Engineering. Ehsan made excellent use of the bursary during his first



Graham Manly and Ehsan Sattar

year. In a development from our programmes areas' Industrial Liaison Panel he is currently shadowing a facilities manager for one of the world's leading banks. **Awarded to: Mustafizur Rahman**, (continued from last year), studying BEng Building Services Engineering.

Rahman is now in his third year and is a continuing recipient of the bursary. He is enjoying the course and making good progress.

CIBSE – The Worshipful Company of Fan Makers Bursary

Awarded to: Andrew Thomas, studying BEng Building Services Engineering. Andrew joined the BEng honours Building Services Engineering in September 2007 and completed his first year with very good grades.

Heriot Watt student celebrates Hays/CIBSE bursary

A delighted **Nicole Jean** (pictured), a Building Services Engineering student in her final year of study at Heriot Watt University, Edinburgh, received a cheque for £1,500 as the CIBSE – Hays Construction and Property bursary holder for another year. It was presented by Mike McNally, business director of Hays Construction and Property, and Roy Webb, Nicole's tutor and BS course leader. Nicole will use the money to help with her studies and progression into the building services industry. Hays Construction and Property continue to contribute and work closely with the CIBSE facilitated bursaries scheme in encouraging and attracting young people into building services engineering. CIBSE would like to thank Hays and Mike McNally for presenting Nicole with her cheque, and congratulates Nicole on her success.

To find out more about the bursary scheme, or to become a sponsor, visit: www.cibseyoungmembers.co.uk

Thanks!

CIBSE would like to take this opportunity to thank the sponsors for their support and contributions to the CIBSE-facilitated bursary scheme, and congratulates the students on their success on being chosen from a very competitive selection of hopefuls.



News in brief

Building Simulation Group

The new Building Simulation Group held its first meeting on 6 April at CIBSE HQ. Eighteen people attended and Prof Hazim Awbi was voted in as the chairman of the new group. The attendees also agreed on a preliminary plan for a series of seminars commencing in autumn 2009.

If you would like more information about this new group, or would be interested in joining, contact Nyree Hughes at groups@cibse.org

From Member to Fellow

CIBSE is staging a free event for members who have been chartered engineers for 10 years or more, on Friday 15 May.

The event, in Balham, will include an opening address by past president John Armstrong, and inform members how to upgrade their membership. Contact clacey@cibse.org or visit www.cibse.org

New board members

CIBSE is pleased to welcome six new members to its Board.

Terry Dix (vice president) Peter Kinsella; Chani Leahong; Tony Sung; Nick Mead; and Stuart MacPherson formally took up their positions on 7 May.

The Board is the governing body of the Institution and has overall responsibility for setting CIBSE's strategy and for all operational matters. As well as attending regular Board meetings, members are actively involved in CIBSE Committees, regions and special interest groups, and represent the institution on outside bodies.

They will join the existing seven members of the board, including new CIBSE president Mike Simpson. We look forward to their valuable contributions.

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Training and Development

Training and development submissions

The closing dates for annual submissions to be received at the July and October Training and Development Panel meetings are 20 June and 8 September respectively.

Training submissions and any queries, plus employers' enquiries and applications for approved company training schemes should be addressed to Olwen Williams on 020 8772 3605 or at owilliams@cibse.org

CPD monitoring winner

We are pleased to announce that Dr Conn Hong Nei Yuen, CENG MCIBSE, from the Hong Kong region, has won the prize draw from the CPD monitoring exercise in December. He has been awarded a £50 publications gift voucher.

CPD Directory update

CPD course providers who would like to apply for an entry into the Directory of CPD Course Providers should contact Olwen Williams, training and development administrator, on 020 8772 3605 or at owilliams@cibse.org

We also accept applications for online courses. We welcome more e-learning applications.

The following organisations have recently been added to the directory: Caice Acoustic Air Movement Ltd Fire Safety Training Group University of Westminster

A concessionary rate is available for:

- Academic institutions;
- Not-for-profit organisations offering free or non-profit training courses;
- Sole traders who are members of CIBSE and offering non-profit training courses and;
- Sole traders who are members of CIBSE and the training business amounts to less than five per cent of their annual turnover.

CPD course speakers

All CPD course speakers can apply for CIBSE membership by contacting Bobby Wright on 020 8772 3639 or bwright@cibse.org

CIBSE Hong Kong branch celebrates 30th anniversary

CIBSE Hong Kong branch marked its 30th anniversary with an honorary dinner. Chairman Victor Leung gave a speech outlining its history and its future vision. The event was also attended by Hon. Eva Cheng, secretary of the Transport and Housing Office, who spoke about the forthcoming infrastructure and public housing development in Hong Kong, which presented exciting opportunities and challenges for the building services engineering profession.

Since its inception 30 years ago, the Hong Kong branch has organised numerous technical events, visits and seminars, as well as certificate courses in air conditioning, plumbing and drainage, providing members with opportunities for continued professional development. Over



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the last year the Hong Kong branch has also increased its participation in engineering research, particularly in research on thermal comfort in conjunction with Dongguan Institute of Technology, as well as participating in the recently-launched research by University of Hong Kong on Heat-Island Effect. Looking ahead, the branch aims

to contribute to local government consultations around legislation on building energy codes, increase participation in engineering research, develop the China region and provide support in establishing a Shanghai panel to coordinate CIBSE activity in China.

For more information email lam.herbert@pbworld.com

Members' opinions sought in consultations

Members can comment on the Department of Energy and Climate Change's (DECC) 'carbon neutral' consultation; its definition and recommendations for good practice.

It seeks views on a draft definition that can be used by individuals and organisations and in relation to the products (goods and services) they provide. The consultation also provides practical guidance on applying the definition and sets out recommendations on what constitutes good practice. Visit

www.decc.gov.uk/en/content/cms/consultations/open/open.aspx Comments must be received by 18 May 2009.

This is separate to the recent Department of Communities and Local Government consultation on the definition of zero-carbon buildings.

The **Carbon Reduction Commitment (CRC)** has reached the draft legislation stage. The third round of consultation contains three main documents: the draft CRC order, the accompanying consultation

and the revised Regulatory Impact Assessment scheme. DECC invites comments on the draft CRC order and a few detailed elements of the policy. Comments are needed by 27 May 2009. Visit www.decc.gov.uk/en/content/cms/consultations/open/open.aspx

The consultation on the revisions to **Part L** is expected to be released in early May. For further information about its release visit www.cibse.org/partl

All comments should be sent to smcdonough@cibse.org

Call for help in ARCC research

Members can help with high-profile research into the Adaptation and Resilience to a Changing Climate (ARCC) project.

Through the online stakeholder forum members can feed into research projects coordinated by UK Climate Impacts Programme (UKCIP). By being involved, members could benefit from having access to current research into the area and an opportunity to influence academic research in the BS field as an end-user.

The EPSRC (Engineering and Physical Sciences Research

Council) funded research portfolio includes projects that look into the adaptation and resilience of the built environment to climate change. Project themes include new and existing buildings and building services, urban environment, transport, water systems and infrastructure. The main aims of the projects are to develop guidance, weather data, case studies and tools based on the forthcoming UK Climate Change Projections (UKCP09), to be used by building professionals in the future proofing of the built environment

to the impacts of climate change. The current projects are looking into: developing methodologies for the use of the UKCP09 probabilistic information in the design of buildings and their systems; exploring the use of UKCP09 specifically for the design of drainage and management of flood risk; and analysing the impacts of the urban heat island effect in the urban environment and exploring urban design solutions to alleviate it. Six new projects will also be announced at the ARCC inaugural event in early May. www.ukcip-arcc.org.uk

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New cap will weigh

Many larger companies that have fallen outside the European rules on capping carbon emissions are now being drawn into the net. But some leading building services engineers are concerned about the workability of the scheme. **Bob Cervi** reports

Next month sees the closure of a UK government consultation on a policy that could have a significant impact on companies, local authorities and the building services sector. The Carbon Reduction Commitment (CRC) policy is due to be introduced next year, but some of its initial provisions are already beginning to take effect.

The introduction in recent years of the Emissions Trading Scheme (ETS) in Europe has meant that each EU country has had to set a cap on total carbon emissions from its energy-intensive industries, in order to meet the Kyoto agreement on climate change. Such industries include electricity generation, steel, cement and paper.

Under ETS, companies are allocated a carbon 'allowance' and can trade these annually. If they have exceeded their allowances they can cover this excess by buying additional allowances. If, however they have achieved an allowance surplus through a reduction in emissions, they can sell this surplus

to other firms that have exceeded their allowances.

Under UK legislation, the CRC is being brought in to apply a system of carbon allowances to non-energy intensive sectors, so long as they consume more than 6,000 megawatt-hours of electricity a year. These sectors cover operations such as supermarkets, hotel chains, office-based corporations and large local authorities.

Under the scheme, companies will have to pay for their carbon emissions up front – at a rate of £12 per tonne. This means a minimum bill of £35,000 for anyone in the CRC. There is also a long time lag between paying up and getting the money back.

Building services organisations and consultancies will have a role in advising and servicing the needs of organisations that come under the CRC net. But building services engineering professionals have mixed views about the viability of the CRC. Another complex layer of activity in the CRC scheme is that companies will be placed in an

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annual league table based on their carbon emissions and reductions.

Ian Butters of building services engineering group Fulcrum Consulting says the table will lead to a game of "carbon-reduction poker". Butters, along with other building services industry figures, took part in a recent debate on the CRC organised by the CIBSE Energy Performance Group (EPG) and Fulcrum.

He says that companies will want to work out how they sit in the table by trying to predict their energy usage up to a year ahead. The result will be companies jostling for position in the table by, for example, buying up carbon credits.

John Field of consultancy Power Efficiency argues that, in the initial phase of CRC implementation up to 2013, the process could actually increase emissions.

"The credit crunch has meant a reduction in energy usage, and there is loads of [unused] carbon sloshing around. This means the CRC may actually increase energy usage," he warns.

Field also points to a potential loophole in the system when it comes to changes in company

There is loads of unused carbon sloshing around – which means the CRC may actually increase energy usage – John Field

activity: "Minor changes to property ownership can enable a company to get [more] carbon allowance rights and push it [the company] up the league table."

David Farebrother of property group Land Securities believes that the CRC will reduce emissions overall – although probably not enough to meet government targets – but that some sectors will inevitably languish at the bottom of the table as others are more able to cut emissions. No matter how well commercial property groups do in reducing emissions, they might never be able to match the potential for major cuts by, for example, manufacturers.

James Patterson of consultancy

Anti-CRC views sway majority

The recent debate on CRC, jointly organised by the CIBSE Energy Performance Group (EPG) and Fulcrum, posed the statement: *This house believes that the Carbon Reduction Commitment will not reduce carbon emissions.*

Those attending the debate gave a show of hands before discussions started, and a clear majority rejected the motion – indicating a belief that the CRC can work. However, once the debate was concluded, a second show of hands revealed that the audience

had been swayed by the sceptics, with most attendees backing the motion.

The debate was chaired by Phil Jones of London South Bank University, who is also chairman of the EPG. Those who took the position of arguing for the motion were David Farebrother of Land Securities and John Field of Power Efficiency Ltd. Speaking against the motion were Patrick Brown of the British Property Federation and James Patterson of Environ.

www.cibse-epg.org

heavy on polluters

Many companies that are not high energy users will come under the UK scheme for cutting emissions



Environ insists that the CRC will be important in bringing the true cost of carbon emissions home to those companies that are so far outside the ETS requirements.

"These companies will have to decide whether to buy carbon [permits] or invest in abatement measures." Patterson points out that some airports are still using boilers from the 1940s, adding that there are many improvements on energy efficiency that can be made

relatively cost-effectively. Companies will want to make a difference under CRC because of its impact on their public image and corporate social responsibility policies, according to Phil Jones, research fellow at London South Bank University and chairman of the EPG.

"These 'softer' issues [of image] will come into play," he says. "It's not just about money, it's a feeling about where we want to be heading as a society."

According to comments from other building services professionals at the EPG debate, the CRC could turn into an unnecessarily complex and unworkable system for cutting carbon emissions, in contrast to a much more reliable solution: a carbon tax.

Such a tax, it is argued by some, would be a simple and effective means of enacting the principle underlying the ETS and CRC – the polluter pays.

With the CRC, sustainability is being turned into a "bean-counters' charter", according to some professionals, who regard it as too blunt an instrument for effecting change. But the ETS and CRC are here to stay, with the latter due to come into force as soon as this October.

The real crunch will come next year, when the process begins for selling carbon allowances to affected organisations. This initial phase will last until 2013, when the full-blown CRC takes effect. All of which should provide plenty of opportunities for consultancies to offer services to companies faced with the labyrinthine rules of the new system. ●

CIBSE members can comment on the CRC consultation by going to www.cibse.org/consultation. Comments should be sent to smcdonough@cibse.org by 27 May. The government consultation paper is at www.decc.gov.uk/en/content/cms/consultations/crc/crc.aspx

Timetable

Countdown to CRC implementation

2008-09: Organisations with half-hourly meters need to calculate their electricity usage. If consumption through these meters is greater than 6,000MWh/year, the organisation comes under the scope of the Carbon Reduction Commitment.

Early 2009: The environment agencies in different parts of the UK send out CRC registration packs to all relevant addresses using half-hourly meters.

March to June 4th 2009: Consultation period on the UK government's proposals.

October 2009: CRC regulations come into force, under the aegis of the Climate Change Act.

2010: Introductory phase begins, up to 2013. Carbon 'allowances' sold to CRC-participating organisations at a fixed price of £12 per tonne of CO₂ emitted.

April 2011: First sale of carbon allowances by organisations begins, based on allowances for both 2010-11 and 2011-12. Future sales will cover only the year ahead.

2013: Auctioning of carbon allowances begins – sales are no longer based on the fixed price. Other means of purchasing allowances also available, including the ETS.



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Letters

Teamwork does exist – but it seems to be in a parallel universe

So a report by the Specialist Engineering Alliance (SEA) finds that “building teams must work together to ensure sustainability” (April, page 9).

Reading this was like being transported to a parallel universe in which Sir Michael Latham’s 1995 *Constructing the Team* report had never been published. This report identified fragmentation as a major problem for the industry and, together with Sir John Egan’s *Rethinking Construction* report published three years later, kick-started a massive effort to modernise the construction industry.

The SEA is, of course, absolutely right to say we need to work in integrated teams – but why do we need reminding? Those of us who were paying attention back in 1995 have long since forged links within the supply chain and become active in third-party organisations like the UK Green Building Council. But the SEA’s report suggests that, for a large chunk of the industry, the concept of integrated teams is still a novelty.

If the industry had embraced the teamwork idea more enthusiastically first time round, achieving the UK government’s sustainability goals might not be the daunting task it is today.

Gerry Mitchell

Head of innovation, Saint-Gobain Isover

We need to keep an open mind about climate change

Martin Ratcliffe’s rebuttal of Nick Cullen’s column by cherry-picking the IPCC report (March, page 20; April, p14) has to be countered by another statement from it: “The last time the polar regions were significantly warmer than present for an extended period was about 125,000 years ago ...” No buildings existed then, to influence that.

When the primary goal is to reduce carbon, we need to be convinced that this can meaningfully influence climate change. CIBSE is a learned institution, and we must keep open minds. We have a responsibility to society as a whole.

Those who are convinced that man-made carbon is the predominant influence on climate should turn their attention to transportation, agriculture, industry, electricity generation and land use, where greater savings can be made. Applying their logic would mean that we should focus more on coastal protection than on buildings; but we would also need to be convinced there is substance to the alarmist



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claims on sea levels. Responsible building engineers already strive to reduce energy use (and carbon emissions).

Global warming is a natural phenomenon but so is latching on to fashionable trends. Let us spend more time on properly engineered projects and less on evangelism. We may even save more carbon. Who knows, the unusual achievement of having a few satisfied clients may one day become the norm.

J H R Hampson *CEng, CIBSE Fellow*

My crystal ball remains cloudy on climate change future

I read Nick Cullen’s article about climate change doubts in the March *Journal*, and then Martin Ratcliffe’s response in April (page 14). I look forward to Martin’s pleasant prediction that the UK climate will in the future become like the south of France, but my off-the-wall hypothesis is that geography, latitude and the Atlantic jet stream will intervene, and the UK climate will remain as disappointing as it is now, so I won’t order the sun awnings just yet.

It seems a reasonable hypothesis that six billion of us must affect the planet, and carbon emissions are a likely part of this, so personally I have *chosen* to save energy. Every light source in my house is a low-energy one, I have changed them frequently for the latest version, baffling my poor wife who often wanders the house in semi-darkness! I save energy and recycle where I can.

Martin believes expert climate predictions. I wish I could share his faith, but I may be blinded by doubt and cynicism. In my lifetime, the end of our human civilisation has been predicted by experts several times, through population growth, famine, nuclear war, pandemic, bird flu, Sars, ozone depletion, and even the infamous millennium bug. In 2009 the world economy lies in ruins, for reasons not predicted by any

economic expert, undiscovered by rigorous auditing and governance. It is the same economic experts who invented carbon trading – should this concern us?

Whether we like it or not, we in CIBSE are into the prediction game in a big way, we are profoundly ‘sustainable’, nearly every article in the *Journal* declares this intent. But to be ‘sustainable’ you have to know what is going to happen in the future, you have to predict with accuracy: getting it wrong is not ‘nearly sustainable’, it’s just wrong. Can we predict the future with accuracy? I can offer no helpful predictions; as I have grown older my crystal ball has got cloudy. How’s yours?

John Cooknell

Take the LEED on doing nothing

Your article on LEED (March, page 42) states: “Current LEED APs will have two years to opt into the new system to avoid losing their qualifications, by agreeing to CPD requirements and demonstrating basic experience with one LEED project.”

Having reviewed the US Green Building Council website, this statement appears to be incorrect, as there is an option to: “Do nothing; remain designated LEED AP without a speciality title in the LEED Professional Directory.”

Edward Humphries *LEED AP, USA*

CIBSE Journal welcomes article proposals from any reader, wherever you are – whether it be letters, longer opinion pieces, news stories, people or events listings, humorous items, or any ideas for possible articles.

Please send all letters and any other items for possible publication to: bcervi@cibsejournal.com, or write to Bob Cervi, Editor, CIBSE Journal, Cambridge Publishers Ltd, 275 Newmarket Road, Cambridge, CB5 8JE, UK. We reserve the right to edit all letters. Please indicate how you wish your letter to be attributed, and whether you wish to have your contact details included.

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A dim guiding light

The buildings services engineering profession is still failing to get the most out of the young talent at its fingertips, says young engineer **Michael Norton**



What are the key concerns of young building services engineers at present? I would argue that, amid the current economic downturn, job security is at the top of the list.

The recession in Britain and elsewhere has resulted in something which is likely to be new to anyone under 35. Many young engineers are faced with the prospect of losing their jobs and some have already done so.

What must be going through the mind of a young engineer who is perhaps studying part-time, when they are told they may not have a job or a sponsor for their studies? Senior engineers need to build on what is being done today and work towards a future where the path from junior to senior professional is much more structured and smooth.

CIBSE and industry have an important role to play here. Companies who employ young people could do more with structured training and make more time available to allow young members of staff to attend CIBSE events such as the annual conference. CIBSE could play a part here too with more focus on encouraging companies to provide support and training.

In general, a greater effort is needed in the overall support and guidance for young engineers, and now more than ever. There are many tools and facilities for young people to learn and develop their skills such as CPD events and completing the CPD page in the CIBSE journal. However there seems to be a lack of awareness amongst young engineers in this area.

From experience I can say that the early days of a building services engineer are all about learning the basics in what is a complex and diverse subject. A young engineer or graduate will quickly have to learn that there is much more to what we do than the basic calculations, drawings and report production. We must work well in a team, know where a clients needs are and how to apply what we know to what will often be a challenging brief.

However, there is also the need for the young engineer to explore the wider aspects of our industry – such as facilities management, manufacturing, client relationships, and HSEQ (health, safety, environment

and quality management), to name a few. There is a huge amount to learn, and many young engineers can feel overwhelmed, but may be reluctant to ask too many questions.

As designers we will inevitably come in to contact with other disciplines as well as manufacturers contractors and facilities managers. In order to have a successful relationship with all these other people an understanding of who they are and what they do is extremely important.

The danger with this is that a young person's development may take longer than necessary. It's all too easy for junior staff to be forgotten with their needs not being addressed. Every senior engineer or manager was young once but far too often seem to forget what it was like.

Fortunately, this need not always be the case and there are some shining examples of companies doing a very good job with the training and development of young people within their employment, and not just in the area of design. CIBSE has recognised this and this year will be presenting the first CIBSE/YEN Champions Award to the company that has done the most for young people within their particular organisation.

So do young engineers have anything to worry about? I think so, but I think more importantly it's our industry as a whole that has something to worry about by not getting the best out of the young talent at its fingertips. ●

For information on the Young Engineers Network, use the link at www.cibse.org The YEN website also contains details of the CIBSE Champions Award and an application form. The CIBSE young members blog is at www.cibseyoungmembers.co.uk

Michael Norton is a member of the CIBSE YEN Network

 **Senior engineers need to work to ensure the path from junior to senior professional is much more structured and smooth** 

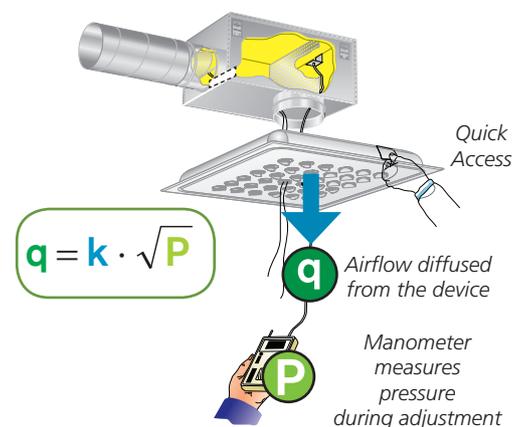
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The F-Gas plan

You may not realise that the equipment you deal with contains an F-Gas. If it does, you may need to take action or start devising a replacement plan, writes **Hywel Davies**



Do you use, maintain, install or manufacture equipment that contains an F-Gas, or do you have clients who do? Anyone with stationary refrigeration, air conditioning or heat pump equipment containing gases such as R404A and R408A is affected by the F-Gas Regulation and needs to have a plan for complying. Perhaps your clients could use your help to prepare for it?

F-Gases are a family of gases similar to hydrocarbons, with fluorine replacing some hydrogen atoms. They were developed over many years because they have excellent refrigerant properties. What wasn't realised until much later is that these hydrofluorocarbons (HFCs) are powerful greenhouse gases (GHGs) that contribute to global warming if released into atmosphere. And some are ozone-depleting substances (ODPs) too.

Since the Montreal Protocol of 1987, manufacture, use and handling of ODPs, including CFCs, HCFCs as well as HFCs, all widely used in refrigeration, air conditioning and heat pumps, have been increasingly stringently controlled. The EU Ozone Regulation of 2000 set a timescale for the phase-out of CFCs and HCFCs. And the 2006 EU F-Gas Regulation introduced strict inspection rules for operators of such equipment containing more than 3kg of HFC.

This regulation defines the operator as "the natural or legal person exercising actual power over the technical functioning of the equipment and systems...". This includes:

- Free access to the system to supervise its components and their function;
- Control over day-to-day operation, eg, ability to switch it on or off; and
- Power (including financial) to decide on technical modifications (eg, replacement of a component, installation of leak detectors) and to have checks or repairs carried out.

If all these powers are contractually devolved to a third party, then authority and responsibility will also be deemed as transferred. If the powers are only partially transferred, responsibility stays with the original operator. Even with a comprehensive

maintenance contract, responsibility stays with the owner if they have day-to-day control of the system. The greatest area of complication is in multi-tenanted air-conditioned buildings, where it is important to refer to the lease – which may specify which party is responsible for the operation and upkeep of the system.

Therefore, such operators have a legal duty to have the equipment checked regularly for leaks, by qualified people. Companies employing personnel who handle refrigerant must ensure that they have appropriate qualifications. The UK environment department (Defra) has designated Refcom the mandatory certification body required by the UK Fluorinated Greenhouse Gases Regulations.

The frequency of F-gas inspection depends on the amount of refrigerant in the system. Systems with 3kg to 30kg require annual inspection (the minimum size rises to 6kg for hermetically sealed systems). Systems with 31kg to 300kg (sealed or otherwise) need six-monthly checks, and systems over 300 kg need quarterly checks, although fitting an approved automatic leak detection system halves this. Any air conditioning system over 12kW effective rated output also requires regular inspection by an accredited inspector under Part 4 of the Energy Performance of Buildings (EPB) regulations. Under the EPB regulations, systems must be inspected every five years (in some cases in Scotland every three years).

The F-Gas and Ozone regulations limit the availability of replacement supplies of some refrigerants, so that recycled refrigerant, if available, may be the only option – and only for a limited period. It may be prudent to begin to plan for the replacement of older systems. Operators need to have a plan for the management and replacement of these assets over the coming years. ●

Hywel Davies is technical director of CIBSE
technical@cibse.com

Operators have a legal duty to have the equipment checked regularly for leaks, by qualified people

CFC

Chlorofluorocarbons. Historically used in refrigeration, foam blowing and aerosols. Now completely banned under the EU Ozone Regulation (2037/2000).

HCFC

Hydrochlorofluorocarbon. Similar uses to CFCs. Already phased out in many applications under Ozone Regulation, totally banned in EU by 2015.

HFC

Hydrofluorocarbon An F-Gas, with similar uses to CFCs and HCFCs. Regulated by EU F-Gas Regulation (842/2006).

For details of the REFCOM scheme go to www.refcom.org.uk/contact_refcom.html
For details of air conditioning inspectors go to www.cibsecertification.co.uk/ccw/consultants/airconditioninginspectors

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When an inspector calls...

In the first of our occasional question-and-answer columns on technical and professional issues, CIBSE's team of specialists answer queries around energy assessments of buildings

Q A public body occupies a space over 1,000m² but does not have any utility bills for the past year. Do they still need to produce a DEC?

A The energy assessor should explore all options to get data on energy usage. But where that is not available s/he will use the default values to produce a "default" DEC for the first year. This extract from Department for Communities and Local Government guidance gives the full explanation:

"The primary need is that you are able to identify all, or nearly all, of the energy that your building has consumed over the 365-day period for which the building will be assessed – called the assessment period. Your assessor will be asked while carrying out the calculation of the OR whether at least 95 per cent of the energy used by the building can be accounted for. If the assessor cannot make that assertion, then the building will be given a 'default' operational rating of 200. This indicates a CO₂ emissions rate of double the amount typical for the type of building selected, and is associated with a grade G label (worst performer)."

Q I need to produce a DEC, but the tenant has no details of the floor area. Do I [as an energy assessor] have to survey the building?

A If there are no plans, then the energy assessor must measure the building to get the floor area. The floor area is measured as the total area of all enclosed spaces measured to the internal face of the external walls.

Q I am a level 4 energy assessor. I've had several calls from people wanting me to lodge energy performance certificates (EPCs) on their behalf. Is this legal?

A At the time of answering, it is legal, but with a few caveats. Any energy certificate lodged by an energy assessor is a legal document and as such must be accurate to the best of their knowledge. Anyone that accepts data from a third party is therefore urged to make whatever checks they feel appropriate to ensure the accuracy and authenticity of that information before relying upon it to produce an EPC or DEC.

You may also wish to consider whether you will

be covered under your PI insurance if there is later a challenge to the EPC or DEC and it is found to be based on inaccurate data. As the energy assessor you are legally liable for data whether you collected it or not.

It may also be prudent to ask yourself why they are taking this course of action. If you are unsure of the data or the motives of a third party, do not produce the EPC or DEC. Any proven case of wilful deception or fraudulent production of an energy certificate is a criminal offence.

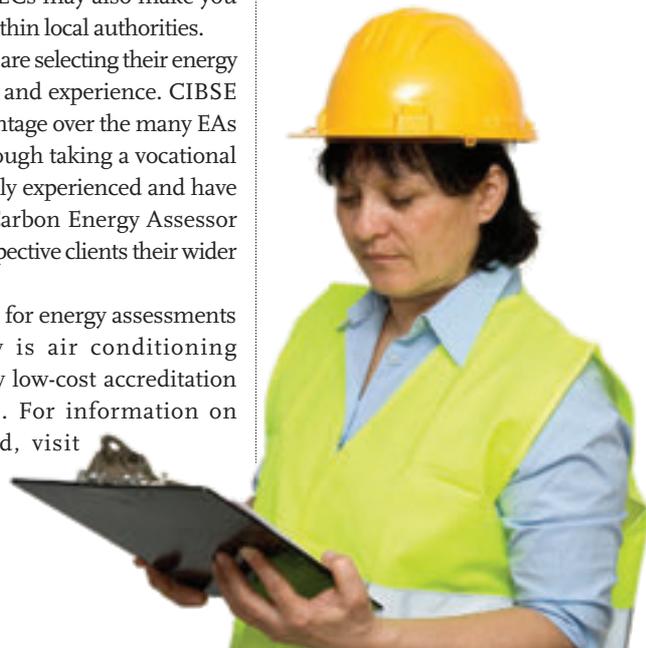
Q Is becoming an energy assessor a good way of insulating myself against the economic downturn?

A In any recession, the more qualified and experienced staff are more likely to be retained in preference to their less experienced colleagues – and this time round seems to be no exception. In fact many building services consultancies are considering offering energy certificates as part of their portfolio of services and are therefore retaining staff who are qualified energy assessors, even if they are having to let other employees go. The recession has certainly reduced opportunities in the marketplace, but being qualified to produce DEC's may also make you eligible for secure positions within local authorities.

Clients that do require EPC's are selecting their energy assessor based on reputation and experience. CIBSE members have a distinct advantage over the many EAs who are being accredited through taking a vocational qualification: they are generally experienced and have the backing of CIBSE Low Carbon Energy Assessor status, which confirms to prospective clients their wider competence and knowledge.

One area where the market for energy assessments is still expanding rapidly is air conditioning inspection, and this is a very low-cost accreditation to achieve through CIBSE. For information on how to become accredited, visit www.cibsecertification.co.uk or call 020 8772 3668. ●

The energy assessor should explore all options to get data on energy usage



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CIBSE's new beacon

CIBSE's new president takes up the role at a time of major threats and opportunities for the institution and the profession it represents. But, as a lighting expert, Mike Simpson knows a thing or two about illuminating dark corners, writes **Carina Bailey**

Mike Simpson has been fascinated by light since childhood, making his first lighting instrument from a Smartie tube and a Quality Street wrapper when he was four years old. That was half a century ago, and now the technical director of Philips Lighting and Design, who is the incoming CIBSE president, has plans to unite the lighting industry for "the common good of the profession".

He explains: "That's not to merge [the different lighting bodies] – as they all have their own distinct identity – but to find ways of doing things together to help support and develop the profession. I think we have a 'moment in time' to achieve this and I want to see this delivered in my [presidential] year."

Simpson's 30 years' experience within the lighting field has seen him design the external lighting for Tower Bridge, St Paul's Cathedral and the Pepsi-Max rollercoaster at Blackpool. He even has royal credentials, having designed the new façade lighting for Buckingham Palace in 2007, using solid-state lighting.

A family man at heart, with a wife and three children, Simpson also believes CIBSE has a duty to support its members through this difficult financial period, which has changed "all the ground rules" for his short-term vision for CIBSE. "[The institution] has to be all about supporting its members. Lots of people are going through difficulties in their work situation; people

are being made redundant. I think the main thing we have to do over the next 12 to 18 months, or however long this [recession] goes on, is to make sure they're in the best possible situation to practice their craft."

Ins and
outs of
office light
Page 45

This means making training and legislation updates a priority, with members having access to CPD and other initiatives the institution is involved with, such as the CIBSE Low Carbon Energy Assessor scheme, so as to offer more opportunities for finding a job, he says. It also means preserving members' time as much as possible.

"I think we have to be really careful of time bandits," Simpson asserts. "Using the modern technology that we have to disappear into the office for a telephone or web conference is going to make it easier than saying I'm going to Balham [CIBSE's London headquarters]. Webinars will be absolutely crucial to supporting our members in the future."

In the long term, he sees CIBSE becoming a pivotal >

"CIBSE has to be all about supporting its members. Lots of people are going through difficulties in their work situation; people are being made redundant"



The outside lighting for London's Tower Bridge is one of Mike Simpson's former projects

“People thought of CIBSE as people who put wires and pipes in a building. I'd like them to see it as the guys who deliver sustainable buildings and environments to live and work in”

> body in bringing together strands of building services that aren't currently represented within the institution: “That's not to say we want to take everybody over. We need to bring in people who've got those specialities that cover perhaps wider fields but also encompass buildings, so that we can start to integrate and bring in the whole building services field together in one organisation.”

The institution also has the opportunity to take the sustainability and energy efficiency agenda from the commercial building sector into the domestic arena, says Simpson. The challenge, however, comes in applying the equipment designed to run in a commercial building, and getting manufacturers to produce domestic versions and training the installers in the new technology. “I suspect if you give the average plumber a heat pump they would probably look at it and scratch their head.”

Simpson believes it will take 10 years to get the domestic sector ready, but he doesn't feel that it's necessary to embark on a PR campaign to educate the public about what building services engineers are, and what they do. However, he adds, there might be a case for raising CIBSE's profile among other UK and international organisations dealing specifically with the sector.

Simpson admits that, in the past, building services engineers may have been overshadowed by architects, but he insists that the tide is changing: the drive for sustainability means that engineers are beginning to work with architects at the concept stage.

As regards the branding of CIBSE itself – a contentious issue for some – Simpson says: “What

we want is for people to [look at] CIBSE and see sustainability. Traditionally, people thought of CIBSE as [representing] people who put wires and pipes in a building. I'd like people to see CIBSE as the guys who are all about delivering sustainable buildings and environments for people to live and work in.”

The size and scope of CIBSE is also something Simpson sees as a strength, compared with other larger institutions that can become too diverse. “Most larger institutions are a collection of smaller institutions under one banner. We could grow from 20,000 members to 100,000, and we would become large, but ultimately I don't think we would be serving our members.

“Maybe we'll start to attract other people involved in the building environment, not to jump ship but for them to come and share [their experience with us]. The future of the institution is not just for people who only do services but for those whose job touches on building services as part of their general remit.

“Maybe in the future [CIBSE] won't be an organisation only for the building services engineer, but one that encompasses a whole range of different professions that touch on the building environment.”

This might mean, Simpsons argues, that more societies and special-interest groups will form within CIBSE, incorporating these other elements that aren't currently linked into the institution – “like a one-stop shop for all the things that go into buildings, trying to draw all these professions together”.

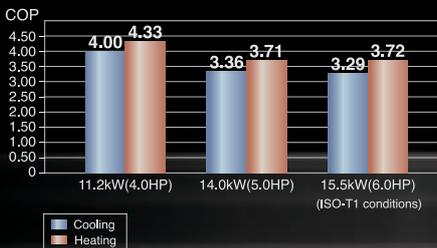
He adds: “[The societies and groups] probably tend to operate in isolation from each other at the moment. >

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Mike Simpson
BSc Hons, CEng,
FCIBSE, FSELL, FIET, FILE

CV

Born Christmas Day 1954
in Bromley, London

Education BSc Hons
Electrical and Electronic
Engineering with lighting
specialism, South Bank
Polytechnic, London

Career
1977-1997: Technical and
design roles at Philips
Lighting including
designing the external
lighting for Tower Bridge
and St Paul's Cathedral
in London, and the
Pepsi-Max roller-coaster
at Blackpool
1977-2003: Technical
director, Marlin Lighting,
responsible for product
design and development.
Since 2003: UK technical
and design director,
Philips Lighting. In 2007
designs new façade
lighting for Buckingham
Palace using Solid State
Lighting

Honorary posts Worked
on the drafting panels
for many of CIBSE's
lighting guides as well
as British and European
Application Standards. In
1994, made president of
the Institution of Lighting
Engineers, and in 2001
president of the Society
of Light and Lighting.
Guest lecturer on college
lighting courses

Hobbies Theatre an
"enduring passion" –
outside of work, creates
lighting for the theatre,
mainly for pantomimes
and musicals

Family Simpson lives
with his wife, son
and two daughters in
Bromley



Mike Simpson's work at Philips has included designing the external lighting for St Paul's Cathedral, London

> Certainly one of the challenges for my year is to start to get cross-fertilisation between the different groups and societies so we start to join the dots. There's no point saying it's a one-stop shop for building services if you get to the shop and [find] it's like a store with individual departments in it."

Simpson, who has found a way to couple his passion for lighting with his enduring interest in theatre by lighting local amateur shows like musicals and pantomimes, has a great belief in the emerging and existing technologies designed to cut energy use and carbon emissions. So meeting the UK government's reduction targets are possible, he believes, but only if a holistic approach is taken, involving the people who conceive, design, locate the buildings, put in the services and then ultimately go on to use them. If they all come together, there's a chance of achieving the targets, says Simpson. But when it comes to references to zero emissions, he says it will be hard to imagine being able to meet zero-carbon targets unless we all stop working when it gets dark.

"You can put jumpers on for heat and open windows for cooling, but you have to have the light on when the sun goes down. Light will consume energy. We have to produce that light in the most efficient way we can, by making sure that it comes from renewable sources."

As for the future, Simpson sees the biggest challenge in 40 years' time for the industry as being able to make all existing buildings hit even tougher carbon reduction targets. But trying to foresee the changes that could occur in the lighting industry is nearly impossible, he insists.

"We are going through a technological revolution the like of which I have probably not seen in my career. In 10 years' time there will probably be something around that will be a really good solution to [our] problems, or



"In lighting terms we have to remember that whatever we are doing, it isn't just a set of numbers on a piece of paper, it's about creating an environment that people find pleasant and stimulating"

ones that no one even knows about [yet], or is just an idea on the drawing board at the moment. In 40 years' time? Goodness knows."

He predicts that, over the next 10 years, LED lighting will completely take over, and we could even be using something that is only just an emerging technology today, with the low-energy compact fluorescent lamps (CFL) that we're changing to now probably becoming obsolete in 10 years' time.

Simpson knows more than most about the angst caused by the demise of the incandescent lamp and the thrusting of the CFL upon the nation, but he says it could be a lot worse – people could be banned from having their lights on at all, for example.

"In lighting terms we have to remember that whatever we are doing, it isn't just a set of numbers on a piece of paper, it's about creating an environment that people find pleasant and stimulating. We have to do that first and then do it in an energy-efficient way."

He believes it is imperative not to return to the 1970s when there was such a big energy drive that it became the panacea of that time to save energy at any cost, leaving people with poor working environments. "We have come a long way in making sure that we talk about the environment for people. We don't want to lose that on the altar of energy efficiency." ●



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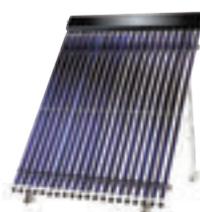
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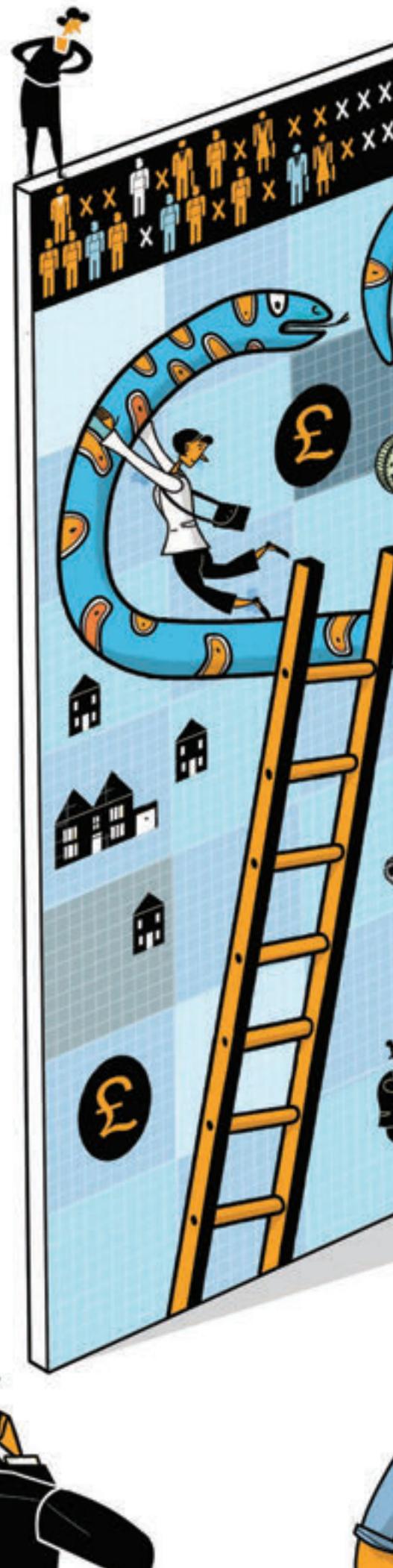
Slippery slope of recession

How have the credit crunch and recession impacted on the employment market in the building services sector? The new annual *Hays/CIBSE Journal jobs survey* shows that the landscape has radically changed, with employers more able to call the shots but certain skill sets in greater demand

The last 12 months have brought a marked change in recruitment activity, as the landscape has undergone a 180 degree transformation – from a market that was job-rich and lacking in candidates, to one that has fewer jobs that are more in demand. This has been mainly because of companies' reduced liquidity to fund private sector projects, which have had to be put on hold.

Despite this backdrop of the credit crunch and recession, there continues to be a demand for senior professionals in the **private sector** because of a shortage of skills at this level. Employers are prepared to offer competitive packages for partners of firms and company directors who can demonstrate a strong track record of winning business and shaping strategy.

The **public sector** has remained resilient, and building services professionals have experienced steady growth in opportunities, particularly within the >



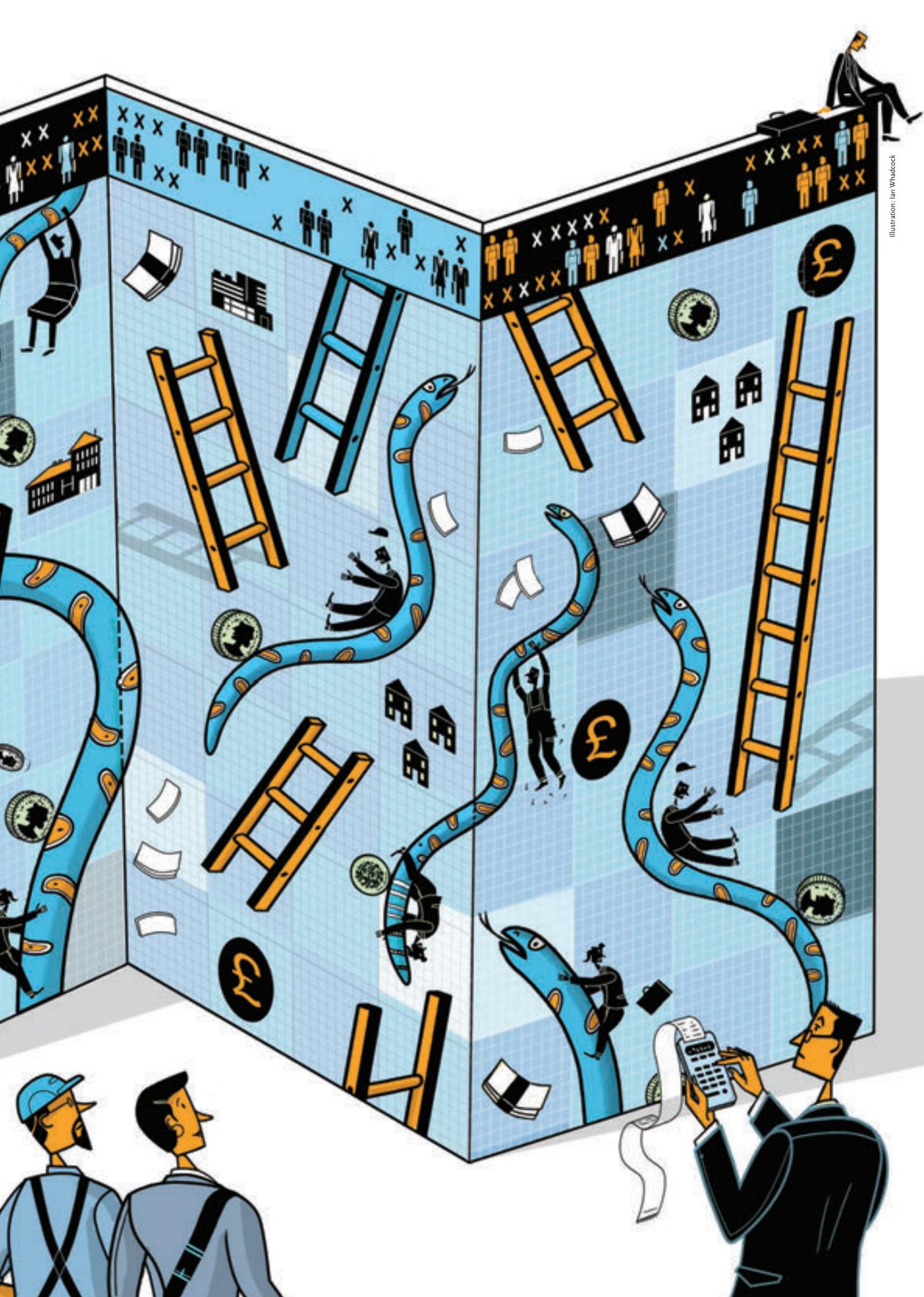


Illustration: Ian Whaddock

Recruitment

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For further information, contact Mike McNally, business director at Hays Building Services on 0191 222 0044 or visit www.hays.com/buildingservices

> NHS and education sectors. Organisations are keen to tap into the vast array of private sector skills, and competition for roles remains intense. Applicants need to work on their CVs and enhance their marketability, for example by highlighting their transferable skills, quantifying their achievements and outlining any previous experience of public sector projects.

While around one third of employers maintained salary levels and another third reduced them, 14 per cent increased remuneration.

This pattern is reflected in the national average year-on-year salary increases for experienced professionals, such as M&E quantity surveyors (a 3.9 per cent average rise), mechanical contracts engineers (1.8 per cent), management contractors (6.3 per cent) and consulting design engineers (1.8 per cent). Junior and graduate roles have not fared so well, with salaries falling across all specialist skill areas.

Key skills

A major trend highlighted by the survey is that employers can now afford to be more selective and want candidates that tick all boxes before offering a job. The interview process has also become more thorough, as there is even more pressure for employers to get their recruitment decisions right.

The reduction of carbon emissions to meet energy targets on new and existing buildings has fuelled demand for **energy efficiency specialists**, such as low carbon consultants and low carbon energy assessors with Part L, Energy Performance Certificate and BREEAM experience.

In the survey, more than four in 10 employees (42 per cent) thought that sustainability would have the biggest impact on the industry over the next five years. Achieving low carbon consultant status not only means that individuals can make themselves more marketable and command better salaries, but these specialists can make a real difference to consultancies and bring in much-needed project work.

Although salaries for senior **estimators** have fallen

by under 2 per cent nationally, in East Anglia they have increased by 6 per cent. Estimators are still in demand but in short supply. These individuals are needed by contractors to make sure that they can produce competitive prices for jobs and increase their effectiveness when tendering for projects.

Benefits

Although benefits remain important, the prime motivation for one third of **jobseekers** is a higher salary, followed by a new challenge, with only 12 per cent looking for enhanced job security – which is surprising in light of the uncertain economic climate.

So it's very clear that benefits don't appear to be jobseekers' priority at present – and, of course, if you're looking for a job, securing it is going to be more important than the benefits on offer.

The top three benefits offered to employees are annual leave entitlement (the top priority for 66 per cent), flexible working (62 per cent) and pensions (60 per cent).

The most important factor for employees considering a new job was the salary offered – a third of respondents put monetary benefits at the top of their list.

As to the benefits employees actually receive, these closely correlated with their preferences, although training and support also makes the top three (offered by two-thirds of employers). Flexible working is provided by only 49 per cent of employers.

In our survey, 69 per cent of employees said they would stay with their employers if they addressed the issues of concern to staff, while 59 per cent said they would recommend their organisation if they did so – which shows that job satisfaction continues to remain high. Just over a fifth (22 per cent) stated that they definitely would not recommend their employer.

Pensions

Whereas 92 per cent of employers offered pensions in 2008, this dropped to 78 per cent in 2009. The number of employers offering stakeholder pensions



has increased to 63 per cent (from 56 per cent in 2008) but there has been a marked decline in those offering final salary schemes (down to 11 per cent from 27 per cent) – which indicates a greater focus on cost management during the downturn.

Work-life balance

For the vast majority of employees (85 per cent), work-life balance remains 'good' or 'OK', which would suggest that employers are still offering competitive benefits. The number of respondents who rated their work-life balance as poor has also fallen year-on-year (from 17 per cent to 15 per cent), which reaffirms workers' job satisfaction.

Recruitment

Our survey revealed that just over half of employers (51 per cent) experienced problems recruiting during the last 12 months, a significant fall from 91 per cent in 2008. Sourcing appropriately qualified permanent staff remains the prime stumbling block, with almost three quarters of employers (74 per cent) attributing

this to a shortage of experienced rather than qualified applicants. Employers are clearly placing greater emphasis on track record in the industry – the ability to make strategic decisions and impact the organisation's bottom line.

Retention

When asked about problems retaining staff, our survey received an almost unanimous reply, with 95% of employers not experiencing any problems over the past 12 months. This is in stark contrast to 2008, when retention was an issue for half of employers.

This again highlights the current climate of job insecurity and the reduced propensity for jobseekers to change roles – 31 per cent of survey respondents said they did not plan on moving jobs. However, employers should keep employee engagement at the top of their agenda in this difficult climate, particularly if they have to make redundancies. ●

“ There’s been a significant fall in the number of employers experiencing problems in recruiting staff in the past 12 months ”



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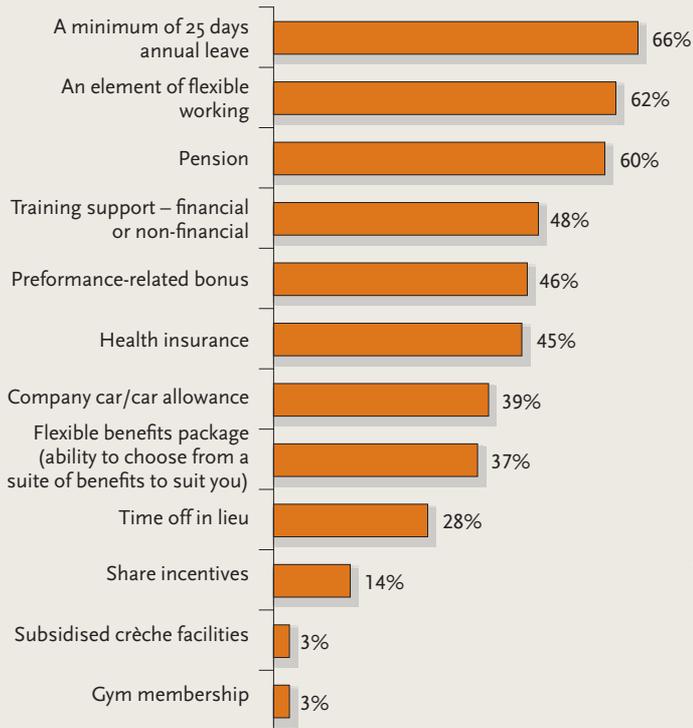
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Region	Senior M&E Quantity Surveyor, 40, HNC			Intermediate M&E Quantity Surveyor, 28, HNC			Junior M&E Quantity Surveyor, 20, ONC												
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09										
Central London	60000	9%	50000	2%	65000	8%	47500	6%	36500	-4%	48000	4%	25500	-2%	23500	7%	30000	7%	
North Home Counties	55000	4%	50000	6%	60000	0%	37500	-6%	34000	-6%	43000	-4%	22000	-12%	20000	-9%	27000	-4%	
South Home Counties	55000	4%	50000	4%	60000	0%	38000	-12%	35000	-8%	43500	-3%	24000	-20%	21000	-19%	28000	-20%	
South West	42000	0%	35000	-8%	48000	0%	36000	-3%	28000	-7%	38000	-10%	20000	0%	19000	0%	25000	-4%	
Wales	40000	8%	35000	0%	42500	6%	35000	0%	30000	-6%	38000	0%	20000	-20%	18000	-18%	25000	-7%	
West Midlands	42000	5%	38000	9%	45000	6%	35000	-3%	30000	-12%	40000	0%	22000	-8%	20000	-5%	25000	-4%	
East Midlands	40000	-5%	38000	-5%	45000	0%	33000	-3%	30000	0%	38000	-5%	22000	-12%	20000	-9%	25000	-11%	
East Anglia	45000	0%	42000	5%	50000	0%	35000	0%	30000	0%	39000	3%	23000	-12%	20000	-13%	26000	-7%	
North West	40000	-6%	36000	-5%	42500	-8%	34000	-6%	30000	-6%	36000	-8%	22000	-12%	20000	-5%	24000	-4%	
Yorkshire	40000	-5%	36000	-3%	45000	-4%	36000	-3%	30000	-12%	38000	-7%	22000	-12%	20000	-9%	24000	-8%	
North East	40000	3%	36000	0%	45000	5%	35000	0%	30000	-6%	38000	0%	22000	-12%	20000	-9%	24000	-8%	
Scotland	42000	-7%	38000	-10%	50000	-9%	34000	3%	30000	-6%	38000	0%	22000	-8%	20000	-5%	25000	-4%	
Northern Ireland	34000	0%	29000	0%	36000	0%	28000	0%	26000	0%	32000	0%	20000	5%	17000	0%	22000	0%	
National Average 2009	44231						36462						22038						
% Change 08-09	3.9%						2.2%						-7.9%						

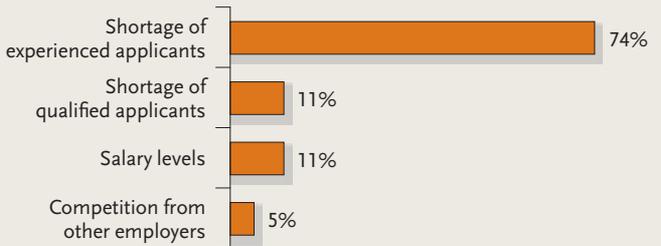
Mechanical

Region	Senior Mechanical Contracts Manager, 40, HNC			Mechanical Contracts Engineer, 35, HNC			Junior Mechanical Contracts Engineer, 24, ONC												
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09										
Central London	55000	0%	46000	0%	60000	9%	42000	-7%	40000	0%	45000	-6%	30000	0%	25000	0%	32000	0%	
North Home Counties	50000	-4%	42000	-7%	55000	-8%	40000	-7%	35000	-8%	42000	-7%	26000	-7%	25000	4%	30000	-6%	
South Home Counties	51500	-1%	45000	0%	57500	-4%	40000	-11%	35000	-13%	44000	-8%	26000	-13%	22500	-13%	31500	-10%	
South West	40000	8%	37000	9%	45000	7%	35000	3%	30000	-3%	37000	3%	23000	10%	18000	0%	25000	-4%	
Wales	38000	6%	35000	3%	45000	13%	35000	0%	30000	-3%	37000	-3%	22000	0%	18000	-10%	25000	0%	
West Midlands	42000	5%	39000	3%	50000	11%	35000	-3%	30000	-6%	40000	0%	25000	-4%	20000	-17%	28000	0%	
East Midlands	38000	0%	35000	0%	46000	-4%	35000	0%	30000	-9%	36000	-5%	24000	-4%	22000	-4%	26000	-7%	
East Anglia	45000	7%	40000	0%	50000	11%	35000	0%	32000	0%	40000	8%	25000	0%	22000	10%	27000	17%	
North West	38000	0%	35000	0%	40000	0%	33000	-6%	32000	7%	36000	3%	24000	-4%	23000	0%	25000	-14%	
Yorkshire	38000	0%	35000	3%	45000	7%	33000	3%	30000	3%	37000	0%	22000	-4%	18000	-10%	24000	-11%	
North East	38000	6%	35000	13%	45000	15%	33000	3%	30000	0%	37000	-3%	22000	-12%	18000	-18%	24000	-14%	
Scotland	36500	1%	32500	2%	44000	10%	34000	6%	28000	0%	36000	3%	25500	-2%	23500	2%	28500	2%	
Northern Ireland	38000	0%	35000	0%	40000	0%	32000	7%	28000	0%	35000	0%	22000	-8%	20000	0%	26000	0%	
National Average 2009	42154						35538						24346						
% Change 08-09	1.8%						-1.5%						-4.3%						

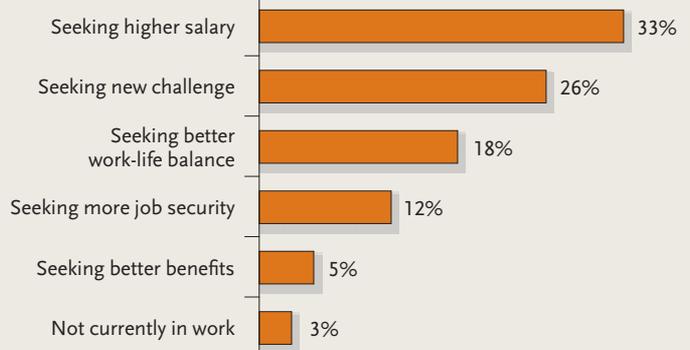
Benefits considered important to employees



Why employers had experienced problems recruiting staff



Factor that is most important in persuading employees to seek their next role



Contractors - Management

% shows rise/fall in salary on 2008

Region	Managing Director, 45, Degree, Chartered			Operations Director, 45, HNC/Degree			Commercial Director, 45, HNC/Degree		
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09
Central London	80000 10%	70000 8%	100000 0%	70000 8%	65000 7%	80000 7%	67500 13%	62000 17%	75000 15%
North Home Counties	75000 7%	70000 8%	100000 0%	68000 5%	60000 0%	75000 0%	65000 8%	60000 9%	75000 15%
South Home Counties	80000 14%	70000 8%	100000 0%	70000 8%	65000 8%	80000 7%	65000 8%	60000 9%	75000 15%
South West	60000 0%	55000 10%	75000 0%	50000 0%	40000 0%	60000 0%	45000 0%	40000 0%	55000 0%
Wales	50000 0%	45000 -2%	60000 9%	45000 2%	40000 0%	50000 4%	40000 5%	35000 9%	48000 20%
West Midlands	60000 9%	55000 10%	70000 17%	52000 4%	47000 4%	60000 9%	45000 0%	40000 0%	52000 4%
East Midlands	60000 7%	55000 6%	70000 17%	52000 0%	45000 -10%	60000 5%	45000 0%	40000 5%	50000 4%
East Anglia	56000 0%	52000 0%	62000 3%	52000 0%	47000 -6%	55000 -4%	50000 11%	42000 11%	55000 15%
North West	55000 10%	52000 16%	65000 14%	48000 0%	45000 13%	52000 4%	48000 7%	40000 7%	50000 11%
Yorkshire	55000 10%	50000 9%	65000 14%	48000 0%	40000 -2%	52000 2%	43000 0%	40000 8%	48000 14%
North East	55000 10%	50000 11%	62000 13%	45000 2%	38000 3%	50000 4%	42000 2%	38000 6%	48000 17%
Scotland	55000 2%	45000 0%	60000 0%	45000 5%	38000 6%	50000 9%	42000 11%	36000 9%	48000 9%
Northern Ireland	48000 7%	40000 0%	55000 10%	42000 5%	36000 0%	45000 0%	37000 0%	34000 0%	40000 0%
National Average 2009	60692			52846			48808		
% Change 08-09	6.3%			3.1%			5.1%		

% shows rise/fall in salary on 2008

Region	Project Director, 40, HNC/Degree			Operations Manager, 40, HNC			Commercial Manager, 40, Chartered		
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09
Central London	65000 8%	55000 10%	75000 15%	62500 4%	57500 5%	67500 4%	62500 4%	52500 5%	65000 0%
North Home Counties	63000 9%	52000 4%	70000 8%	60000 0%	55000 0%	65000 0%	62500 8%	52500 5%	65000 0%
South Home Counties	65000 8%	55000 10%	72500 12%	62500 4%	57500 5%	67500 4%	62500 4%	52500 5%	65000 0%
South West	45000 -10%	40000 -11%	55000 0%	45000 0%	35000 -10%	50000 0%	43000 2%	38000 -16%	50000 -9%
Wales	42000 5%	37500 7%	50000 14%	40000 3%	35000 6%	45000 13%	38000 -5%	33000 -6%	45000 2%
West Midlands	43000 -7%	38000 -10%	47500 -5%	43000 -7%	38000 -10%	45000 -10%	43000 -4%	38000 -10%	47500 -5%
East Midlands	42000 -7%	38000 -12%	47500 -3%	43000 2%	38000 -3%	45000 -2%	43000 -4%	38000 -5%	47500 -3%
East Anglia	48000 4%	45000 2%	50000 4%	45000 7%	40000 3%	48000 4%	45000 0%	40000 -5%	48000 0%
North West	42000 2%	38000 3%	46000 -2%	42000 -7%	38000 3%	45000 0%	42000 0%	38000 0%	46000 -4%
Yorkshire	42000 5%	38000 6%	48000 4%	42000 0%	38000 0%	45000 5%	40000 0%	36000 3%	46000 -2%
North East	42000 5%	38000 6%	48000 4%	42000 5%	36000 6%	44000 7%	40000 0%	36000 3%	46000 0%
Scotland	44000 5%	35000 -8%	48000 0%	40000 5%	35000 3%	44000 2%	37000 -16%	33000 -8%	45000 -4%
Northern Ireland	40000 0%	34000 3%	45000 0%	34000 -6%	32000 -6%	38000 -5%	36000 -5%	33000 -3%	40000 -9%
National Average 2009	47923			46231			45731		
% Change 08-09	2.4%			1.0%			-0.8%		

Electrical

% shows rise/fall in salary on 2008											
Region	Senior Electrical Contracts Manager, 40, HNC			Electrical Contracts Engineer, 35, HNC			Junior Electrical Contracts Engineer, 24, ONC				
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09		
Central London	55000 0%	50000 0%	60000 0%	45000 0%	40000 0%	48000 0%	30000 0%	26000 0%	32000 -9%		
North Home Counties	48000 -4%	43000 -4%	55000 0%	40000 -7%	34000 -11%	45000 -18%	26000 -10%	23000 -8%	30000 -9%		
South Home Counties	51000 -7%	45000 -10%	57500 -4%	40000 -11%	35000 -13%	43000 -10%	24500 -18%	22000 -15%	30000 -14%		
South West	40000 -11%	37000 0%	52000 4%	35000 3%	30000 -3%	37000 0%	23000 10%	20000 11%	25000 -4%		
Wales	38000 6%	35000 3%	45000 13%	35000 3%	30000 -3%	37000 -3%	22000 -4%	18000 -5%	25000 0%		
West Midlands	40000 -11%	37000 -3%	46000 -8%	35000 -3%	30000 -6%	38000 -5%	23000 -12%	20000 -17%	25000 -11%		
East Midlands	40000 0%	35000 -8%	45000 -10%	35000 0%	30000 -6%	38000 -5%	22000 -12%	20000 -13%	26000 -7%		
East Anglia	45000 13%	42000 20%	50000 11%	35000 -8%	32000 0%	40000 -7%	25000 0%	21000 -5%	28000 -3%		
North West	38000 -5%	35000 -13%	42000 -7%	33000 -6%	29000 -3%	36000 -10%	24000 -4%	23000 -8%	25000 -17%		
Yorkshire	38000 0%	35000 -3%	42000 0%	32000 0%	28000 -7%	37000 -5%	22000 -4%	20000 0%	26000 -13%		
North East	38000 0%	35000 -3%	42000 0%	31000 -9%	28000 -7%	36000 0%	22000 -15%	20000 -17%	25000 -22%		
Scotland	37000 -8%	33000 -6%	42000 -2%	30000 0%	28000 4%	35000 -3%	23000 -4%	20000 0%	28000 0%		
Northern Ireland	36000 -5%	35000 0%	40000 0%	30000 -14%	27000 -4%	35000 -3%	22000 -8%	18000 -10%	26000 -7%		
National Average 2009	41846			35077			23731				
% Change 08-09	-2.9%			-4.4%			-7.3%				

Estimators

% shows rise/fall in salary on 2008											
Region	Senior Estimator, 38, HNC, 20yrs exp			Estimator, 30, ONC, 8yrs exp			Junior Estimator, 20, ONC, 2yrs exp				
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09		
Central London	47000 -2%	42000 0%	52000 0%	42000 2%	36000 0%	45000 5%	28000 -7%	25000 -7%	32000 0%		
North Home Counties	43000 -7%	38000 -5%	45000 -10%	36000 -5%	31000 -3%	40000 -5%	25000 -11%	23000 -8%	28000 -7%		
South Home Counties	45500 -1%	40000 -5%	50000 -4%	35500 -11%	31000 -9%	40000 -9%	24500 -18%	22000 -15%	29000 -9%		
South West	38000 6%	34000 3%	45000 15%	30000 -6%	28000 -7%	35000 -3%	21000 -9%	18000 -5%	25000 -4%		
Wales	35000 -3%	30000 -6%	42000 5%	28000 -13%	26000 -13%	34000 -11%	19000 -17%	18000 -18%	24000 -8%		
West Midlands	40000 -7%	37500 -6%	46000 0%	32000 -9%	30000 -6%	37000 -8%	23000 -8%	20000 -13%	25000 -11%		
East Midlands	40000 0%	35000 0%	45000 0%	32000 -9%	28000 -7%	36000 -5%	22000 -12%	20000 -9%	25000 -11%		
East Anglia	42500 6%	38000 9%	48000 7%	34000 -3%	30000 0%	37000 -3%	24000 -4%	22000 10%	27000 -4%		
North West	38000 -5%	34000 -15%	40000 0%	32000 0%	28000 -3%	35000 -5%	24000 -4%	20000 -9%	26000 -7%		
Yorkshire	38000 6%	34000 3%	42000 0%	32000 0%	28000 -3%	35000 -3%	23000 0%	18000 -10%	25000 -11%		
North East	38000 -5%	35000 -5%	42000 0%	32000 -3%	28000 4%	35000 0%	23000 -8%	18000 -10%	25000 -4%		
Scotland	40000 -5%	35000 -3%	42000 -9%	33000 -3%	30000 0%	36000 -5%	24000 0%	20000 -9%	27000 8%		
Northern Ireland	35000 -3%	30000 -6%	38000 0%	28000 -3%	26000 -4%	32000 0%	19000 -5%	18000 0%	23000 0%		
National Average 2009	40000			32808			23038				
% Change 08-09	-1.7%			-5.0%			-8.8%				

Consulting Engineers - Design

% shows rise/fall in salary on 2008											
Region	Principal Design Engineer, 35, Degree, Chartered			Senior Design Engineer, 30, working for charterhip			Intermediate Design Engineer, 26, HNC				
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09		
Central London	52000 0%	45000 0%	55000 0%	45000 5%	42000 5%	48000 0%	35000 0%	30000 0%	38000 0%		
North Home Counties	50000 0%	45000 7%	55000 0%	42000 0%	36000 -10%	45000 -6%	33000 3%	28000 0%	35000 0%		
South Home Counties	50000 0%	45000 0%	55000 0%	43000 -4%	38000 -5%	46000 -4%	34000 -3%	30000 0%	37000 -3%		
South West	40000 5%	35000 6%	45000 5%	35000 0%	30000 -3%	40000 3%	30000 3%	25000 -4%	32000 0%		
Wales	38000 0%	35000 0%	45000 0%	35000 3%	30000 -9%	38000 0%	28000 -7%	25000 -4%	32000 0%		
West Midlands	42000 5%	40000 14%	50000 11%	38000 6%	30000 -9%	42000 5%	30000 7%	25000 -4%	33000 3%		
East Midlands	43000 2%	40000 0%	50000 9%	38000 0%	32000 -9%	42000 5%	28000 0%	24000 4%	30000 0%		
East Anglia	45000 7%	42000 5%	48000 4%	35000 -8%	27000 -23%	38000 -5%	29000 4%	24000 4%	32000 7%		
North West	40000 0%	38000 -5%	45000 0%	35000 0%	30000 -9%	38000 -5%	28000 -7%	24000 -20%	30000 -14%		
Yorkshire	40000 0%	38000 -3%	44000 5%	36000 0%	30000 -6%	38000 -3%	27000 -4%	24000 -11%	30000 -12%		
North East	40000 5%	38000 0%	43000 7%	34000 0%	28000 -3%	35000 0%	27000 -4%	24000 -11%	30000 -14%		
Scotland	42000 5%	38000 1%	45000 0%	36000 3%	30000 0%	40000 0%	27000 0%	24000 0%	30000 0%		
Northern Ireland	36000 -5%	32000 -6%	38000 -5%	32000 -16%	28000 0%	34000 0%	26000 -6%	22000 -8%	28000 -7%		
National Average 2009	42923			37231			29385				
% Change 08-09	1.8%			-1.1%			-0.9%				

Consulting Engineers – Other roles

Region	Junior Engineer, 22, ONC, 5yrs exp			Graduate Trainee, 21			Resident Engineer, 40, Degree, 15yrs exp		
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09
Central London	29000 -3%	25000 0%	33000 3%	24000 0%	20000 0%	27000 0%	45000 0%	40000 -2%	50000 4%
North Home Counties	27500 -8%	24000 -4%	29000 -9%	22000 -8%	18000 -10%	25000 0%	40000 -11%	35000 -13%	45000 -6%
South Home Counties	27500 -8%	23500 -6%	29000 -9%	21000 -13%	19500 -7%	24500 -6%	42500 -6%	35000 -17%	47500 -1%
South West	24000 4%	20000 0%	26000 4%	19000 0%	16000 -11%	22000 0%	34000 10%	30000 3%	40000 54%
Wales	23000 -4%	19000 -5%	25000 -4%	18000 0%	16000 -9%	21000 0%	33000 10%	30000 7%	40000 67%
West Midlands	23000 -4%	20000 -9%	27000 0%	19000 0%	15000 0%	20000 -9%	36000 6%	32000 3%	42000 5%
East Midlands	22000 -12%	20000 -9%	26000 -7%	18000 -5%	15000 -19%	20000 -9%	35000 -3%	32000 0%	40000 0%
East Anglia	24000 -4%	21000 -5%	26000 -7%	18000 -5%	16000 -9%	20000 -5%	34000 -8%	30000 -14%	38000 -5%
North West	22000 -4%	20000 -9%	25000 -7%	18000 -10%	16000 -20%	20000 -9%	35000 -8%	31000 -14%	40000 0%
Yorkshire	22000 0%	20000 -5%	25000 4%	18000 -5%	16000 -11%	20000 -5%	34000 -6%	32000 -3%	40000 -5%
North East	22000 0%	20000 -5%	24000 0%	17000 -6%	15000 0%	20000 -5%	33000 0%	30000 3%	38000 -5%
Scotland	23000 -4%	20000 -9%	26000 0%	18000 -5%	16000 0%	21000 0%	32500 -7%	29000 -15%	36000 -5%
Northern Ireland	20000 -9%	18000 -10%	23000 -8%	19000 0%	15000 0%	20000 -5%	32000 -9%	29000 -3%	36000 -10%
National Average 2009	23769			19154			35846		
% Change 08-09	-4.9%			-4.8%			-3.0%		

Consulting Engineers CAD

Region	CAD Manager, 35, C&G, 8yrs CAD exp			CAD Operator, 30, C&G, 5yrs CAD exp			Junior CAD Operator, 21, C&G, 1yrs CAD exp		
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09
Central London	38000 0%	35000 0%	45000 0%	32000 0%	28000 0%	35000 0%	21000 0%	18000 0%	24000 0%
North Home Counties	35000 -3%	30000 0%	40000 0%	29000 -9%	26000 -7%	32000 -9%	19000 -10%	17000 -6%	22000 -8%
South Home Counties	36000 -5%	32500 -4%	41500 -8%	29000 -9%	26000 -7%	32500 -10%	19500 -11%	17500 -13%	22500 -10%
South West	28000 4%	25000 0%	35000 0%	24000 14%	20000 11%	27000 0%	17000 6%	15000 -6%	19000 -5%
Wales	28000 4%	25000 0%	32000 0%	22000 10%	18000 6%	26000 0%	16000 0%	14000 -7%	17000 -6%
West Midlands	29000 -3%	26000 -7%	35000 0%	24000 -8%	20000 -13%	28000 -3%	17000 0%	14000 8%	18000 -10%
East Midlands	30000 0%	26000 -4%	35000 0%	25000 0%	21000 5%	28000 4%	16000 14%	14000 17%	18000 20%
East Anglia	31000 0%	28000 4%	35000 0%	22000 -12%	18000 -10%	28000 4%	14000 0%	12000 0%	16000 7%
North West	28000 -7%	25000 -11%	32000 -9%	23000 -18%	19000 -32%	27000 -10%	16000 -11%	14000 -7%	17000 -15%
Yorkshire	28000 -7%	26000 -4%	32000 -3%	24000 -4%	20000 -9%	27000 -7%	15000 -12%	13000 -7%	16000 -24%
North East	28000 -7%	26000 -4%	32000 0%	24000 -4%	20000 -17%	27000 -7%	15000 -17%	13000 -19%	16000 -16%
Scotland	29000 -3%	25000 -7%	33000 -6%	24000 2%	20000 -5%	27000 -4%	16000 -6%	14000 0%	18000 -10%
Northern Ireland	29000 -3%	26000 -4%	31000 -3%	22000 -8%	18000 -10%	26000 -7%	15000 -6%	14000 0%	16000 -11%
National Average 2009	30538			24923			16654		
% Change 08-09	-2.5%			-4.5%			-4.8%		

Consulting Management

Region	Partner, 45, Chartered			Associate, 40, Chartered		
	Typical 09	Min 09	Max 09	Typical 09	Min 09	Max 09
Central London	75000 0%	65000 8%	85000 0%	60000 0%	50000 -4%	70000 0%
North Home Counties	70000 0%	60000 0%	75000 -6%	58000 -3%	50000 -4%	65000 -7%
South Home Counties	70000 -7%	60000 0%	80000 -6%	58000 -3%	50000 -4%	65000 -7%
South West	50000 0%	46000 0%	60000 7%	45000 -2%	42000 0%	50000 0%
Wales	45000 0%	40000 5%	55000 10%	40000 -5%	40000 0%	50000 9%
West Midlands	45000 0%	40000 5%	50000 0%	45000 2%	40000 -5%	55000 10%
East Midlands	45000 7%	40000 5%	50000 11%	44000 -2%	38000 -5%	50000 -4%
East Anglia	45000 0%	42000 0%	50000 4%	42000 -5%	36000 -10%	45000 -10%
North West	45000 -10%	40000 -20%	50000 -17%	45000 0%	40000 0%	50000 0%
Yorkshire	45000 -10%	42000 -7%	50000 -17%	43000 0%	38000 0%	48000 -6%
North East	45000 -10%	42000 -7%	50000 -17%	42000 5%	38000 9%	48000 4%
Scotland	50000 -4%	45000 -10%	55000 -5%	45000 2%	40000 5%	48000 1%
Northern Ireland	45000 -10%	40000 -11%	50000 -7%	38000 0%	35000 0%	40000 0%
National Average 2009	51923			46538		
% Change 08-09	-3.6%			-1.0%		



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Modern office lighting comes not only from the ceiling, but from other parts of the room too

Illuminating the future

A range of technologies is set to transform the face of office lighting, with clients, architects and even interior designers at the forefront of change
Carina Bailey reports

Interior designers could become the lighting designers of the future. Furniture, wallpaper and even paint are expected to be the new sources of light.

Clients are already requesting lighting to be a subtle part of their surroundings, rather than a uniform pattern of luminous squares on the ceiling. But it is the development of OLEDs (organic LEDs) that gives this prediction some weight, according to some experts.

OLEDs may be expensive to make now but are expected to become much cheaper than LEDs, and their energy consumption will be even lower. Lighting will no longer only come from the ceiling, and issues such as screen luminance limits are expected to “go out the window”, leading to a whole new set of codes, according to Tim Downey, director of international lighting designers Pinniger and Partners.

“There’ll be wallpaper that lights up, furniture that lights up – light fittings themselves are not necessarily going to continue to appear in their present form,” Downey told a recent Society of Light and Lighting seminar on office lighting.

Mobile technology is also expected to have a major influence. “The offices that we currently know are going to change. The biggest driver of that is [mobile technology],” Downey adds. “Technology is allowing [businesses] to get people together virtually. Maybe the [Underground station] is the office of the future.”

Peter Le Manquais, technical director of office lighting specialist WILA, says there are three basic human needs that lighting has to satisfy: visual comfort, visual performance and safety. To achieve these there are reams of guidance, recommendations and standards available.

“If you follow the guidelines you tend to get a space that looks OK,” Le Manquais says, but lighting designers could end up “chasing their tail” trying to get more light on the wall using certain luminaires, he argues: “The more light you put on the task, the more light you need to get on the wall because of the ratios.”

European standards for lighting indoor workplaces are currently being considered and, if they are accepted, the Society of Light and Lighting will change its recommendations, says Le Manquais.

The European review is looking at the illuminance in volume area, illuminance requirements for ceilings and walls, the modelling index and DSE screen luminance limits, which will “make people try to do what’s been in the code for years – to make good assumptions so you end up with something that’s efficient,” adds Le Manquais.

Downey argues that this is forcing the lighting industry to choose one of two directions – to measure light or to satisfy human needs. Increasingly these two objectives are causing friction, he says. “Often

“The European review will make people do what’s been in the code for years – make good assumptions” – Peter Le Manquais

these two conflict, and common sense seems to have gone. Look at the progress we’ve made – everybody is committed to producing a better environment for people, but it’s still largely statistics-led.

“If you conform to the various tables and graphs, then it’s perceived to be good lighting. But what we’re starting to see now are designs that don’t necessarily conform to those criteria but are still good lighting.”

Designing lighting purely to suit the raft of recommendations and standards can lead to clients installing their own solutions, like free-standing task lighting, which Le Manquais describes as a good solution and makes changing the office – for new or existing clients – very easy. Often, lighting is ripped out and started again when new clients move in.

Controlled dimming, putting in more wiring and >

Luminaires

Different types of lighting

Task lighting

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Balanced illumination of the light-emitting area

Transparent trapezoidal tapered linear prisms

High 80s LOR

Source: WILA

Best practice

From codes to regulations

Standards

BS EN 12464 Part 1

H&SE workplace

H&SE VDT Environments

Building regulations Part L

BS 5266 Emergency Lighting

BS EN 1834 Emergency Lighting

European directives

Environmental legislation:

EUP Energy using Products

RoHS Reduction of hazardous substances

WEEE Waste Electrical and Electronic Equipment

Energy legislation:

EPBD Energy Performance in Building Directive

ESD Energy Service Directive

Ballast Directive

EEL Energy Efficiency Label

Codes and guides

SLL Code for Lighting

SLL Lighting Guides LG 1-12

BCO Office Lighting

Carbon Trust – Guide to Extra Capital Allowances (ECA)

ECA Energy Technology Criteria

BREEAM – Offices

Source: Bob Venning/Arup



Feature lighting: clients want subtlety, not wall-to-wall lighting

> less light fittings, enables occupants to change their environment to suit their needs.

Le Manquais is also an advocate of micro-prismatic technology, which is becoming more popular in offices as a way to control lighting. In addition, Microprism lighting provides high vertical illuminance resulting from an even, balanced luminosity. Some high-end products are made using glass.

Choosing the right type of luminaire can be critical for cutting carbon dioxide emissions, according to Derek MacMillan, project manager at Etap Lighting. For example, 1W/m² saving in electrical lighting power saves 1.5kg/m²/annum. This equates to 225,000kg of carbon dioxide in 10,000m² over 15 years. Dimmable controls could reduce that figure further.

As a consequence of reduced lighting, useful heat gains are cut and the heating load increases but the cooling load decreases. Therefore, it is far more important from a carbon perspective to reduce the cooling demand than the heating demand, MacMillan says. This would allow for other gains, such as solar through increased usage of glass, to be included.

But clients are now becoming much more aware of guidelines, and are asking service providers how far below these guidelines they can go. Says Downey: "There's a lot of awareness now, particularly among clients. They know high lighting levels generally produce high energy [consumption] levels, and actually clients want it to come down."

Overloaded

Bob Venning, a consultant at Arup Lighting, is critical of the array of guidelines, standards and directives on lighting, which he says produces conflicting messages. "I think what they're doing is strangling lighting designers and their ability to be able to perform their duties."

Currently engineers are working to two classes of 'code': building regulations that demand compliance, and advice that does not. Often the advice is better than the statutory regulations, insists Venning. He is also concerned about the quality of energy using product marks. If CE marks can be bought, why not energy marks?

Moreover, these marks don't include tangible targets for engineers to aim for: "Every workplace will have 'suitable' and 'sufficient' lighting [but] they are very woolly terms. We should be demanding from our regulations something we can aim at."

MacMillan is concerned that Part B2 of the Building Regulations seem to have "disappeared off the face of the Earth". He adds: "Firemen don't like going into buildings with molten plastic dropping onto them. Acrylic drips more readily and gives off noxious gases."

"Strictly speaking approved document B2 is not a legal document, but it is referred to by the Building Regulations. If you deviate away from it, that document will be used against you. If you do follow the document that's your defence, then you are covered should the worst happen."

But clients today are taking more control of their environments, including their lighting needs, regardless of what codes and guidance they are expected to follow. According to Downey, engineers need to accommodate this desire for control, whether it means installing task lighting or creating spaces which

"I think they're strangling lighting designers and their ability to perform their duties"
– Bob Venning

don't have the same lux level from one corner to the next. He says: "It's about creating lighting that's more relaxing than functional. Clients themselves know that productivity goes up when people enjoy where they're working."

The façades of buildings are becoming intelligent screen interiors, allowing the building to be part of the lighting design. And environments that are "borderline bizarre" are starting to be created, says Downey, with many of these the result of research between client and staff, which suggests they've "chucked the rule books out the window".

Clients are also guilty of a knee-jerk reaction that has seen fluorescent lamps crammed full of LEDs in the assumption that it will save money and energy. But this actually consumes more energy than fluorescents, and the lamp can't be re-used. "We're getting some really, really horrible things out there at the moment. They're trying to design LEDs into fittings designed for fluorescents."

Venning agrees that lighting engineers are being pushed in two directions: the Building Regulations recommend lighting for the conservation of fuel and energy based on installed load. The CIBSE/SLL codes and guides recommend lighting for personal safety, the task, the space, health and comfort of people. Venning questions whether the two ideologies are compatible. ●

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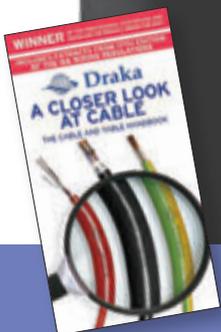
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Satisfaction not

What are the main criteria for assessing the overall performance of a building from the client's viewpoint? **Nigel Anderson** and **Jo Harris** outline key findings from a study of customer needs

In the first issue of the *CIBSE Journal*, in February 2009, Bill Bordass of the Usable Buildings Trust made an eloquent plea for engineers to adopt a "new professionalism" that could improve clients' experience of their buildings throughout their operating life. Too often clients feel let down once the design and construction teams have disappeared, and too many are disappointed by how their expensively-built asset performs in reality.

At BSRIA, we feel that the key to this problem is to establish a culture of performance measurement and benchmarking across the industry, with the accent heavily on real buildings, so that we have a method for continuously and objectively seeking improvement to pass on to facilities management (FM) teams.

However, we recognised all too clearly that applying research techniques to real-world operations can be challenging. Our solution was to establish the Operation and Maintenance Benchmarking Network, which comprises 50 firms committed to benchmarking service provision, and to create a series of key performance indicators (KPIs) that can measure client satisfaction (see *KPI box*).

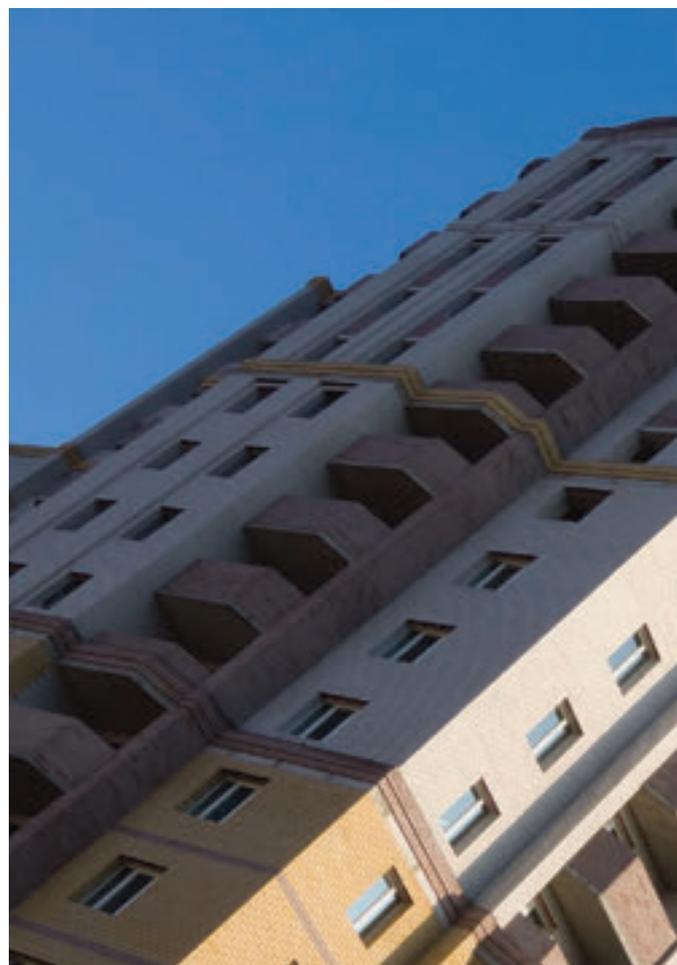
The concept of the benchmarking network is to provide a tangible source of information that helps the members of the network to evaluate their organisation against their peers.

The members depend on mutual co-operation, confidentiality and a 'give-to-receive' approach. Five areas are covered in the data collection questionnaire: hard FM costs; operation tasks; maintenance tasks; utilities; and soft services.

Customer satisfaction

Ensuring customer satisfaction is a perennial industry problem, and the latest feedback from the benchmarking network is that mechanical and electrical (M&E) service providers are performing well in relation to legislative compliance, but they need to improve their approach to communication and innovation.

The overall level of satisfaction has not changed in the last year, with only 40 per cent of clients rating their relationship with their service provider as 'good'



or 'excellent' – the mean score was 6.6 out of 10.

KPI credits were discussed in a recent special interest group meeting of the benchmarking members, and one service provider asked: "Would it be possible to build up KPI credits for exceeding expectations, and could these be offset against other KPIs, which are not so good?"

The clients' response was unequivocal: "No. Providers must perform."

The benchmarking network has collected customer-satisfaction KPIs for maintenance service providers for four years, and it is clear that completion of work to a high standard, and on time, is the key measure. Clients also consider response to breakdowns and the quality of planned maintenance as fundamental; above all else, the management of the contract has a huge impact on customer satisfaction.

As a result of our most recent results, we have rewritten some of the KPI survey questions to make them clearer, specifically in relation to:

- Open and clear lines of communication between contractor and customer;

Indicators

KPIs applied by BSRIA

Planned preventative maintenance quality

Reactive response

Invoicing

Additional works

Managing health and safety

Staff skills

Record keeping

Control of environmental impact

Energy efficiency

Overall satisfaction

guaranteed



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Surveys

Customer satisfaction KPIs

“How do you know where you could improve your services or what is of particular importance to your customers if you do not ask them?” It is an obvious question, seldom posed and often service providers are surprised that their perception is not the same as the customer’s expectation or the reality.

There are very good business reasons for carrying out customer satisfaction surveys, including:

You want to improve

Your competitors are doing it

Your customers are demanding it

It costs six times more to win a new client than retain an existing one

Being proactive in this way shows that you are interested in your customers

- Positive customer/contractor relationship with a good level of trust and honesty; and
- Contractors taking the initiative and being proactive.

We have also included two new measurable KPIs: statutory and legislative compliance; and keeping within the budget.

Clients also tell our members that they very much value a so-called traffic light system involving regular team meetings and high levels of communication and honesty.

Cost

When our benchmarking network started eight years ago the focus was on measuring best practice, but this has shifted towards ‘real’ measures: what does it cost to run our building compared to others?

This clearly has a big impact on client satisfaction, but the problem is that reliable cost data is not widely available.

To compare costs you need to appreciate the type of building, the way in which it is being used and its

location – all of which have an impact on the cost of services. One building may be 25 years old with high maintenance costs, while another may be only two years old, requiring minimal maintenance.

The expression ‘comparing apples and oranges’ often applies to benchmarking, but if you can establish a clear protocol of what information is needed, >

CIBSE FM Group

The CIBSE FM Group was set up to promote the application of building services engineering to the continuing improvement of facilities management. It also links with other CIBSE groups on operational service risks associated with building services. Go to the special interest group link at www.cibse.org The CIBSE Guide M on maintenance can also be found in the knowledge bank link on the website. CIBSE also works with the British Institution of Facilities Management in a number of ways, including more recently on the ‘carbon-critical design’ initiative.

“ Having good benchmarking data ensures visibility of costs and can reduce pressure on service providers to defend their spending.”

Soft services and energy data

The BSRIA benchmarking network collects soft services cost data for cleaning, catering and security. As with maintenance, we collect data on the influences that affect the cost of these services. Our results show that premium offices, which are generally customer-facing, have a higher standard of cleaning than average offices, which is reflected in the cost/m² price difference.

The total kgCO₂/kWh per m² has been calculated for each category of building. Premium offices and education facilities are the largest creators of CO₂ and for general offices the data ranged from 86 to 167 kgCO₂/kWh per m². The lowest producers of kgCO₂/kWh per m² in the network are the halls of residence. The cost of electricity, gas and water per m² are also covered.

> these anomalies can be controlled. Having good benchmarking data ensures visibility of costs and can reduce the need for service providers to have to defend their spending. Comparison to a benchmark can also be used as a tool to drive change within an organisation. People who can see a reason for change will generally respond more positively.

The aim of benchmarking is shifting and is now heavily concerned with making our buildings more sustainable, rather than just making them cost-effective.

KPIs

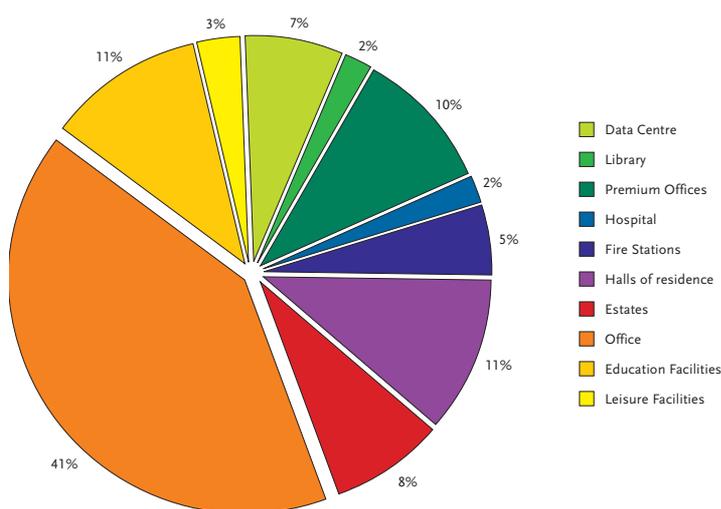
Benchmarking is increasingly used as a mechanism to measure the performance of contractors or in-house maintenance teams. It can also be used as a basis for setting targets to encourage improved performance. Key performance indicators are now widely used by service providers, to identify areas of strength and weakness, and by clients to set targets for their suppliers. These targets should be realistic and achievable, but also slightly stretching based on current and past performance.

KPI feedback can also be used as a supply-chain measure to assist in making decisions for future procurement and extension of contracts, etc. For example, one NHS client reported that a company was awarded a seven-year contract because it could demonstrate having a KPI programme.

It is a complex picture, and there are many elements involved, but one thing is certain: unless the industry improves its ability to measure and monitor client satisfaction, it will not be able to deliver the “new professionalism” needed to improve the ongoing performance of our built environment. ●

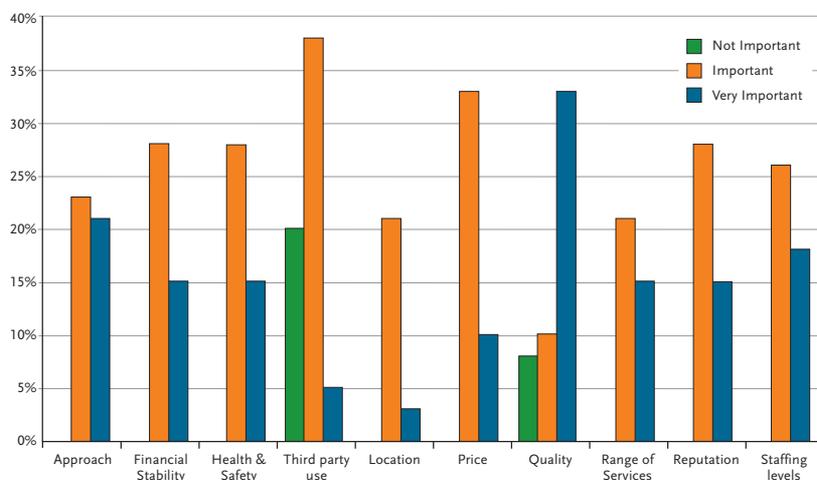
Nigel Anderson is head of design and FM innovation and **Jo Harris** is FM engineering team leader at the buildings research body BSRIA. www.bsria.co.uk

Building sector categories for benchmarking



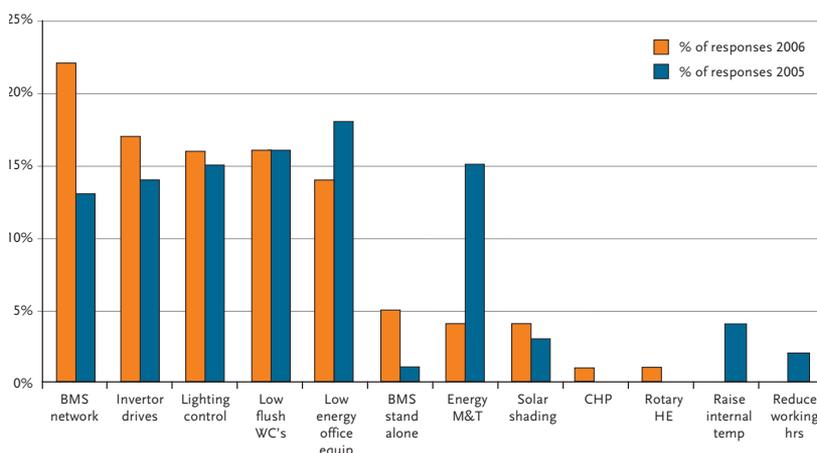
This chart shows the make-up of the 50 buildings belonging to the BSRIA Operations and Maintenance Benchmarking Network, by building type

Criteria for selection of M&E contractors



This graph shows the percentage of clients who ranked each of these selection criteria by level of importance.

Energy-saving technologies and initiatives



Many businesses are now looking to measure, benchmark and reduce their energy consumption. The network questionnaire for the last two years has asked respondents about their energy-saving technologies and initiatives

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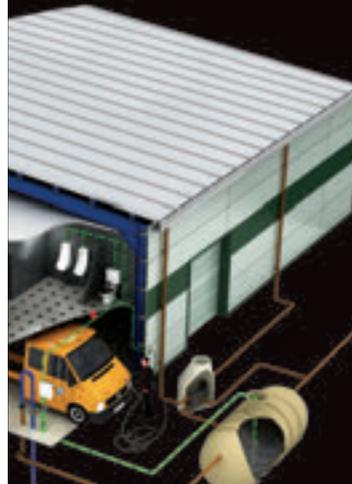
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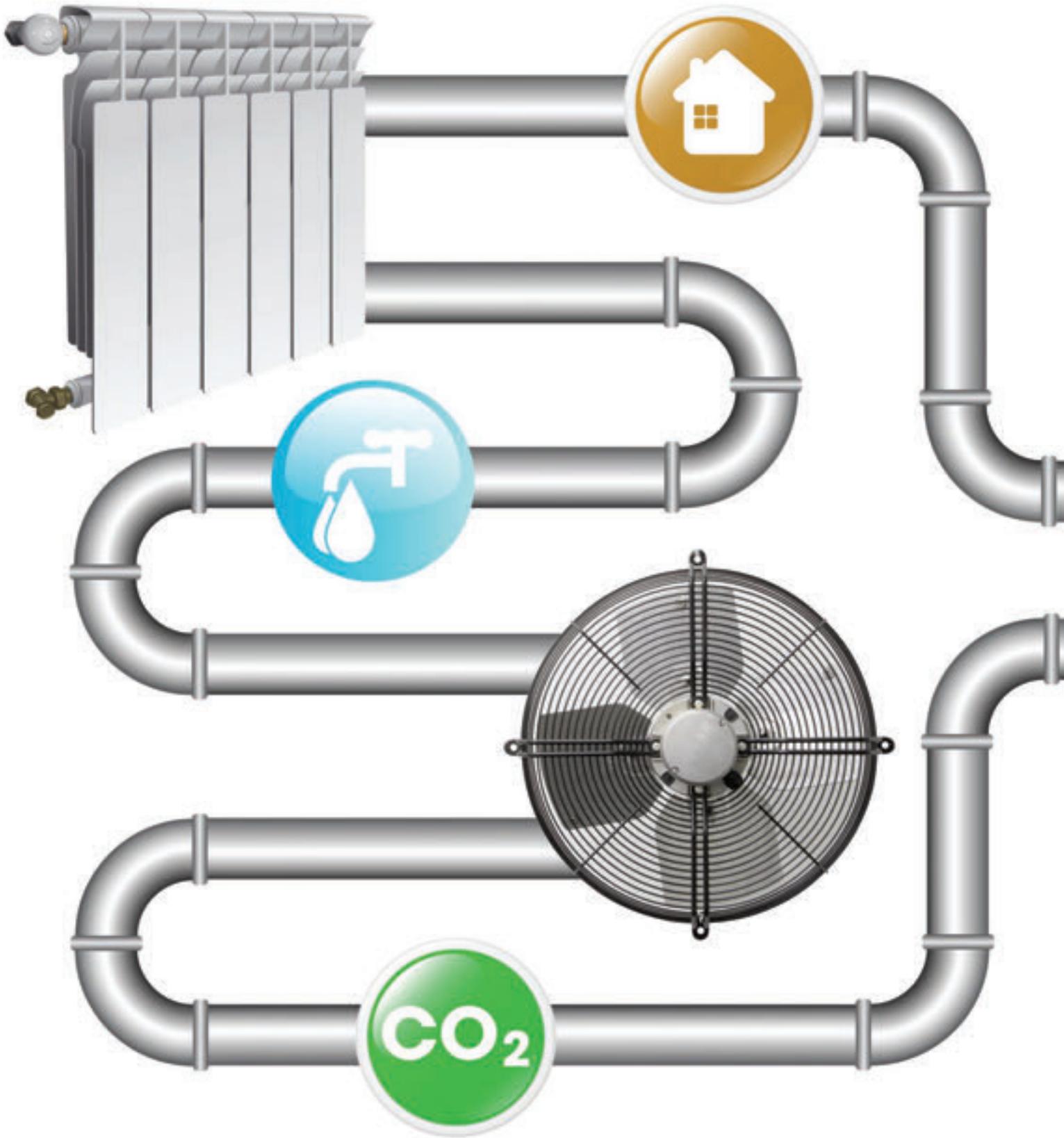


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Captivating carbon

The more environmentally-friendly carbon dioxide-based heat pump has been slow to take off in the domestic market in Britain. **Paul Haddlesey** looks at the technology and recent developments that could help to buck the trend

The benefits of carbon dioxide as a refrigerant (known as R744) have been recognised for many years, and there are already thousands of CO₂-based cooling systems throughout Europe. The key difference between a CO₂-based heat pump and a hydrofluorocarbon (HFC)-based one is that the refrigeration cycle with HFCs is 'subcritical'. This means that heat rejection takes place below the critical point, so that condensation occurs.

CO₂ heat pumps operate with a 'transcritical' cycle, where heat rejection occurs above the critical point. Consequently there is no condensation, the CO₂ remains in a gaseous state, and higher temperatures can be achieved.

As well as generating higher temperatures, CO₂ has other properties that improve heat transfer. "With HFC heat pumps the temperature remains constant, so heat transfer reduces with time," notes Jane Gartshore, president of the Institute of Refrigeration and a strong advocate of CO₂ refrigerants. "With CO₂, the temperature is always falling, so heat transfer is maintained better," she adds.

Another characteristic of CO₂ refrigerant is the higher pressure that is generated: up to 100 bar, compared with 25 to 35 bar for HFC heat pumps. "CO₂ systems are very different to the more familiar HFC systems. I feel there is more risk of an accident with CO₂ systems, so training is going to be a major issue," Gartshore warns.

Many of the measures that are being taken to reduce dependence on fossil fuels are encouraging the increased use of electricity for heating and hot water. "If we are really serious about achieving a low-carbon economy we have got to do it with electricity through a low-carbon grid," says Ant Wilson of consulting engineers AECOM, formerly Faber Maunsell | AECOM. "Therefore, any electric >

"With CO₂, the temperature is always falling, so heat transfer is maintained better than with HFC"
— Jane Gartshore



Sanyo's CO₂ heat pump, recently launched in the UK, was tested at this cottage on Exmoor, Devon

■ There are around 1.6m domestic boilers replaced every year, so there is a huge potential to replace these with heat pumps to reduce energy consumption ■ – Graham Wright

> heating technology that can offer better coefficients of performance (COPs) than a gas-fired boiler is to be welcomed," he adds.

Clearly, heat pumps are seen as a key element in this strategy, and the most appropriate choice will depend on a number of factors. For example, the electrical load for dwellings has doubled since 1970 and is typically around 5,000 kWh/year. Much of this will be dissipated as heat so, combined with better-insulated buildings, the overall effect is to further reduce space heating requirements.

This trend, therefore, increases the potential opportunity to use lower heating capacity technologies such as heat pumps.

Product profile Sanyo aims for wider marketplace

Sanyo recently launched its ECO carbon dioxide-based heat pump in the UK – a system that, the company claims, overcomes many of the barriers that have limited the wider use of heat pumps for heating, especially in the domestic sector.

In particular, its ability to generate higher water temperatures as a result of the higher discharge temperatures of CO₂ refrigerant is said to eliminate the need for supplementary electric heating in many applications.

Output temperatures up to 90 degrees C from the ECO are theoretically possible, though the system used in the UK is designed not to exceed 65 degrees C. This, says the company, can be achieved at outside ambient temperatures down to minus 25 degrees C.

Sanyo's stated COP figure for the model is "up to 3.7", though this is for a water temperature of 35 degrees C at an ambient temperature of 15 degrees C. If water is supplied at 65 degrees with an ambient temperature of 7 degrees C, the COP falls to 2.7. The more meaningful Seasonal Energy Efficiency Ratio (SEER) is 3.7 for water at 35 degrees C and 2.6 for water at 65 degrees C.

The inverter-controlled ECO system consists of an outdoor heat pump unit, containing the compressor and CO₂ refrigerant circuit with 1.4kg of refrigerant, linked to a thermal store containing a heat exchanger for hot water supply. The system also incorporates controls with

a compensated heating circuit so that as ambient temperatures rise, the flow temperature to the heating system can be decreased to improve the SEER.

The 9kW version is said to be suitable for a 140 sq m house with a heating load of 65W per sq m. But for newer homes with improved insulation, this could increase to a 240 sq m house. In most cases, supplementary heating would be needed to 'top up' DHW if the heat pump is used primarily for space heating.

To deal with the high pressures involved, Sanyo has developed what is claimed to be the world's first two-stage rotary compressor for use with CO₂. The compressor has been engineered to ensure effective load dispersion, necessary to accommodate the high working pressures and minimise the risk of leaks.

The compressor also offers quiet operation, claims Sanyo, with the 9kW version operating at noise levels of 47dB(A) at 1m – lower than many split-system air conditioners and an important consideration for domestic applications.

Currently, these units are only available in capacities up to 9kW because of the need for special compressors, but the company says it is working on larger compressors that would extend the application possibilities.

In its first UK trial, a 9kW Sanyo ECO CO₂ heat pump replaced an existing oil-fired boiler at a 200-year-old, three-bedroom cottage on



Sanyo's ECO carbon dioxide-based heat pump

Exmoor, supplying both heating and hot water systems. The outdoor unit was installed in a temperature-controlled workshop, allowing the temperature of the 'outside' air to be controlled between 20 degrees C and minus 2 degrees C.

The system's performance was monitored for four months. A COP of 3.7 was recorded with water at 35 degrees C and an ambient temperature of 15 degrees C. A COP of 2.71 was recorded with a flow temperature of 65 degrees C, at an outside temperature of 7 degrees C.

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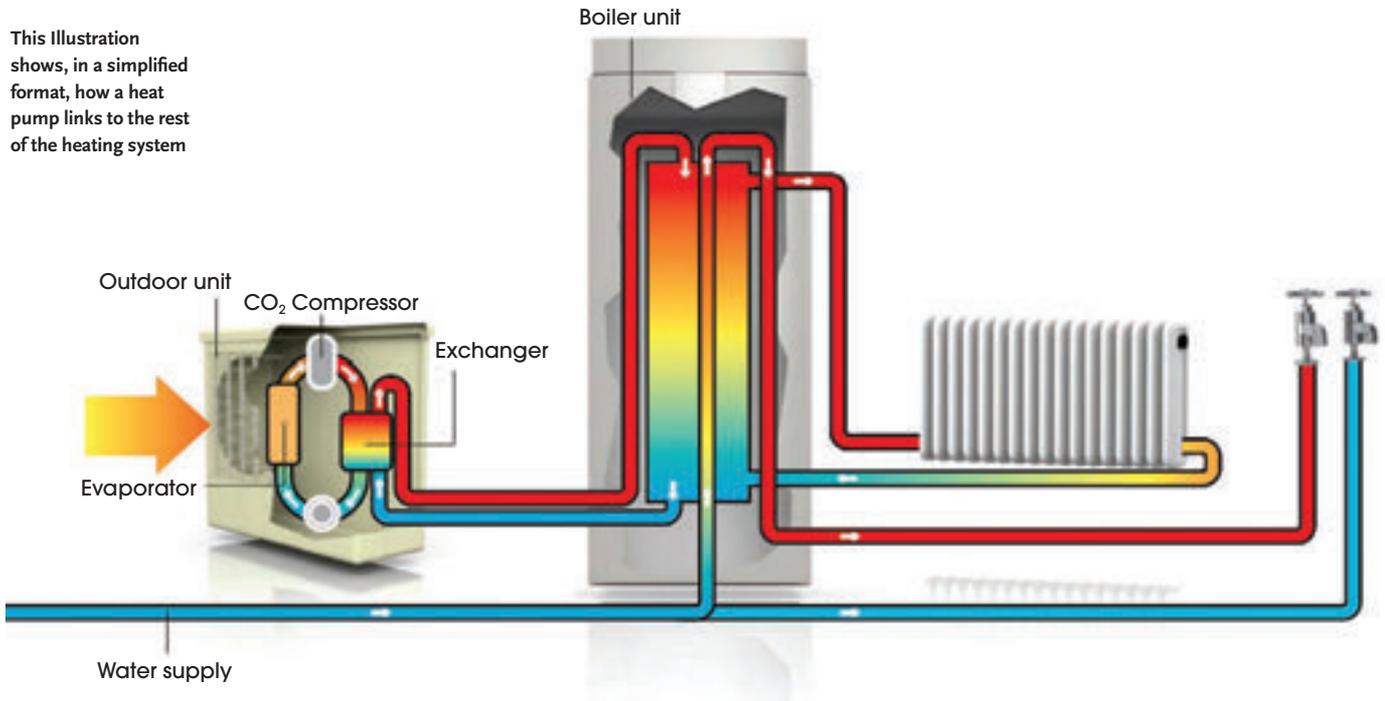


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*using a typical 2 heating period daily heating profile with night saving

This illustration shows, in a simplified format, how a heat pump links to the rest of the heating system



> According to the Heat Pump Association (HPA), the UK's commercial heat pump market is valued at around £300m, but the domestic sector has been much slower to adopt this technology. This is partly because heat pumps that are small enough for domestic use have not generally produced sufficiently hot water, with a limit of 50 degrees C.

But Terry Seward, secretary of the Heat Pump Association, disagrees: "While that may be true of heat pumps using R410A [refrigerant], those units using R134a can achieve a DHW [deliver hot water] temperature at 60 degrees C, with a COP of 2 to 2.2." Others argue that such a temperature would require higher volumes of refrigerant, resulting in larger units that would not be as suitable for domestic applications. It has also been noted that a temperature of 60 degrees C doesn't give much room for error when needing to achieve a sustained 58 degrees C to eliminate legionella.

Certainly, the ability to achieve a water temperature of 65 degrees C is important. This is not just because of its potential to eliminate supplementary heating for legionella 'kill cycles' but also because it enables the heat pumps to be retrofitted directly to an existing

Benefits of CO2

In addition to the benefits afforded by its thermodynamic properties, CO2 is cheap, non-toxic, does not need to be reclaimed and is not covered by the F-Gas Regulations. Crucially, it has a global warming potential (GWP) of just 1; many times lower than HFCs, as indicated in the table below, which also shows critical point temperatures.

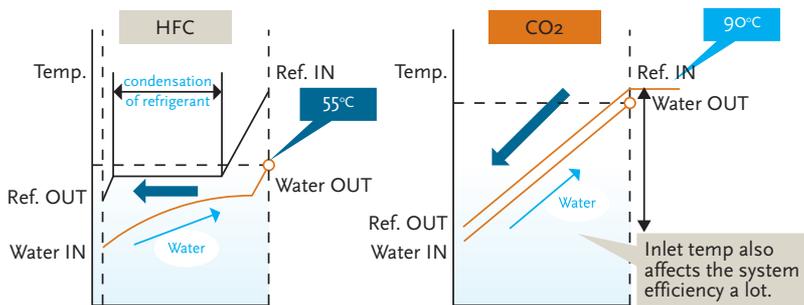
Refrigerant	GWP	Critical point (°C)
CO2 R744	1	31
R134a	1300	101
R410A	1900	72
R407C	1600	86

central heating system with no need to change the radiators to low-temperature versions.

"There are around 1.6m domestic boilers replaced every year, so there is huge potential to replace these with heat pumps to reduce energy consumption and CO2 emissions," says Graham Wright of Sanyo.

The key issue here, though, is getting the right balance for each project. "CO2 is very good when you need a high delivery temperature, but when lower temperatures are acceptable it's important to get the right balance between the significantly higher cost of a CO2 heat pump, compared to HFC systems, and the performance of the system," says Christian Heerup of the Danish Technological Institute.

As heating loads fall in newer buildings, therefore, the heating capacity of the heat pump becomes less critical. However, that still leaves millions of existing systems that could benefit from a retrofitted, higher-temperature system; though it remains to be seen how many homeowners will shell out the higher costs for a CO2 heat pump, compared with installing a new gas boiler. ●



The respective benefits of using HFC and CO2-based heat pumps

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BEC installs first Delta BACnet touch screen in UK

Building Environment Control (BEC) has announced that it has installed the first Delta BACnet touch screen at Crewe Hall in Cheshire.

Crewe Hall has recently undergone a £13.5 million enhancement programme, which includes additional accommodation, leisure and conference facilities at the Grade 1 listed 17th century hotel and conference centre.

BEC designed and installed a complete Building Management System (BMS) for the new facilities. This included the installation of a new seven-inch colour Delta touch screen – the DHMI. The touch-screen technology enables hotel staff to monitor and manage the building controls of all four conference suites in the new events centre, which can accommodate up to 370 delegates.

● Contact John Brough on 01923 432651 or email jbrough@deltaccontrols.com.

Hitachi sets new industry standards with IVX+

Hitachi Europe has launched an impressive, next-generation product in its Inverter range of air conditioners. The new IVX+ is energy-efficient, cost-efficient and space-efficient, making it the ideal installation for modern buildings. It also boasts even greater flexibility with up to 10 connectable indoor units and extended piping up to 250m.

Industry-leading COP: The IVX+ brings Variable Refrigerant Flow to the Inverter split range with fully independent control. It features Hitachi's pioneering DC



Inverter technology to drive the compressor and fans, resulting in a significant cost reduction in annual electricity charges and the market-leading COP of 4.28.

Energy Efficiency is also delivered through the new functions of Demand Control and Wave Mode, which drastically decrease power consumption.

Low noise technology: Available with heating and cooling capacities from 22.4kw to 37.5kw, the IVX+

also features new model fin technology to keep noise levels as low as 53dB(A) during usage.

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LG – a full range of VRF products

Now available from LG is the full suite of VRF products with a comprehensive range of indoor units – cassettes, ducted cassettes, wall-mounted units, floor standing cased and uncased units – and, of course, the Art Cool range.

The Multi V 2 range of condensers is available in 4, 5 and 6 hp sizes and all utilise a single-phase power supply, while the Maxi VRF range is available as two-pipe heat pump, three-pipe heat recovery systems.



These systems offer 200m pipe separation, up to 1,000m of pipe work installation and height separation of 100m, making them suitable for every possible installation. Every system now is covered by the government's ECA tax break scheme via the CarbonTrust.

The Multi V Maxi ranges are available in 6 to 48 hp sizes with the capability of connecting between 2 and 40 indoor units per system.

● Visit www.lge.co.uk or call 01753 876772

Ciat's easy clean air handling units specified for MOD kitchen



Designed to give simple and quick access to all components for maintenance and repair, CIAT

Ozonair's Air Access air handling units have been installed in the newly-built Defence Food Services School at Worthy Down, Hampshire.

Air Systems SW Ltd installed a total of 17 CIAT units to provide general supply and

extract ventilation. Each AHU is fitted with a plate heat exchanger to recover heat extracted from the kitchens by means of conventional kitchen extract hoods.

The unique design of the Air Access AHU allows all mechanical and electrical services to be run adjacent to or in the built-in Multi Service Bulkhead, leaving the removable sliding panels fully accessible along the complete access side of the unit.

● Further information: Roy Nutley, general manager, CIAT Ozonair Ltd, Unit 5 Byfleet Technical Centre, Canada Road, Byfleet, West Byfleet, Surrey KT14 7JX



MHI multi-splits are first choice for age concern centre

Mitsubishi Heavy Industries' multi-split systems were the immediate choice for a new air conditioning installation at Age Concern's activities

centre in Vicarage Field shopping mall, Barking. Hertfordshire-based HVAC specialist Birdsall Services Ltd installed two FDC250V outdoor units with a maximum cooling capacity of 28.0kW, connected to a total of eight FDT60 cassettes in the centre's activities room and food hall.

The £80,000 Health Concern project, funded by the Barking and Dagenham Primary Care Trust, was overseen by Harlow-based contractor Grays Associates. The new unit features a Health Café as well as activity, meeting and therapy rooms plus office space, with health trainers on hand to give nutritional and fitness advice to help people change to a healthier lifestyle. There will also be keep-fit, salsa, belly dancing and Tai Chi classes to keep people on their toes.

● For further information, visit www.mitsubishiaircon.co.uk



New Scottish Prison

When HMP Addiewell opened recently it was the first prison built locally for nearly 10 years and only the second privately-built prison facility in Scotland.

It has already made the headlines as the facilities it offers seem more in line with a luxury hotel than a house of correction, as they include a fully-equipped gymnasium, well-stocked library and cells with flat screen TVs. In addition it also provides inmates with a wide range of educational opportunities.

When at full capacity, regardless of the trappings, Addiewell Prison will be home for 365 days a year to 700 medium- and high-security male prisoners for the duration of their sentences. With a staff of 350 people there will be an ongoing high demand for a wide range of back-up services.

Providing a consistent HVAC and water supply to this large and static group of people is an important aspect of the success of any such operation and Grundfos, with their reputation for reliable and efficient pumps were delighted to work with AMEC to specify the best pump solution that was supplied via BSS.

● Email: uk-sales@grundfos.com or call: 01525 850000

DANLERS PIR occupancy switches for simply saving energy

DANLERS manufactures a comprehensive range of passive infra-red occupancy switches for automatic lighting control. The products are easy to install, using the existing wiring in a building. These PIR switches are ideal for saving energy and can be used to help reduce costs and carbon emissions in a variety of situations, such as offices, factories, schools, warehouses, hospitals, bathrooms, hallways and many other applications.

DANLERS PIR occupancy switches detect the movement of people within their vicinity and the lighting is switched on and off accordingly.

Each model in the range includes a passive infra-red quad person detector, an adjustable time lag before switch off, an adjustable



photocell override and a relay for switching up to 6 amps (1500W) of any type of load, including fluorescent lights and fans. The time and photocell settings have straightforward spindle adjustments.

● Please contact DANLERS for a free catalogue or for further product information. 01249 443377, email: sales@danlers.co.uk, or visit www.danlers.co.uk

CIAT Ozonair new packaged free cooling chillers take efficiency to a new level

CIAT Ozonair have launched a new packaged free cooling chiller range – called Aquaciat Free Cooling – that takes efficiency to a new level. The free cooler section is totally self-contained with its own control centre and is delivered with the chiller as a complete package. Easy to install – two simple connections are all that are required on site – the unit ensures instant communication between the chiller controller and the dry cooler. This enables the operation



of the units to be optimised for maximum economy.

Because the Free Cooling equipment is completely independent of the chiller, isolating valves allow maintenance to be carried out without having to stop the chiller.

In addition, the package concept provides savings in space – units in the Free Cooling range have a footprint 25 to 40 per cent smaller than equivalent units.

● Further information: Roy Nutley, general manager, CIAT Ozonair Ltd, Unit 5 Byfleet Technical Centre, Canada Road, Byfleet, West Byfleet, Surrey KT14 7JX

SAS International Integrated Service Modules installed as part of Police Federation's commitment to sustainability



SAS International supplied both passive and active Integrated Service Modules (ISMs) to the Police Federation of England and Wales' Headquarters in Leatherhead, Surrey. The design brief demanded that the building utilises energy efficient technologies to meet the Police Federation's ongoing commitment to embracing sustainability within its buildings.

The M&E services for the contemporary two-storey building were designed by environmental building services consultancy, Couch Perry Wilkes. SAS International installed the ISMs incorporating active chilled beams and bespoke flat modules on behalf of mechanical and electrical contractors EMCOR.

"The Police Federation was keen to embrace the low energy proposals and sustainable design put forward by the design team. The SAS chilled

beams and integrated beams provided an ideal solution for some important areas," commented John Hauton, mechanical associate director for Couch Perry Wilkes.

"They have interfaced well with the exposed slab principle and provided a good-quality finish to these high profile areas. SAS has developed some bespoke units, on budget, that suit the specific needs in these key areas and we would happily use them again."

The active ISMs provide between 700 and 800 watts per linear metre (W/m) of cooling and approximately 550 W/m of heating. Additionally fresh air is supplied at a rate of 12 litres per second per person.

The passive ISMs provide 185 W/m of cooling, with room air velocities of less than 0.25 metres per second. The flow and return water temperatures, for both passive and active beams, are 14 degrees C and 17 degrees C respectively.

● Email: enquiries@sasint.co.uk or visit: www.sasint.co.uk



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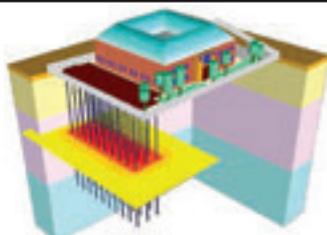
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Presented by:

Dr. David Stribling, MCIBSE, CENG
Director - Space Building Dynamics



Brief Agenda

- Introduction to Fluid Mechanics
- Airflow Characteristics of Ventilation Design
- Mechanical Ventilation Strategies
- Natural Ventilation Strategies
- Benefits of CFD in Ventilation Design

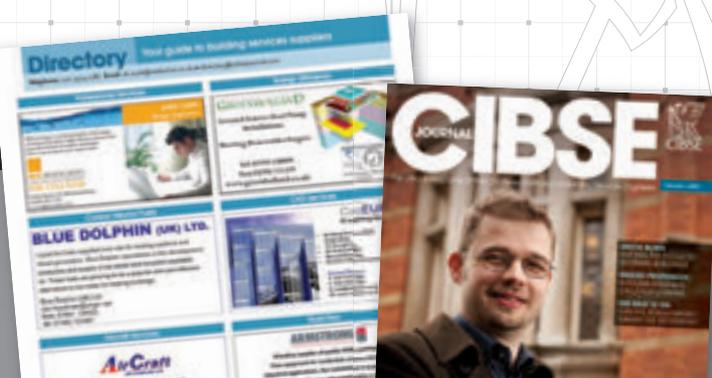


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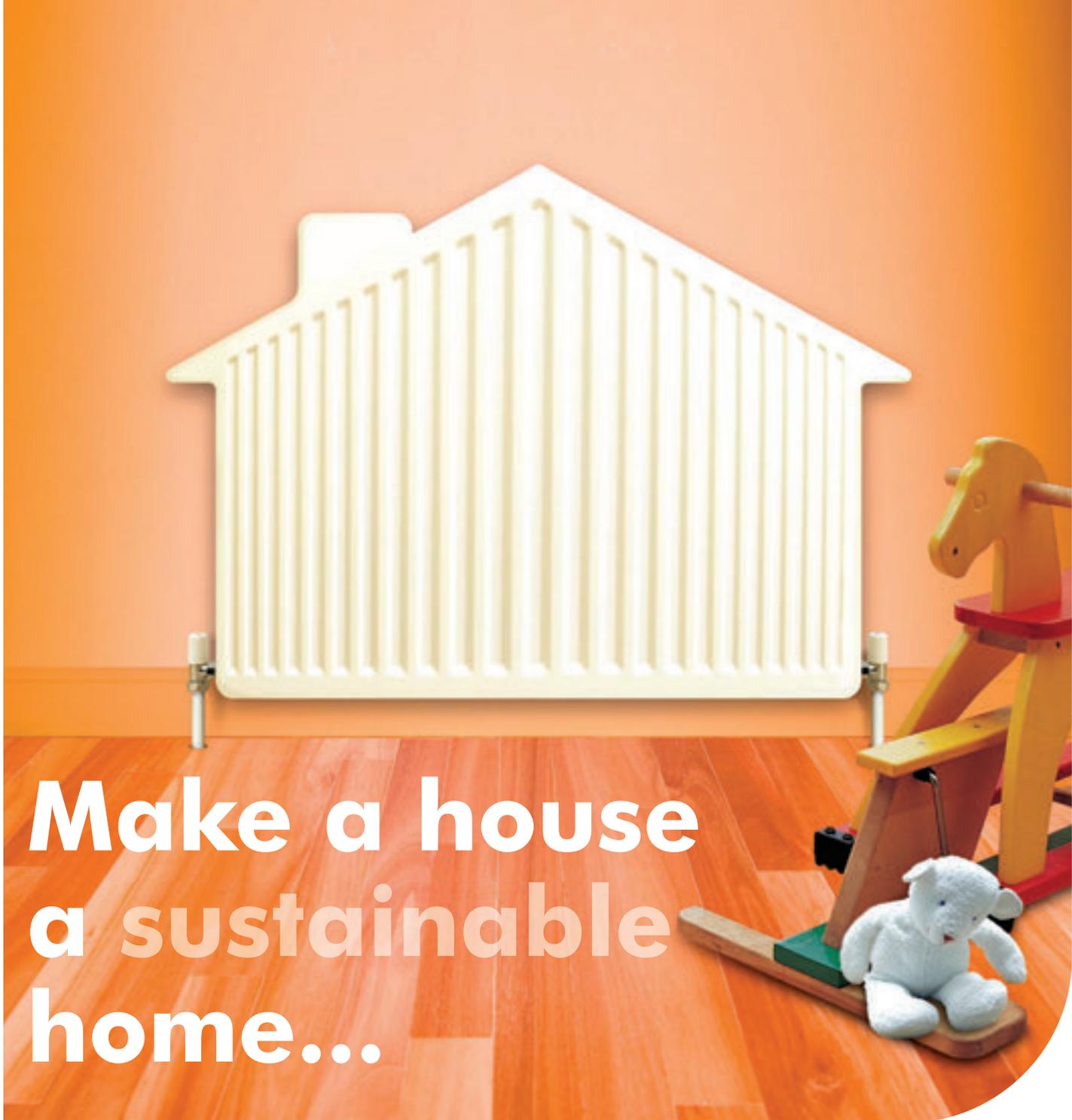


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Heat pump technology

A range of developments have occurred in the heat pumps marketplace in the UK and Europe – particularly in the fields of technology and regulations. Heat pumps are also being increasingly viewed as a renewable source of energy for domestic use. This CPD module surveys the changes

This CPD article reports on further developments in the technology, legislation and application of heat pump systems and equipment, particularly to the domestic housing market. There have been a number of heat pump-related CPD articles over the last three years, which indicates the rate at which the industry is changing. References to these are provided at the end.

As an introduction, recent press releases have confirmed that heat pumps are a renewable technology. There has been debate querying the contribution of heat pumps to saving energy and climate change, but it is obvious that a device that harnesses energy from a renewable source, i.e. ground, air or water, is renewable. Following debate in the EU parliament surrounding the Directive for the Promotion of Energy from Renewable Sources (RES), all of Europe is committed to including heat pumps as a major tool in the introduction of renewables to reduce CO₂ emissions. So heat pumps are now seen as

part of renewable deployment and not solely as energy efficiency measures.

Another major development has been the formation of the Department of Energy and Climate Change (DECC), a unit dedicated to a more coherent view of energy policy. The energy activities of the Department for Business, Enterprise and Regulatory Reform (BERR) have been transferred to DECC, as has the Standard Assessment Procedure (SAP) programme – previously run by Defra and headed by Ed Milliband, government minister for energy and climate change. Further support has come from the European Partnership for Energy and the Environment (EPEE), the voice of the building services industry in Europe. The group is delighted that the use of aerothermal energy (energy in the air) and hydrothermal energy (energy stored in water) will now be promoted as part of the new RES policy.

For domestic users and charitable institutions in the UK, an installation using either ground or air source heat pumps is

available with reduced VAT at five per cent. In addition, a ground source installation can attract a maximum £1,200 grant and an air source installation a maximum grant of £900, through the Low Carbon Building Programme. For organisations wishing to invest in commercial or industrial heat pump installations, an enhanced capital allowance is available for products that satisfy the requirements of the scheme. These products may be found listed on the Carbon Trust's energy technology list at www.eca.gov.uk.

Heat pump principles

There are many definitions for a heat pump. However, the European standard EN14511 defines it as an encased assembly or assemblies designed as a unit to provide delivery of heat. It includes an electrically operated refrigeration system for heating. It can have means for cooling, circulating, cleaning and dehumidifying the air. The cooling is by means of reversing the refrigeration cycle. The majority of heat pump >

> applications are electrically driven and based on the “vapour compression cycle”. However, heat driven systems are also available based on the absorption cycle and use gas, or waste heat, or solar/geothermal heat.

The principle of the vapour compression cycle is well documented but, for a reminder, look back to the March *CIBSE Journal* and the cpd programme – “Refrigeration – inside the box”. This referred to the cycle operating in the cooling mode – whereas, in heat pump mode, the condenser heat exchanger is the useful “heat output” component (the heat sink), whilst the evaporator is the “heat collection” component (heat source). The majority of heat pump applications in building services use a reverse cycle system that is able to heat or cool the space. Figures 1 and 2 show how this is achieved with the introduction of a four-way reversing valve.

Referring back to the March issue, perhaps the most significant section explains the efficiency and performance characteristics of the cycle. A heat pump coefficient of performance (COP_h) is:

Useful heating duty (kW)/power input to the compressor (kW)

Today, COP_h average values between 3 and 4 are achievable for air source heat pumps over the heating season. This means that, for every 1kW of electricity consumed by the heat pump unit, between 3 and 4kW of heating are produced. At this point the performance characteristic of a vapour compression cycle must be appreciated, whether operating in cooling or heating mode. Basically, the efficiency is a function of the pressure difference over which the heat pump operates. The greater the pressure difference, the lower the efficiency, and the two pressures in the system are determined by the heat source and heat sink temperatures – together with the refrigerant fluid used. This means that the lower the heat source temperature, say ambient air or the ground, the lower is the COP_h and therefore the heat output is reduced. The higher the heat sink temperature, say for air or water heating, the lower the COP_h . So to optimise maximum efficiency for any heat pump application, the refrigerant heat exchangers must have high heat transfer rates and the condensing and evaporating temperatures must be maintained at the minimum possible temperature difference. This is why high temperature heat sources, like waste heat extract, and low temperature heating systems, like underfloor heating, can give COP_h values greater than 5.

Reverse cycle heat pump – heating cycle

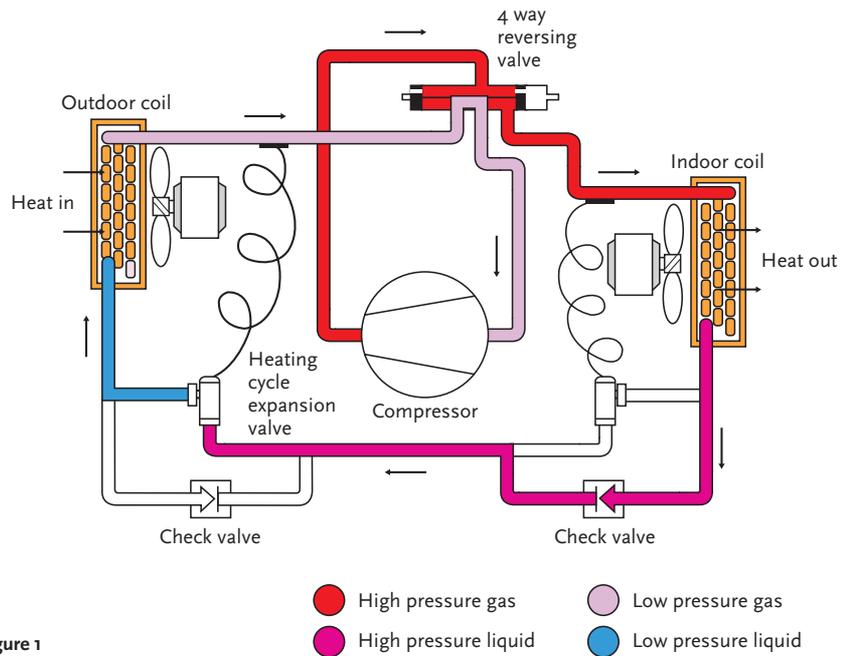


Figure 1

Reverse cycle heat pump – cooling cycle

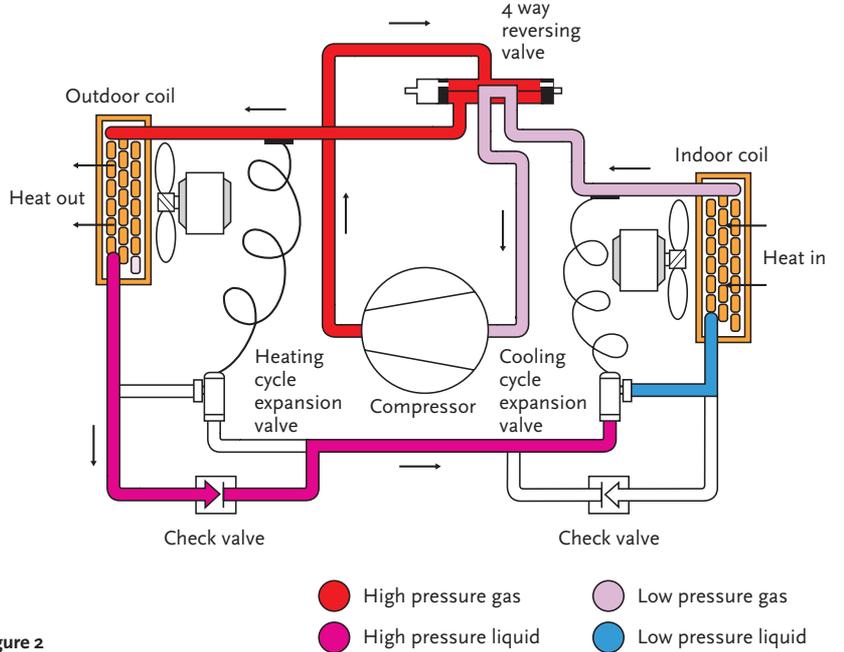


Figure 2

Heat pump types

This is well documented now, but basically there are a number of heat sources used by heat pumps and these, in simplest terms, can be defined as air, ground and liquid. In the case of air, the source would normally be an ambient temperature; however, more sophisticated systems may use recovered exhaust air to drive the heat pump process where this is available. The ground as a heat source normally consists of coils of piping laid in a shallow trench or deep boreholes with a U-tube inserted in each bore. In each instance the piping forms a closed

loop, containing an antifreeze solution, which exchanges heat with the ground. Open systems that take water directly from the ground can also be utilised – however, the requisite permits from the Environment Agency are required to operate a system such as this. Heat pumps that use liquid as a source will generally utilise water. This may be in the form of closed loop energy transfer systems or closed loops utilising man made ponds, rivers or lakes with heat exchangers embedded in the source water. Other high-energy liquid sources that can be used, include slurries and effluent.

Figure 3 Comparison heating methods and operating costs

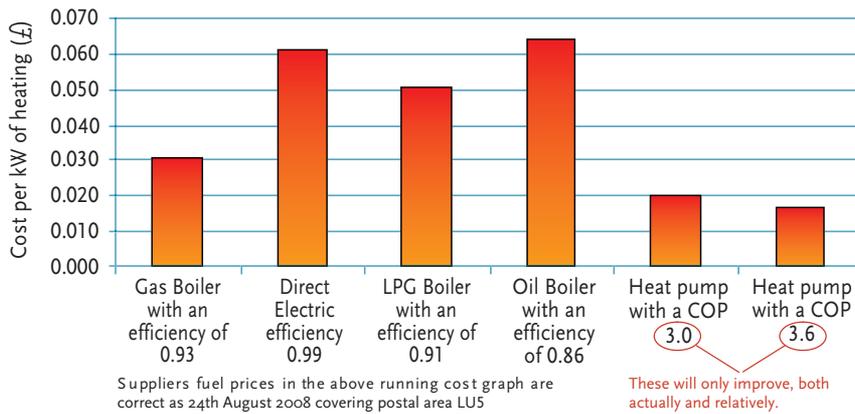


Figure 4 Comparison of heating methods: carbon emissions

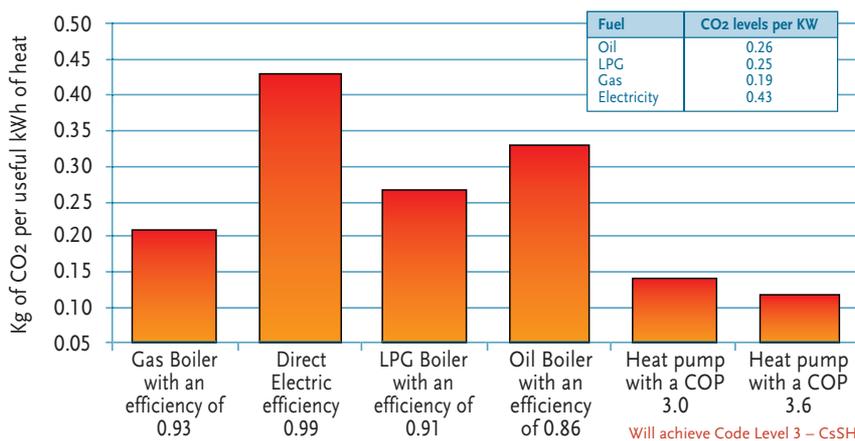
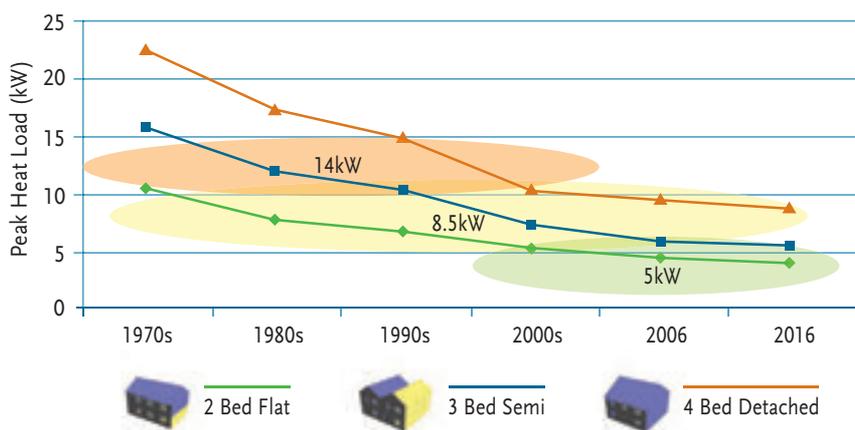


Figure 5 Progressive domestic housing: peak heat loads



The heat delivery methods divide into either heated water or heated air. Either of these can be supplied at medium temperatures (say 35 degrees C to 45 degrees C) for space heating requirements such as heater batteries or underfloor heating, or at high temperature for domestic hot water heating or for process drying. The highest temperatures that can normally be achieved with vapour compression cycle heat pumps is 60 degrees C to 65 degrees C, but most applications would suggest 55 degrees C as the economic maximum. When used for heating with radiators, the size of

radiator will have to be increased to give the same heat output with the lower water temperature.

Technology constantly improves, however. Figure 3 shows that, with a COP_h between 3.0 and 3.6, heat pumps outperform all other types of heating shown and can be included in low-carbon heating solutions, along with biomass, CHP and solar thermal. Figure 4 also shows that heat pumps have lower CO₂ emissions than other forms of heating.

These figures are based on air source heat pumps (ASHPs), which are marketed

specifically for the domestic housing market. They are emerging as a primary low-carbon replacement technology in this market – as a stand-alone solution or in combination with other technologies. Figure 5 shows how the housing peak heat load has reduced significantly since the 1970s, such that a four-bedroom detached house today has a lower heat loss than a two-bedroom flat in 1970.

A new ASHP recently marketed towards domestic housing has the refrigerant circuit completely sealed, very similar to the domestic fridge and freezer. The unit includes a plate heat exchanger for the heat sink, or condenser, heating water that is piped to the heating application, e.g. radiators, underfloor heating or hot water cylinder. The unit also includes a four-way reversing valve, enabling a cooling mode in the summer. The advantages of the sealed refrigerant circuit are improved reliability, installation by plumbers without specialist refrigerant qualification, and easy replacement into the existing water system.

Case study

A retrofit of a four-bedroom house in Toddington, built in 2000, saw the house fitted with a non-condensing boiler rated at 23kW, supplying radiators with water at 70°C and with an output of 8.4kW. The hot water demand was 140 litres per day. The boiler was replaced with an ASHP based on a house heat loss of 8kW at an ambient temperature of minus 3 degrees C. Some radiators were upgraded and were supplied with water at 55 degrees C to provide heating at 8.4kW. The average COP_h over the 2007/8 winter was 3.5. The savings, compared to the gas boiler, were 48 per cent less CO₂ emissions and a 38 per cent reduction in running costs.

© Terry Welch

References

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 BSJ April 2006 CPD, Packaged air to water heat pumps, Tim Dwyer
 BSJ January 2006 CPD, Ground source heat pumps, Graeme Maidment
 Heat Pump Association Newsletter, Mar 2009, Two moves forward, Tony Bowen. www.heatpumps.org.uk
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 Mitsubishi Electric Heating Systems, Ecodan presentation, Max Halliwell

Module 4

May 2009

1. The Department of Energy and Climate Change incorporates:

- A The EU Directive for the Promotion of Energy from Renewable Resources
- B The European Partnership for Energy and the Environment
- C The Low Carbon Building Programme
- D Enhanced Capital Allowance
- E The energy activities of BERR

2. Domestic ground and air source heat pump installations can avail themselves of a VAT of:

- A 5%
- B 10%
- C zero
- D 17.5%
- E 15%

3. Heat pump systems use the following to provide heating or cooling from the unit:

- A Run the compressor backwards
- B 4 way reversing valve
- C oversized heat exchangers
- D 2 way thermostatic expansion valve
- E Non-return valves

4. The economically maximum water temperature from a heat pump is:

- A 35°C
- B 75°C
- C 45°C
- D 55°C
- E 65°C

5. Typical CO₂ emissions reduction for a heat pump compared to a gas boiler in domestic housing applications is:

- A 38%
- B 22%
- C 48%
- D 63%
- E 17%



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Organisation

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THE FINALISTS

Large Consultancy of the Year

- Arup
- BDP
- Buro Happold
- Hoare Lea
- Hulley & Kirkwood Consulting Engineers
- Red Engineering Design
- WSP Group

Consultancy of the Year

- Beattie Flanagan
- CBG Consultants
- King Shaw Associates
- Long & Partners
- RHB Partnership
- Semple & McKillop

Major M&E Contractor of the Year

- Balfour Kilpatrick
- Dodd Group
- NG Bailey
- Shepherd Engineering Services

M&E Contractor of the Year

- Airedale Mechanical & Electrical
- Cavendish Engineers
- Grainger Electrical Services
- JS Wright
- Rotary North West

Health & Safety Initiative

- Balfour Kilpatrick
- Haden Young
- JTL

New Achiever of the Year

- Morwenna Wilson, Arup
- Laura Bayliss, BDP
- Marlon Kobacker, Cundall
- Hayley Maxwell, Gifford
- Farah Naz, Gifford
- Edward Garrod, PHA Consult

Training Award

- Buro Happold
- Fulcro Engineering Services
- Haden Young
- Hoare Lea
- Maleon
- NG Bailey
- White Young Green

Major Project of the Year

- Victoria Square, Belfast BDP
- The Bexley Wing, Leeds Bovis Lend Lease
- New Street Square, London Cundall and Sir Robert McAlpine
- Cabot Circus, Bristol Hoare Lea
- Manchester Joint Hospitals, Manchester Rotary North West
- Liverpool ONE, Liverpool WSP Group

Project of the Year

- Jessop West Arup
- Lighting at Liverpool ONE BDP
- Carrochan, Scotland Buro Happold
- Lion House @ Alnwick Haden Young & Faber Maunsell
- Health, Exercise & Biological Sciences Building (HEBS), Loughborough University Hoare Lea
- Warwick Digital Laboratory Hoare Lea
- Penryn College, BSF Hulley & Kirkwood Consulting Engineers

Environmental Initiative of the Year

- Arup and Carbon Trust Arup
- Citi Data Centre, Frankfurt Arup Associates
- Elmswell Affordable Housing Buro Happold
- Project ZEBRA @ Lion House Haden Young & Faber Maunsell
- Max Fordham HQ Max Fordham
- Behavioural Change Campaigns Transport for London
- Workplace6, Darling Island, Pyrmont, Sydney Waterman Group

Innovation of the Year

- Buro Happold
- Cundall
- E-stack
- King Shaw Associates
- Max Fordham
- McBains Cooper

Best use of IT

- Haden Young
- Hoare Lea
- Norman Disney & Young
- Wolseley

International Achievement

- Arup
- BDP
- Buro Happold
- Cundall
- Halcrow Yolles
- PHA Consult
- Red Engineering Design

For sponsorship opportunities and table bookings, please contact Carlo Menezes:
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Summit SKILLS

Learning new skills

Kayley Lockhead provides a glimpse of the life of an apprentice craft trainee at building services provider NG Bailey



Kayley Lockhead is one of about 60 apprentices taken on each year by NG Bailey, training as an apprentice craft trainee.

Currently on her second year of a four-year course, she has already learned many skills – from completing H&S method statements and helping with site inductions, through to commissioning. But now she is helping NG Bailey's project team on a healthcare refurbishment job

in the north of England.

"What I love most about my job is the variety of activities that I get involved in. In fact, I can honestly say that not a week goes by where I haven't faced a new challenge," says Lockhead.

"I also have the opportunity to work with clients and suppliers to help make decisions on the location of services on-site, for example, and for me, this is the most challenging part of my job."

Kayley's working day starts at 7am and her first job is to report to the project team before being assigned a task. This time it's to help plan the on-site ductwork.

Working alongside a qualified engineer, she first helps to draw up a schematic, showing how the ductwork will integrate with other elements of the build and services. This involves gathering information from the team around her and taking building regulations into consideration. The task takes one or two days to complete.

"Engineering can be complex so it can take time to find the right solution. However, what's great about this course is that there is always someone on hand to help in such an instance, and I feel like I am offered endless support until I understand all that I need to."

Once approved by the NG Bailey

team, the graphical design drawing is sent to the main contractor for final approval, before the order for the ductwork is placed with the supplier. It is Kayley's job to follow this process through until the end, and support the site team when the installation takes place.

It's a long day for Kayley, who doesn't leave the site until 4.45pm, but this hasn't deterred her from her ultimate ambition to climb the building services career ladder, nor has working in a male-dominated environment.

"What I love about my job is the variety of activities I get involved in – each week I face a whole new challenge"

"Many people ask me what it's like working in a male-dominated environment and, although I have to admit that when I first joined it was rather daunting, I now know the nerves I had were unfounded.

"When I qualify in 2011, my goal is to continue working for NG Bailey, firstly as a building services engineer then working my way up the career ladder as far as I can go."

Email your latest people appointments and role profiles to cbailey@cibsejournal.com

Movers & Shakers



Phil Abbott has joined AECOM (formerly Faber Maunsell | AECOM) as associate director

within its acoustics division.

Abbott comes from the Transport Research Laboratory (TRL), where he was a senior research fellow.



A new sustainable design director has been appointed at AECOM.

Rob Buckley will

be based in the company's London office and will help to drive sustainability forward in the built environment. He joins from Atelier Ten.



John Cooper is the new business development director for NG Bailey's managed services businesses.

Cooper will work very closely with Jane Skelton, managing director of this area of the business. He joins NG Bailey from Operon, where he was business development director.



Philip Dille is now group chairman of Arup, the global design, engineering and consulting firm.

He will reshape the company to focus on energy industry and resources, property, social infrastructure and transport. Dille was formerly head of Arup's Europe and Middle East region.



Andrew Flett is now group head of sustainability at WSP group. He was appointed at the design,

engineering and management consultancy to support and develop WSP's sustainability strategy. Flett was formerly global head of environmental sustainability for Barclays bank.

New members join CIBSE

This month more than 20 members from around the world have either progressed through the ranks or joined CIBSE's membership.

Of those, 17 are new members, with two existing members progressing to Fellow. Four people have become Associate members.

The full list is:

FELLOW

Martin Richard Bailey	Ilkley, West Yorkshire
Herbert Lung Wai Lam	Hong Kong

MEMBER

Mohammed Abdul Basith Ali	Bahrain
Michael Carter	Edinburgh
Andrew Campbell	Ballynahinch
Man Yuen Cheung	Hong Kong
Panteleimon Teli Chinelis	Woking, Surrey
David Clark	Macclesfield
John Austin Douthwaite	Sunderland
Yousuf Jamal	Dubai
Samuel Lo	Hong Kong
Cornelis Lommers	West Perth, Australia
Caroline Jane Marklew	Sheffield
Gary Middlehurst	Brentwood, Essex

Bajji Subburaman Rajakumar	Sharjah, UAE
Adam Rawlinson	Aylesford, Kent
Sam Shooter	Cardiff
Michael Stone	Bristol
Stephen MarkTomkins	Sutton Coldfield
Chi Ming Wong	Hong Kong

ASSOCIATE

Richard Allen	Dundee
John Stuart Bond	Fleet, Hampshire
Ronald Darling	Earlston, Berwickshire
Adam Sebastian Hall	Northhalleron, North Yorkshire



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The Projects section is a multi-disciplinary group of around 40, comprising architectural staff, quantity surveyors, mechanical, electrical, structural and energy engineers, planned maintenance technicians, clerks of works, housing development and interior design staff. The section is responsible for the implementation of the Council's capital plan of approximately £13m per annum, (£23m including housing). The range of projects is extremely diverse in type and scale and includes new housing, new schools, alterations, extensions and refurbishment of schools, leisure and cultural buildings, offices, day centres, housing etc.

Responsible for the implementation of access audits, fire risk assessments, asbestos audits, building surveys and related asset management planning works, we carry out a wide range of minor works arising out of HMIE and Care Commission inspections and adaptations and extensions to Council houses. We work closely with the Estates section to provide a comprehensive property management service to the Council.

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The person we are seeking must have a thorough understanding of the role and the industry, be hard working, technically competent, ambitious, articulate and a team player with solid credentials. In addition to having CIBSE/MIET/CEng status, business development acumen and experience are essential requirements for this position.

The role may appeal to an Engineer who has all these attributes and now aspires to developing this level of seniority within a small/medium sized well-respected Company.

Salary package will be negotiable(c£50K). Profit/performance related bonus also apply to this position together with significant opportunities for development within the Company.

Please submit your CV to Tony Cryne, Managing Director, Charles Andrews Ltd at info@charlesandrews.co.uk or call Helen Woodward for an informal discussion on 0161 848 9955.

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INVESTOR IN PEOPLE

Building and Estate Services

Senior Mechanical Engineer (Ref. E03N2043)

This new full-time post is available immediately on a permanent basis.

The University of Exeter is seeking to recruit a chartered Mechanical Engineer with a least five years postgraduate experience to work as a senior engineer in a small M & E team in Estate Development Services, delivering the estate infrastructure plan.

Based at the Streatham Campus, this post offers the opportunity for the successful applicant to build upon existing mechanical engineering skills, taking responsibility for the project management of the M & E elements of major building projects with capital value from £500K to £40M. Also, you will be required to carry out design, costing, financial control, administration and supervision of minor works and maintenance projects, with individual values up to £500K.

The University is keen to appoint an engineer with experience of design and project management. You be able to work on your own initiative, able to supervise assistant engineering and clerk of works staff and be effective both leading and participating in multi-disciplinary teams.

You must have experience in the design, financial control, administration and supervision of building and infrastructure projects with individual project values in excess of £500K and recent project management experience of the mechanical element of major capital projects with total value over £10M. You will also be required to advise on technical matters and deal with general estate issues relating to the maintenance and development of the University estate.

The starting salary will be from £38,757 up to £44,930 on Grade G, depending on qualifications and experience.

Application packs are available from <http://www.admin.ex.ac.uk/personnel/jobs/E03N2043.pdf> or e-mail hradmin@exeter.ac.uk quoting reference number E03N2043.

The closing date for completed applications is 12 noon on 3 June 2009.

The University of Exeter is an equal opportunity employer and promotes diversity in its workforce and, whilst all applicants will be judged on merit alone, is particularly keen to consider applications from groups currently underrepresented in the workforce.





INVESTOR IN PEOPLE

Head of Mechanical & Electrical Projects

£70,000 base salary, plus bonus and excellent benefits

West London

Driven by the energy and entrepreneurial spirit of its people, Sky has grown to become one of the world's largest and most innovative leaders in the areas of broadcasting and communications. Besides our undoubted commercial success, we are also very proud of our carbon neutral status, which is a living reality within Sky. The Mechanical & Electrical (M&E) department, specifically plays a key role in improving the efficiency of our buildings, enabling ambitious projects and ensuring we continue to lead the way in reducing our carbon footprint.

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Your responsibilities will include:

- Managing a small team to take overall day to day responsibility for all M&E major infrastructure projects including time, cost and quality.
- Leading and managing design teams to achieve success, liaising with third parties where necessary.
- Incorporating innovative solutions and contributing to the forward thinking of environmental requirements to ensure Sky remains respected as a world class organisation and progresses its already very strong green credentials.
- Communicating, reporting back to and building strong relationships with, key directors, other stakeholders and team members.

For success in this role, you need to have:

- A Chartered Engineer (CENG) qualification and, preferably, accreditation through IMechE or CIBSE.
- Significant experience of successfully managing M&E infrastructure projects in a large, complex, 24/7 business-critical environment.
- Specific experience of delivering projects utilising structured methods such as Prince 2 via the extensive use of third parties.
- Knowledge of how to deliver sustainable infrastructure, combined with excellent communication and stakeholder management skills.

Besides a base salary and bonus, other benefits will include free Sky+ worth around £500 per annum, an excellent pension scheme, private health care for you and your family and a share save scheme.

To find out more about working for Sky and to apply, please visit www.workforsky.com

When applying please include a covering letter summarising reasons for suitability and full CV including current remuneration package. (Word document format preferred).

Sky delivers some of the most diverse content & services on the planet, and we value the same diversity within our business. We provide a culture of entrepreneurialism and opportunity for one and all.



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Metro is over 27 years old and Nexus is developing a major 20 year £600 million investment programme to re-invigorate the system for the future. The Renewals Directorate is involved in major projects throughout Metro including Asset Renewal and Capital projects. We are currently seeking to recruit a Project Manager (Electrical & Mechanical) to work in this directorate.

Your role will be to focus the efforts of the team to meet the developed programme of works and provide the support network required to deliver to schedule. You will have excellent technical knowledge, combined with good communication skills and have pride in your standard of work.

In return for your expertise you will receive your basic salary plus a standby and callout allowance and be part of the ongoing performance related pay scheme, local government pension scheme and receive entitlement to free travel. The company places an importance on the development of staff, through offering development and progression on a regular basis.

To request an application pack please visit our website: www.nexus.org.uk or e-mail: recruitment@nexus.org.uk. Alternatively write to Human Resources Department, Metro Control Centre, South Gosforth, Newcastle upon Tyne NE3 1PZ. (CVs not accepted). Please quote reference number.

Closing date: 20th May 2009

www.sector1.net for more vacancies within Nexus

Nexus values the diversity which exists in our area and our aspiration is to reflect this diversity in our workforce.





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Head of Engineering



Homes for Islington (HFI) is an Arms Length Management Organisation (ALMO) set up by Islington Council in April 2004. With responsibility for the management of 21,500 homes and 8,000 leasehold properties, HFI employs over 900 staff and is responsible for the day-to-day running and maintenance of Islington Council's housing stock.

£57,504 to £70,000 + Benefits

A first-class engineer is sought for this high-profile role, leading the engineering and energy management division. Ideally, you will have CIBSE membership or equivalent and have the dedication and commitment to match the salary and benefits available.

You will be responsible for managing the delivery of all mechanical and electrical services to the organisation's residents. In addition to the necessary technical know-how, you'll need to be good at managing and motivating staff, balancing budgets and dealing effectively with contractors in order to provide a high quality customer-focussed service Homes for Islington can be proud of. If you can manage all of this, we want to hear from you.

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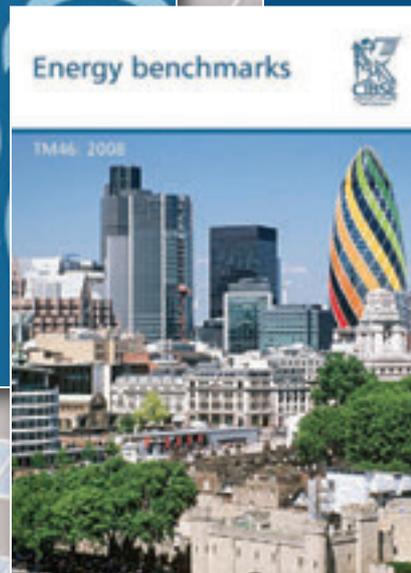
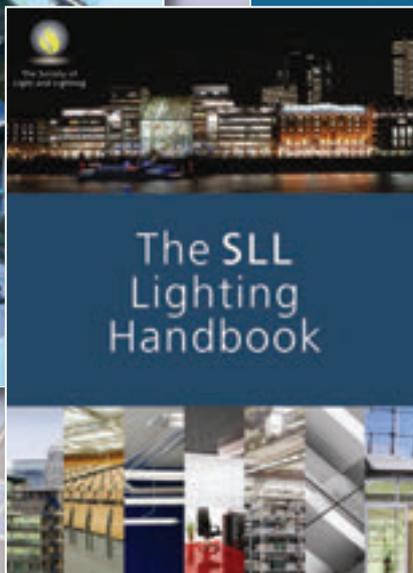
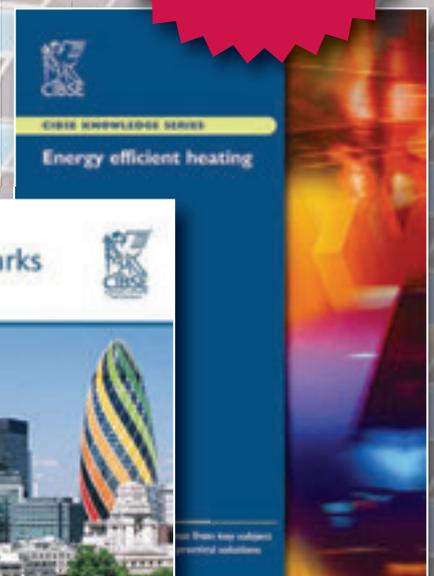
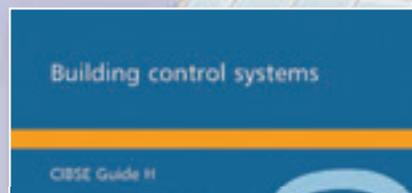
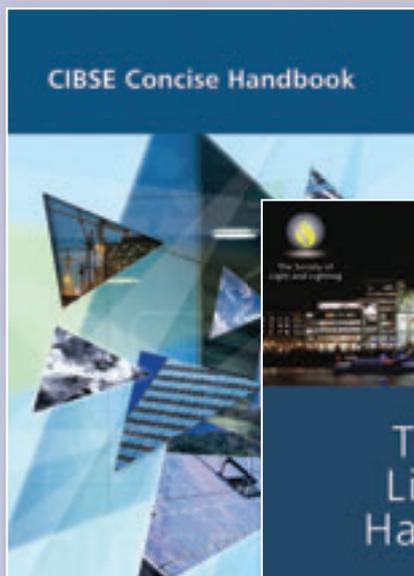
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Events & Training

NATIONAL EVENTS/ CONFERENCES

- **14 May 2009** **Preparing for the Carbon Reduction Commitment: understanding the requirements and opportunities** London
For more information visit www.bre.co.uk/events. This event is repeated on 27 May 2009
- **14 May 2009** **2009 BCIA Conference – Energy under control: solutions to save money and energy** Coventry
For more information, visit www.bcia.co.uk/events
- **14 May 2009** **Carbon reduction '09 Conference and Exhibition** London
For more information visit www.chpa.co.uk
- **14 May 2009** **Beyond Merton: How renewable heat can help you with your carbon savings objectives** Wimpole Street, London
For more information or to book, contact Becky Denney on 020 7633 4520 or visit www.newenergyfocus.com
- **18 May 2009** **EPCs 2009: the real effect on the market** CIBSE, London
For more information or to book, contact 020 8675 5211 or email eventbookings@cibse.org
- **20 – 22 May 2009** **BCO presents 'Challenging conventions' seminars and debates** Edinburgh
For more information or to book, contact www.bcoconference.org.uk
- **21 May 2009** **Building Services and Education Schemes: successfully designing building services for schools and colleges** London
www.hveducation.co.uk
- **22 May 2009** **Helping energy assessors produce EPCs more efficiently** CIBSE, London. A free event
For more information or to book, contact admin@dbcert.co.uk or visit www.dbcert.co.uk
- **28 May 2009** **Refurbishment/T-Zero** WMCCE, Birmingham
For more information visit www.bre.co.uk/events
- **01 – 04 June 2009** **INSITE09 Conference** BRE, Watford
For more information, visit www.insite09.com/index.jsp
- **11 – 12 June 2009** **AECB Annual Conference 'Building for a sustainable future: policy, research**

and design' Oxford Brookes University
For more information or to book, contact Karen@bluezulmarketing.co.uk

- **17 June 2009** **Building Services Awards** Hilton, Park Lane, London
For more information or to book, contact 01252 781178 or email maria@createvents.co.uk

SOCIETY OF LIGHT AND LIGHTING

For more information on the events listed below, visit the SLL special interest group via www.cibse.org

- **19 May 2009** **AGM, Presidential Address and Awards Reception** Royal Society of Arts, London
- **18 June 2009** **LR&T Centenary Symposium** Location tbc

CIBSE/OTHER TRAINING

- **18 – 22 May 2009** **Building Services Integration with KNX/EIB: Five-day course – KNX Certified** BRE, Watford, Hertfordshire, UK (Ref KNX05/20090518)
For more information visit www.bre.co.uk/events
- **26 – 28 May 2009** **BREEAM Healthcare Assessor Training Course: three-day BREEAM Assessor Training Course** BRE Global, Watford
For more information visit www.bre.co.uk/events
- **8 – 12 June 2009** **Certificate in Fire Risk Assessment: ABBE Level 3 Certificate in Fire Risk Assessment** BRE, Watford
For more information visit www.bre.co.uk/events

CPD TRAINING

Unless otherwise stated, for more information visit www.cibse.org/midcareercollege or to book, call 01223 880016 or email courses@cibse.org

- **13 May 2009** **Legionnaires disease prevention: implementing the guidelines** London
- **14 May 2009** **Building electrics basics 1: Choosing Electricity Supplies** London
- **14 May 2009** **Introduction to BS 7671:2008 'Requirements for Electrical Installations' (IEE Wiring Regulations 17th Edition)** Manchester

INSITE09

The INSITE09 Conference is a four-day exhibition and conference focusing on the future of low-carbon and sustainable buildings.

It aims to raise awareness of the latest technologies, materials and building techniques that can contribute to a sustainable future.

The programme will focus on a number of issues, including delivering sustainable communities, mitigating against climate change, the use of materials and their embodied energy, and innovation and surviving the credit crunch.

The first day will focus on the challenges presented by climate change, with Philip Sellwood, chief executive of the Energy Saving Trust, speaking on 'Putting people at the heart of low carbon homes'. On day two delegates will look at carbon emissions and Britain's existing building stock and how to improve energy efficiency.

Day three will focus on the 'grey population', changing healthcare and fuel poverty, while day four will



Buildings at last year's conference, originally called OFFSITE

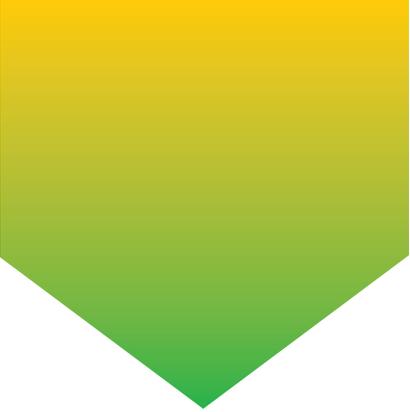
be spent investigating the issues of sustainable urbanism.

Throughout the event, full-scale prototype buildings incorporating a range of technologies and products will be showcased. These include three new buildings, two healthcare-based refurbishment projects and a new sustainable landscape. There will also be a six-zone exhibition area and free masterclass seminars.

For details of the conference (see left) visit www.insite09.com All bookings need to be made online.

A 50 per cent discount is available using code 'CIBSE4805' when booking.

- **14 May 2009** **Asbestos awareness (half-day course)** London
- **14 May 2009** **Using the Society of Light and Lighting Code for Lighting 2008** London
- **14 May 2009** **Understanding basic HVAC controls** London
- **15 May 2009** **Fire detection and fire alarm systems for buildings BS 5839 Part 1: 2002** London
- **15 May 2009** **An introductory guide to the new JCT SBC05 contract and its variants** London
- **15 May 2009** **Building electrics basics 2: distribution systems and equipment** London
- **18 May 2009** **Practical design of water circuits** London
- **19 May 2009** **Auditing for Legionella control** London
- **19 May 2009** **Construction design and management regulations 2007** London
- **19 May 2009** **Lighting basics 1: light, sight and colour** Birmingham
- **19 May 2009** **'Hitch Hikers' guide to whole life costing: practical skills for project engineers** London
- **19 May 2009** **Electrical services explained: special three-day course** Bristol
- **20 May 2009** **Lighting basics 2: lamps and luminaires** Birmingham
- **20 May 2009** **Smoke control: matching the method to the building** London
- **20 May 2009** **The practical application of heat pumps** London
- **21 May 2009** **Practical controls for HVAC systems** London
- **21 May 2009** **Practical project management** London
- **21 May 2009** **Introduction to sustainability** London
- **21 May 2009** **LV circuits and networks: discrimination, grading and protection** London
- **6 June 2009** **Introduction to BS 7671:2008 'requirements for electrical installations' (IEE Wiring Regulations 17th Edition)** London
- **9 June 2009** **National seminar: Building regs Part L2: how to demonstrate compliance** Preston
- **10 June 2009** **Electrical services explained, special three-day course** Preston
- **16 June 2009** **Fire safety engineering design: principles and practice (three day course)** London



THE CIBSE LOW CARBON PERFORMANCE AWARDS | 2010

CALL FOR ENTRIES

The CIBSE Low Carbon Performance Awards recognise and reward proven achievements in delivering carbon savings in buildings. Showcasing innovative and inspirational low carbon solutions the awards highlight carbon reduction in both the design and management of buildings.

Categories include:

- New build of the year
- Refurbishment of the year
- Design/ technical innovation of the year
- Product of the year
- Low Carbon Consultant of the year (only open to CIBSE LCCs)
- Low Carbon Energy Assessor of the year – EPC (only open to CIBSE LCEAs)
- Low Carbon Energy Assessor of the year – DEC (only open to CIBSE LCEAs)
- Client of the year – Energy performance
- Client of the year – Low carbon operation
- Low Carbon Manager of the year

Ensure your projects get the attention they deserve and join your fellow professionals at the forefront of the industry: deadline for entries is 30th October 2009 and awards will be presented in February 2010 at a high profile ceremony at London's Grosvenor House Hotel.

For more information on entry criteria or to enter visit www.cibse.org



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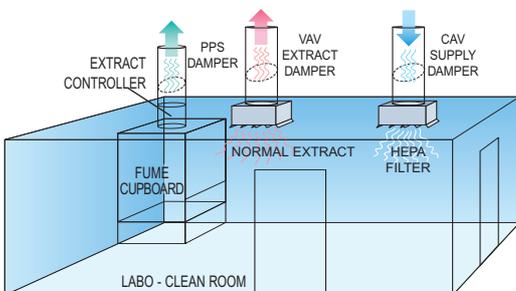


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