

# CIBSE JOURNAL



The official magazine of the Chartered Institution of Building Services Engineers

July 2009

[www.cibsejournal.com](http://www.cibsejournal.com)



## Passive action

Britain's first PassivHaus school takes shape



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In-depth analysis of the proposals

**NEW LEASE OF LIFE**  
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**ELEVATING ISSUE**  
Lifts can be made more efficient

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**The down side? There isn't one.**

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# ***Windcatcher***

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# From the editor



## Falling short of real change

**T**he reshuffling of a ministerial team will almost certainly upset the policy apple cart – with the result that some bright, fresh and promising fruit will fall by the wayside. Such was the case with Gordon Brown's revamp of the UK government. It fell to the new housing minister, John Healey, to unveil the much-anticipated revisions to the Building Regulations last month – and one very shiny apple was absent from his cart.

Industry expectations had been high that the consultation papers, announced by Healey, on proposals for revamping Parts L and F of the regulations would not only be a tidying-up exercise of existing policy (by plugging gaps and adding clarity, for example) but would also be a great leap forward in the seemingly impossible task of meeting UK carbon-reduction targets in 2020 and 2050. As our news analysis starting on page 14 suggests, many in the industry believe that key to hitting these targets is a policy that requires homeowners to make their properties more energy efficient.

What Healey failed to identify in his statement on the proposals for Part L was that the government had decided to ditch the anticipated new requirement that all homeowners making significant changes to their properties would have to make them more energy efficient – the policy known as consequential improvements. As a spokesman for the Department of Communities and Local Government (DCLG) admitted to the *Journal*, this was prompted by ministers not wanting to heap pain on a public already suffering under

the burden of a recession (see page 6). But the omission also reflects the short-termism of a government that is struggling through its last months in power before next spring's expected general election.

As we also report (page 7), the DCLG's own chief scientific adviser outspokenly challenges the government to show just how it will be able to achieve the highly ambitious climate change targets: where is the analysis that shows that we are indeed on the right path, and moving with sufficient pace, to realistically achieve these ends? This is not to downplay the importance of the Part L and F revisions that we can expect

to be implemented, and which are highlighted in this issue. They are a significant step forward; but they still leave open the question as to whether Britain's building stock can be sufficiently overhauled – not just to meet theoretical targets but to help bring about the requisite step-change in public attitudes

towards energy efficiency in homes.

The challenge faced by building services professionals to help make a difference is now all the greater. The industry, all the way down the supply chain, does want to rise to the challenge, and will be working hard to do so. And these professionals will make a major difference in the long run.

What they need is ministers who are prepared to back them with even the most publicly-difficult policy demands. Let's hope whichever party wins the next general election will have the courage to do so.

**Bob Cervi, Editor**  
bcervi@cibsejournal.com

**This policy omission also reflects the short-termism of a struggling government.**

## Warning over air con inspector training

CIBSE and the Heating and Ventilating Contractors' Association are warning that potential air conditioning inspection trainees may not be able to be accredited after undergoing certain training.

They say a number of organisations are offering inspector training based on a proposed ABBE diploma in air conditioning inspection. "This diploma has not been accredited by the Department for Communities and Local Government as a suitable qualification for those seeking accreditation as air conditioning inspectors. This means that, by itself, this qualification will not prove the competence of those graduating, who therefore may not be able to take work providing air conditioning inspection reports," they said in a joint statement.

CIBSE chief executive Stephen Matthews added: "We are very concerned that people with no experience of such systems will be persuaded to take this qualification in the expectation of future work that they will not, in fact, be competent to undertake."

## CIBSE guidance on commercial kitchens

Guidance on how to reduce the amount of energy used in commercial kitchens has been published by CIBSE and the Catering for a Sustainable Future Group. Commercial kitchens are large users of gas, water and electricity and can leave a large carbon footprint, says CIBSE, with the total energy consumption of Britain's catering industry exceeding 21,600m kWh/year.

*TM50: Energy efficiency in commercial kitchens* covers both new and existing kitchens and provides comprehensive and practical advice on energy-saving measures that can be included in large and small kitchen operations. It is priced £30 for CIBSE members and £60 for non-members. For a copy, visit [www.cibse.org/publications](http://www.cibse.org/publications) or call 020 8772 3618.

# Fears over home efficiency targets as ministers water down new regulations

The UK government's heavily trailed proposals for revising key aspects of the Building Regulations have been simultaneously welcomed and condemned across the industry.

The proposals were expected to include a new requirement that all homes undergoing significant alterations such as extensions – known as 'consequential improvements' – would have to be made more energy efficient.

But the consultation documents on revamping Parts L and F of the regulations, published last month, have caused concern after it emerged that ministers had effectively dropped this requirement.

The Department for Communities and Local Government told the *Journal* that the requirement had been limited to very large homes because ministers were concerned about "putting further costs on householders when we

are going through a recession".

However, the move has raised concerns that the ability to meet the government's carbon-reduction targets may be undermined by the U-turn on consequential improvements.

Andrew Warren, director of the Association for the Conservation of Energy, branded the move as "extraordinary". He said: "The implications are absolutely horrendous. This was the only stick that was available in order to encourage anything to happen [in existing buildings]."

"It's such a missed opportunity. One puts one's head in one's hands and despairs."

Paul King, chief executive of the UK Green Building Council said: "To drop a key measure, the so-called consequential improvements, which could really help bolster the market for energy efficient refurbishment, sends the opposite signal."

Hywel Davies, CIBSE technical

director, described the move as disappointing: "Unless we upgrade the existing stock we will never achieve the carbon reductions the government says it wants us to achieve. And we need to start doing that now, not in another three years."

Davies was also critical of the Part F changes, which include the inspection of both natural and mechanical ventilation systems. He welcomed this move but said the proposal to use a checklist as evidence that the new ventilation proposals for domestic dwellings have been completed, did not go far enough. He said. "A checklist is evidence that a pen has been in contact with a piece of paper. Someone needs to sign a certificate that this has all been done, and there needs to be real sanction if they lie."

**News analysis, pages 14-17**  
[www.communities.gov.uk/publications/planningandbuilding/partf2010consultation](http://www.communities.gov.uk/publications/planningandbuilding/partf2010consultation)



## New Centre Court passes tests with flying colours

The new retractable roof fitted to Wimbledon's Centre Court was part of a major refurbishment of the All England Lawn Tennis Club. Companies behind the successful refurb included Balcomm, BSRIA, Galliford Try, M-E Engineers, Populous, Skanska, and Victaulic. The ventilation system, using nine chiller units that supply 143,000 litres of conditioned air per second into the enclosed space when the roof is shut, passed initial tests with flying colours, according to BSRIA.

## Merger talks abandoned

Talks to merge the Society of Light and Lighting (SLL) and the Institute of Lighting Engineers (ILE) have been dropped. Both groups had looked at how to unify the lighting industry, and merger was one option. The SLL has now dropped the idea, but says it is keen to create a new umbrella body for the industry.

Stephen Lisk, president of the SLL, said: "Our discussions with the ILE are about unifying the profession, avoiding duplication, working more closely together, and setting up a new model for lighting going forward. I think it's fair to say we both want the same thing, but after looking at the detail, we have a different view on the best method to achieve this."

Mark Burrows, ILE president, said: "The institution now needs to reflect on what has happened, review the current position and decide how best to move forward."

# DCLG low-carbon strategy under fire from its own scientific adviser

The UK government's strategy for cutting carbon emissions from buildings has come under attack from one of its own chief scientific advisers.

Professor Michael Kelly said that, while government departments had produced several initiatives on cutting emissions in the past 18 months, they had still not set out a clear "roadmap" for achieving these aims. The chief scientific adviser to the Department of Communities and Local Government raised his concerns at a recent UK Energy Institute conference.

Pointing to several government initiatives for cutting emissions from buildings – including plans for net zero carbon homes, the Code for Sustainable Homes, the Carbon Reduction Commitment and energy

performance certificates – Kelly asked how these could achieve the planned emissions cut.

"If it was just by initiative-itis, then we'd have beaten the problem. But here's my problem as an engineer: what do all these measures really and robustly add up to in actual carbon savings?"

"If there was a few per cent reduction in carbon emissions last year, which three of those policies did the most to contribute to it? I'm afraid I cannot get answers that satisfy me as a first-year engineering undergraduate, let alone a senior energy analyst.

"What data for 2010 will convince us we're on a satisfactory trajectory [to achieve the emissions-reductions targets], and do we have sensors in place to do the necessary

measurements? The answer to all these is: no [we don't]."

He added: "It's easy to set targets, but until you have the trajectory, the roadmap, the means, and a properly engineered set of steps, then targets are targets and no more."

Kelly said new measures that the government needed to undertake included improving the thermal envelope of buildings – by applying materials, installation processes and controls – and kick-starting wide-scale retrofitting of buildings.

The government recognised that the energy performance of millions of homes would need to be improved, Kelly said, but added that he hoped there would be no "weasel words" from government on this challenge.

## Futuristic revamp for Science Museum

The Science Museum in London is to undergo a £150m revamp designed by Wilkinson Eyre Architects. The project, depicted here and to be completed in 2015 to celebrate the museum's centenary, will include a new glass structure on the facade and SkySpace, a cavernous rooftop space.



## New BREEAM scheme targets communities

A new version of the BREEAM sustainability assessment scheme has been launched to target the wider impact of developments.

BREEAM Communities aims to help planners and developers improve, manage and independently certify the

sustainability of development proposals through the various stages of the planning process.

BRE said it hoped that its scheme would encourage the consideration of sustainability at the masterplanning stage of developments.

The scheme has been piloted on projects across nine English regions, including the athletes' village at the London Olympics 2012 site in east London, and MediaCity, the new Manchester base for the BBC.

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

## News in brief

### UK's first level-six homes

The first large-scale zero-carbon housing development has been given the go-ahead in South Gloucestershire, UK. Under the scheme, by Barratt Developments and the Homes and Communities Agency, 195 dwellings will be built to Level 6 of the Code for Sustainable Homes.

### Crossrail contracts awarded

Arup, Atkins JV, Mott MacDonald and Capita have won the first design contracts in a major rail project. In a joint venture, Arup and Atkins will design Tottenham Court Road station in London with principal architect Hawkins/Brown. Arup will also design bored tunnels for the £15bn project. Capita Symonds will design the Royal Oak portal, while MacDonald will design sprayed concrete lining.

### Pay cuts to protect jobs

Employees in building services would accept a pay cut to secure their jobs and the short-term future of their organisation to avoid redundancy, according to a survey by recruitment firm Hays of 420 workers in the sector. Around two-thirds of respondents would consider working fewer hours a week, it found.

### Apprentices save thousands

Employing apprentices can save firms up to 15 per cent in labour costs, according to the UK skills council for the building services industry. SummitSkills's report found that savings were available on both large and small projects, as well as adding to a highly skilled workforce. For example, on a £1m electrical contract the cost saving of using apprentices as part of the team was £158,300. [www.summitskills.org.uk](http://www.summitskills.org.uk)

### Corporate footprints

The UK government is seeking views on guidance on the management and reduction of greenhouse gas emissions. The guidance outlines a process for an organisation to calculate its own corporate carbon footprint. It will be published after the consultation, by 1 October 2009.

## International

### Consultancies merge

Consultants Davis Langdon & Seah Japan Ltd have merged with DG Jones and Partners (Japan) Ltd. The merger was effective from 17 June and the partnership will now be known as Davis Langdon & Seah Japan Ltd.

### Buro Happold in Far East

Engineering consultancy Buro Happold has opened its first office in the Far East as part of a push into the Asia Pacific region. The new team will be led by Matthew Smith, office director, and overseen by Steve Brown, who recently took on the new role of managing director for the Middle East, Asia Pacific and Africa.

### Climate-change project

Engineering and design consultancy Arup has launched its project to create a sustainable city for the future in Australia. The consultancy's 'VEGAS2015: the Brisbane retrofit project' was officially launched at the 2009 CitySmart Innovation Festival to tackle the challenges of climate change.

### Water management plan

Mott MacDonald is helping states in eastern Europe and central Asia to develop an integrated approach to river management. In a two-year contract, MacDonald is working on a 2.3m-euro programme funded by the EU to integrate water resource and water quality management, which involves the co-operation of six countries: Ukraine; Moldova; Belarus; Georgia; Armenia; and Azerbaijan.

### Top prize for Arup

The revolutionary approach used to model Beijing's Olympic swimming pool, the Water Cube, has won a UK consultancy Britain's top engineering award. Five people at Arup were awarded the MacRobert prize for their work on the project. The Cube was chosen because of the way the building was modelled on a computer, and for its low environmental impact.

# Ban on resale of homes urged to promote refurbbs

Homes with an energy-performance rating below D should be banned from being put on the market until they have been improved, an environmental group has urged.

Marian Spain, strategy director at the Energy Saving Trust, said the move would force householders to refurbish their properties.

She also proposed making it a planning condition to retrofit the whole house when householders sought planning permission to alter their homes.

Speaking at the recent Insite 2009 conference, Spain said that a study in the south-west of England showed that, despite efforts so far by government and other agencies, more than 50 per cent of cavity walls remained unfilled and 60 per cent of lofts were not adequately insulated.

She blamed the problem partly on the bombardment of information to householders, leaving them confused as to where to turn.

People didn't have the time or resources to implement energy efficient measures and pay for them up front either, she said.

"Interest payments are a huge barrier to people who are not prepared to pay interest – if it's not something the public wants to do, why should they have to pay?"



Consultancy BRE unveils its 'Renewable House' during Insite 09 at its Innovation Park in Watford. It has been built using renewable materials including hemp for the walls

And, even if the scheme works, people still want an upfront "carrot" to take part, such as a reduction on council tax or stamp duty.

Spain also criticised the Carbon Emissions Reduction Target, which provides householders with grants to improve energy efficiency.

She said the scheme was hindered by its "stop-start" nature, with funding for it drying up.

Companies worked in the most cost-effective ways for themselves and not in the best interests of the public, she added.

Nick Raynsford, president of the National Home Improvement

Council, said that as well as incentives to change behaviour, perhaps a return to the era of general improvement areas and housing action areas was needed, focused on private housing.

Paul King, chief executive of the UK Green Building Council, said that, to achieve the government's seven-million whole house makeover target by 2020, at least 50,000 homes needed to be upgraded within the next year. That figure needed to double in 2010 and again the year after that, until 1.6m homes were being refurbished each year, he said.

## School procurements need to double if growth plans are to be met, MPs say

The number of projects being procured and constructed in Britain under the Building Schools for the Future (BSF) programme needs to double, according to MPs.

The Commons Public Accounts Committee report argues that the construction of 250 schools a year from 2011 onwards will be needed, adding that "current promises to increase the pace of the programme are not sufficient to meet this".

Of the 200 schools planned to be completed by December 2008, only 42 were finished by that date.

The Department for Children, Schools and Families (DCSF) had hoped to deliver the programme

over 10 to 15 years. That time frame has now increased to 18 years, with the last school expected to be completed in 2023 – a timescale the report describes as "very challenging".

"It is too early to conclude whether BSF will achieve its educational objectives," said the report. "To date, over-optimism has meant the programme could not live up to expectations."

The report also criticises the government for failing to: define the full benefits it wants its BSF programme to achieve; develop any system against which to measure success; provide schools and local

authorities with support; put a cost-comparison system in place; and plan effectively.

"Establishing Partnerships for Schools to manage the programme centrally has helped local authorities to deliver more effectively, but while Local Education Partnerships have potential advantages, their value for money is yet to be proven," it adds.

Separately, the DCSF announced that Partnerships for Schools, the body overseeing the BSF programme, would take over the management and delivery of all school building and refurbishment programmes from this October. [www.publications.parliament.uk](http://www.publications.parliament.uk)

# A third of government buildings receive the worst DEC rating

One in three government buildings has been given the lowest rating for energy efficiency, a new study has found.

The Association for the Conservation of Energy (ACE), the independent organisation that produced the figures, described the government's record as "shameful".

Of the 267 government buildings issued with a Display Energy Certificate (DEC), one third recorded a G rating.

The figures follow data, reported in the *Journal* in February, showing that one fifth of almost 9,000 public buildings across England and Wales were rated as G.

The ratings for government buildings were published following a series of parliamentary questions by Greg Clark, Shadow Secretary of State for Energy and Climate Change.

A spokesman for ACE said: "With tough government targets to reduce CO<sub>2</sub> emissions by 80 per cent by 2050, and the recognition



by government that modified behaviour and energy management produce the all-important, cost-neutral quick wins, it is alarming to see the government stock performing so far below what is expected."

The Office of Government and Commerce (OGC) is responsible for maintaining the government's building stock and has now published a report into the "State of the Estate in 2008", the first comprehensive annual report on the management and use of its civil estate.

According to the OGC, the report "demonstrates clearly that government is actively managing its estate and that it has the hard-edged information needed to drive improvements".

It added: "There are a number of areas of efficiency where, during 2008, government is performing better than the private sector."

The report also admits that despite progress being made on carbon-emissions reductions, there is still more to do in 2010/11 to improve DEC ratings.

[www.ukace.org](http://www.ukace.org); [www.ogc.gov.uk](http://www.ogc.gov.uk)

## Eco-design and labelling consultation

A consultation into European rules for energy-using products has been launched by the UK government.

The Department for Environment, Food and Rural Affairs (Defra) is asking professionals in the building services sector to respond to key questions relating to the surveillance and enforcement of the Eco-design of Energy Using Products (EuP) and the Energy Labelling directives.

The Energy Labelling Framework Directive also requires distributors to display an energy label at the point of sale. Responses are required by 4 September. [www.defra.gov.uk](http://www.defra.gov.uk)

## Construction slowdown eases

The slowdown in construction projects is beginning to ease following the sharp declines seen since the middle of last year, according to the Glenigan Index.

A rise in project starts in May 2009 has reduced the overall year-on-year decline to 25 per cent, compared to falls of 35 per cent in March and 30 per cent in April 2009. Early leading indicators also show that construction projects going out to tender averaged 38 per day in May 2009, compared with a February 2009 low of 30 per day – a 27 per cent increase following a sharp fall over the previous 18 months. The majority of the new work has been smaller, public-sector projects and jobs associated with major UK government projects.

## Landlords 'concerned' over energy efficiency

Energy Performance Certificates (EPCs) have become a vital part of the decision-making process for landlords and tenants, according to new research.

The Energy Efficiency Partnership for Homes (EEPH) found that nearly a third of tenants who moved after October 2008 claimed they used an EPC when selecting a new property to rent. And nearly a quarter (23 per cent) of tenants

asked their landlord to provide an EPC. The same number asked their landlord to make changes to the property as a result.

This has led to nearly six in 10 landlords becoming concerned about the energy efficiency of their rental properties, with more than a fifth of claiming to be "very concerned".

More than half of landlords surveyed say they will now make

improvements to their properties based on their EPC's findings.

Mark Brown, EEPH partnership director, said: "If we look back to last year's survey of tenants, we saw energy efficiency beginning to register as a key consideration, and as our most recent report shows, this trend looks set to continue with tenants increasingly looking for ways to reduce outgoings and save money."



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## New school diplomas key to attracting pupils into industry

We at CIBSE are working hard to encourage the development of our young members and to nurture the talent coming up the ranks. But that's not where it starts. We have to ensure we attract talented youngsters to the industry in the first place – and this starts at school.

With the introduction of the new Diplomas in Construction and the Built Environment, and Engineering, young people will be able to pursue an interest in our industry at a younger age. These qualifications, available for 14- to 19-year-olds, will provide people with practical and theoretical training in real life contexts. The Advanced Diplomas are the equivalent of three and a half A Levels – 420 UCAS points – thereby



Youngsters need to be attracted early

enabling students to progress onto college, university, apprenticeships or employment. These diplomas will give access to the industry to individuals who may previously not have felt this route was open to them – or not previously considered this – and will also go

a long way to raising awareness of the industry at a much younger age, thereby, hopefully, increasing the pool of talent and skilful people who choose to enter the profession. Not only will they provide a new and exciting way of learning, but they will also place the built environment, and sustainability and climate change, at the heart of mainstream education. As an industry frontrunner, we should all be supporting these new qualifications, and welcoming these new recruits. CIBSE will continue to work with those tasked with delivering the qualifications to ensure that the new generation of building services professionals are well prepared to meet tomorrow's environmental challenges.

*Stephen Matthews, chief executive*

## Benevolent Fund celebrates its 75th

CIBSE Benevolent Fund celebrated its 75th anniversary in May. Awards were presented at a celebration lunch by new president, Mike Simpson, to those who have given special service to the fund:

**Meritorious Service Awards:** presented to Stanley Buttenworth, past chairman of the Benevolent Fund and past almoner for the West Midlands Region, and Leonard Adams, also a past chairman of the fund and past almoner for the Merseyside and North Wales Region.

**Almoners Service Awards:** presented to Harry Ainscough who

was a past almoner for the North West Region, and Derek Plumb, past almoner for the Home Counties North West Region. Bernard Bareham (HCNW Region), Henry Fulda (HCSW Region) and James Hopewell (Scotland) also received awards, but were not able to attend.

The Benevolent Fund received more than £38,000 in donations in 2008, and more than £4,000 of royalties from the sales of Faber and Kell by Doug Oughton and Steve Irving. If you know of any member suffering hardship for any reason contact the Benevolent Fund at



Award winners with CIBSE president Mike Simpson (back left)

CIBSE. Almoners are required in the South West, Home Counties South East and Home Counties South West regions. To help email [sbrown@cibse.org](mailto:sbrown@cibse.org) or visit [www.cibse.org/benfund](http://www.cibse.org/benfund)

## South Downs Planetarium receives donation

Members of the South Downs Planetarium received a £800 cheque from the CIBSE Southern Region Social Fund to help buy new presentation equipment for the groups' extension. (From left: Prof Andrew Miller, CIBSE SR Comm, Ian Pratt, CIBSE SR Comm, Dr J Mason MBE, Mike Opone, CIBSE Southern Region chairman, John KW Green MBE, David Manuel, CIBSE SR Comm, and Laurie Socker, CIBSE SR Comm.)



## News in brief

### Member receives award

Derek Clements-Croome, chairman of the Natural Ventilation and Intelligent Buildings groups, has received an award from the Building Controls Industry Association (BCIA) recognising his contribution to education and training in the controls sector.

### Cylon new Patron member

Cylon Controls has become a member of the CIBSE Patrons scheme. Now Cylon, a provider of smart energy control solutions, is offering free CPD-certified seminars for members. [www.cylon.com](http://www.cylon.com)

### The Yacht Rally returns

The CIBSE Southern Region Yacht Rally is back! It will be held at the RAF Yacht Club in Hamble, Hampshire, on 19 September 2009. It is open to all regions and will be followed by a dinner for all, plus guests, in the evening. For further details contact Ken Beecroft at [kenbeecroft@tiscali.co.uk](mailto:kenbeecroft@tiscali.co.uk) or Kevin Donabie at [donabie@btinternet.com](mailto:donabie@btinternet.com)

### Promoting building services engineering

CIBSE would like to remind members that a careers presentation is available for download from the institution's website. These resources, sponsored by CIBSE Patrons, have been developed for use by anyone wishing to promote the building services sector to youngsters. The slides are designed to appeal to young people aged between 11 and 19 and are accompanied by speaker notes highlighting the key messages. They can be adapted to suit your audience, age group and time available. Find them at [www.cibse.org/careerspresentation](http://www.cibse.org/careerspresentation)

## Training and Development

### Training and development submissions

The closing dates for annual submissions to be considered at the July and October 2009 Training and Development Panel meetings are 23 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, training and development administrator, on 020 8772 3605 or e-mail [owilliams@cibse.org](mailto:owilliams@cibse.org)

### 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 e-mail [owilliams@cibse.org](mailto: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:

- Smedegaard Pumps
- Emerson Network Power Ltd
- George Fischer Sales Ltd

A concessionary rate is available for entries into some categories.

## From Member to Fellow

More than 40 members attended the 'Member to Fellow' event which took place at Balham, London, UK, in May. The evening opened with an address from past president John Armstrong, followed by advice from senior CIBSE Fellows David Hughes, Vince Arnold, Tony Lamberti and Paul Naish, and gave attendees the opportunity to network over a glass of wine.

Hosted by the CIBSE membership team, this successful pilot event saw many requests for further events to be held soon and to be staged regionally. If you would like help or advice with your Fellow application, contact Bobby Wright on 0208 772 3639 or [bwright@cibse.org](mailto:bwright@cibse.org)

# Industry mourns the death of building services icon

by Peter Jackman

The father figure of the building services industry, Neville Billington, has died.

Billington, who died on 17 May aged 93, was once described as 'the all-time industry icon', such was his unsurpassed contribution to the advancement of heating, ventilation and air-conditioning technology in buildings.

Billington's career started in 1937 when he joined the government-funded Building Research Station, where his work on the heating and ventilation of dwellings became the basis of approved UK application. In 1950 Billington was appointed head of the National College for Heating, Ventilating, Refrigeration and Fan Engineering in South London. During his nine years of headship it grew in size and scope, making a crucial impact on the technical status of the industry.

In 1958 Billington became the first full-time director of the Heating and Ventilating Research Council – later the Heating and Ventilating Research Association (HVRA). He remained director until retiring in 1975, when the association became the Building Services Research and Information



Neville Billington died in May

Association (BSRIA). Billington also led impressive technological developments that helped the growth of the building services industry as a whole. Under his leadership, the association became a world-renowned source and depository of technical information.

He was technically brilliant and able to research, write and lecture on a wide range of subjects – including radiator testing, thermal insulation, productivity in artificial environments, air quality, ventilation of dwellings, air-conditioning of hospital wards, and energy efficiency.

While Billington's priority was the welfare and development of the research association, he played

an active part in the Institution of Heating and Ventilating Engineers (IHVE, now CIBSE) making a huge contribution to its technical publications and guides. He became its president in 1970, and was awarded the institution's Gold Medal in 1976.

Another of Billington's pioneering involvements was setting up the Federation of European HVAC Associations (REHVA). He represented IHVE on its management board and was president from 1976 to 1978. He was also actively involved in the British Standards Institution, International Council for Building Research, International Institute of Refrigeration, the Committee of Directors of Research Associations, the Rumford Club and more.

Billington's outstanding contribution to the building services industry was recognised with an OBE in 1966. In France in 1969 he also received the gold medal of the Sciences des Climats Artificiel.

Neville Billington was a true gentleman, a professional of the highest order, who played a colossal part in the technical development of our industry and in inspiring others who work in it.

## CIBSE responds to government's Carbon Reduction Commitment consultation

The Carbon Reduction Commitment (CRC), announced in the Energy White Paper 2007, will apply mandatory emissions trading to cut carbon emissions from large commercial and public sector organisations (including supermarkets, hotel chains, government departments, large local authority buildings) by 1.1 MtC / year by 2020. The scheme includes formal monitoring, reporting, audit and penalties.

CIBSE's response to the latest consultation on the CRC favoured focusing resources on energy and carbon saving (not just on measurement). These include knowledge and skills but also the availability of cash to invest in energy saving measures. Quota

payments could significantly reduce or even eliminate a company's budget for energy efficiency measures.

A straightforward and robust method of measurement is needed for the CRC and energy usage should be identified and apportioned across the complex landlord tenant relationship. CIBSE suggested that the CRC could be used to provide real incentives to deliver proper sub-metering in commercial property. The costs of installation of sub-metering to an appropriate industry standard could be offset against the initial quota payment for the year.

There is also the challenge of practical collation of the required information from multiple sites

in the time available. CIBSE suggested that the compliance of public bodies, such as schools and the NHS, with the CRC should be firmly tied in to the existing Energy Performance of Buildings (EPB) directive so that information would not have to be gathered twice needlessly.

Finally, CIBSE pointed out the anomaly that accreditation for those collecting information for the CRC is not required but the EPB regulations require accreditation for energy inspectors. This is provision of information only, whereas decisions taken under the CRC will have financial implications. For CIBSE's full response visit [www.cibse.org/consultation](http://www.cibse.org/consultation)

# CIBSE's membership list continues to grow

It's been a mammoth month for new members joining CIBSE, with more than 100 new names on its books from across the UK and overseas.

Additionally, three existing members have had their membership upgraded to Fellow, while nearly 20 members became Associates.

The full list is:

## FELLOW

Wildfire Clare	Woking
Williams David Paul	Ormskirk
Wilson Steve John Montgomerie	High Wycombe

## MEMBER

Aldridge Robert Phillip	Dagenham
Algie David John	Newtownards
Altabev David	London
Avellano Adrian Mark	Gibraltar
Barrett Rodney	Clwyd
Bentham Tom	London
Bonett Jonathan R	Malta
Booth Craig	Edinburgh
Bradley Andrew	Basingstoke
Brodie David Barnson	Glasgow
Campbell Duncan Stuart	Wallington
Campbell Iain Anderson	Godalming
Chamberlain Natalie	Cardiff
Chan Wing Keung	Hong Kong
Cheong Natalie Chui Wan	Hong Kong
Cheong Ken Mun	Hong Kong
Chiu Ka Yiu (Aaron)	Manchester
Clark Daniel Paul	Malvern
Clark David Roy	Cambridge
Cobfeld Stephen	Dunstable
Cole Graham Paul	Eastleigh
Connell Simon James	Birmingham
Conroy Neil	Dublin
Cormican Susan Blackrock	Co Dublin
Crank Jon Richard	Stockton-on-Tees
Cumberland Gaven John	Bromsgrove
Dacosta Simon Frederick	London
Daly Patrick Michael	Caterham
Das Bhaumik Claire	Harpender
Davies Jason Graham	Epsom
Dawkins Rebecca May	Exeter
Dawkins Michael	Cork
Diamond Maurice Hamilton	Hillsborough
Dommett Michael James	Tunbridge Wells
Dow Steven Thomas	London
Farrell Alistair	Belfast
Filipovic Svetislav	Dublin
Ford James Robert	Bristol
Fraser Iain Scott	Edinburgh
Fraser Graeme William	Loanhead Mid Lothian
Gill Stephen Charles	Derby
Gortsopoulos Konstantinos	Dorking
Gouldsbrough John	Sheffield
Graham Kerry Lee	Bangor
Griffiths Mark Charles	Bristol
Hammick James Ashley	Tonbridge
Hawes Andrew Mark	Basildon
Haylett Benjamin Giffard	Hitchin
Herlihy Niall	Dublin

Hew Yeu Sang	Perth Australia
Hoden Philip Peter	Lincoln
Holmes David John	Halifax
Howell Stephen Anthony	Newcastle-upon-Tyne
Huitson Martin Ian	Durham
Humphries John	Washington Tyne & Wear
Ip Wan Hung	Hong Kong
Jayasundera Wijayasiri Jonjku Hewa	Romford
Jess Nigel James	Belfast
Johnston Innes	London
Jones Alan	Cardiff
Jones Alan Charles	Hong Kong
Kaczmarek Mrcin	Poland
Keenan Kevin John	Edinburgh
Kerr Peter	Glasgow
Kimber Garry Charles	Nottingham
King Michael Ronald	Southampton
Knights Timothy	Plymouth
Knowles Graeme Pringle	Edinburgh
Kuwali Fresh	Bishop's Stortford
Lamb Robert James	London
Leadbitter Arthur Michael	Newcastle upon Tyne
Lee David John	Burton-on-Trent
Lee Poon Kai	Hong Kong
Lewis John	Surbiton
Ling Benjamin	Norwich
MacKenzie Simon P	Stockport
Magee Martin	Newry
Maidment Mark James	London
Matharu Pritpal Singh	Cambridge
McCausland Gavin Paul	Newtownards
McClafferty Martin	Greenock
McDowall Steven	St Albans
McGill Patrick	London
Montague Adrian Paul	Sheffield
Monteith Iain	Edinburgh
Moore Andrew Stephen	Bury
Mortensen Christopher	London
Moss George	Tunbridge Wells
Mwaniki Andrew Wahome	Nairobi Kenya
Najim Hilal	London
Ng Chi Ching	Hong Kong
Nichols Richard	Sutton Coldfield
Oguta Saul Mogusu	Slough
Oliver Philip	Newcastle upon Tyne
Ottley Alun	Northolt
Page Owen	Harpender
Pangalis Michael	London
Parker Nicholas	Stockton On Tees
Phillips Jonathan Robert	Harpender
Phinbow Matthew John	Oxford
Ponzini Mark Romano	London
Powell Graham Douglas	Redhill
Roche John	Bicester
Ross David	Edinburgh
Shum Wai Lun Franky	Hong Kong
Simpson Adam Jon	Birmingham
Stevens Walter Jon	Sidcup
Stewart Lucy Brona	Newtownabbey
Surendran Nathan Rajiv	Hertford
Szczecinski Adam Albert	Solihull
Taj Kamal	Doha
Tan Chee Chuan	Singapore

Teahan Michael Peter	Mitcham
Tejedor Hugo Jimenez	Brighton
Vaughan Beresford Steven	New Malden
Voyles Eimear	Malmesbury
Watts Fiona	London
Welch Ainsley Kevin	Trinidad & Tobago
White Ian James	Hertford
White Steve	Dartford
Wilkes Richard Andrew	Dagenham
Williams Irvin	London
Williamson Keith	Macclesfield
Wlodarczyk Pawel	Walton-on-Thames
Wong Kwan Lap	Hong Kong
Wong Yiu Wa Franki	Hong Kong
Xing Yangang	Birmingham
Yagoub Waleed Kamal Ahmed	London
Yip Shing Fai	Hong Kong

## ASSOCIATE

Allin Samuel David	Epsom
Applegate Simon James	Bristol
Ayres Christopher David	Devon
Bowcock Mark Arthur	Manchester
Campbell Kerrie Emma	Ilford
Daly Simon	Caterham
Grace David Jonathan	Exeter
Hingston Nigel Malcolm	Newton Abbot
Holloway Shaun Philip	Hayling Island
Legerton Anthony John	Leigh
Lehtonen Aino Sisko	London
Loi Aneell	Birmingham
McClune Gary	Carrickfergus
Nicholson Paul	Ryton
Orts Victor	Brighton
Otterson John James	Maidstone
Smith Roger George Mephram	Leatherhead
Stephenson Paul	Barton-upon-Humber
Wojcik Krzysztof	Maidenhead

## Closing date for membership applications

The next closing date for applications for the Associate (ACIBSE) and member (MCIBSE) grades is **Monday 3 August 2009**.

If you aim to submit your application by the August closing date, please make sure your application is complete.

You need to include:

- Application form;
- Work experience listing;
- Engineering practice report;
- Organisation chart; and
- Development action plan.

For full details of the requirements and application process for ACIBSE and MCIBSE membership, please visit [www.cibse.org/membership](http://www.cibse.org/membership) or email Pearl Mensah, CIBSE membership and registration manager, at [pmensah@cibse.org](mailto:pmensah@cibse.org)

# Part L refit unveiled

New government plans to revamp and improve Part L of the Building Regulations have been widely welcomed, but the unexpected watering down of one key proposal for improving existing buildings has caused concern. **Carina Bailey** reports

Part L of the Building Regulations maps out the future of sustainable building. First introduced in 1985, the documents have been rewritten a number of times to incorporate new energy efficiency targets. The new Part L 2010, published last month by incoming housing minister John Healey, aims to close the loopholes that have hampered the government's commitment to driving energy efficiency in buildings since the regulation's previous rewrite in 2006. Part F, which covers ventilation, is also being revised because of the link with Part L.

But there is concern across the industry that the government will struggle to hit its 2020 carbon reduction targets after it drastically limited a requirement that existing homes be made more energy efficient if they undergo substantial alteration through refurbishment,

extension or a loft conversion – known as 'consequential improvements'.

It had been expected that, under Part L 2010, all homes undergoing such improvements would have to comply with the new energy regulations. But it is now proposed that only homes above 1,000 sq m would have to comply. However, the proposal that all new conservatories will have to comply with the regulations is still in the documents.

Just a few months ago at the CIBSE national conference, a Department of Communities and Local Government (DCLG) official, Paul DeCort, also suggested that the 1,000 sq m threshold for non-domestic buildings could be dropped, telling delegates that raising energy efficiency standards via building regulations was key to meeting the targets – second only to grant mechanisms. But a



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spokesman for the department now says that ministers are concerned about "putting further costs on householders when we are going through a recession". So what does this mean for the industry?

"Strictly speaking, they have not dropped the domestic requirement, but they have so watered it down it is almost inconsequential," says Hywel Davies, CIBSE's technical director. "It is disappointing, because unless we upgrade the existing stock we will never achieve the carbon reductions that government says it wants us to achieve. And we need to start doing that now, not in another three years."

Dan Jestico, a consultant at Hilson Moran, shares Davies's view, describing the outcome as a glaring omission: "Given that 27 per cent of the UK's CO<sub>2</sub> emissions come from homes, this represented a real opportunity for CO<sub>2</sub> savings. Despite the expectation that this will be required by the Energy Performance of Buildings Directive (EPBD) from 2011, no mention is made of it in these proposals."

Andrew Warren, director of the Association for the Conservation of Energy, describes the sudden removal of the consequential improvements section as extraordinary.

"The implications are absolutely horrendous. This was the only stick that was available in order to encourage anything to happen. A very obvious time to get things to happen is when you've already got people on the premises doing things."

## Lost opportunity

He adds: "It's such a missed opportunity. One puts one's head in one's hands and despairs."

David Strong, chief executive of consultancy Inbuilt, cites the change to consequential improvements as "the single most important measure that the government could introduce to improve the energy performance over time in the existing building stock". He adds: "We've already built 70 per cent of the existing buildings that will be standing in 2050. That's where the highest priority lies. This measure would have helped to deliver that."

"If it's not in there, then it's another nail in the coffin in terms of failing to achieve the government's carbon reduction target."

"They've put in place a very ambitious target and, unless they deliver massive carbon savings from existing buildings, we stand no

## Timetable

**In order for the government to meet its own target of reducing CO<sub>2</sub> emissions by 80 per cent in 2050 the building regulations will need to be constantly reviewed. Below is the planned timetable for review and change:**

**2009:** Part P – will be reviewed  
Parts A&C; J&P; L&F; and the Code for Sustainable Homes (CSH) – will all be consulted on  
Part G – will be changed

**2010:** Parts A&C; J&P; L&F – will be changed  
In 2010 DCLG will confirm what will be reviewed for 2013; giving an indication of the 2016 changes

**2011:** Parts L&F and the CSH will be reviewed

**2012:** Parts L&F and the CSH will be consulted on

**2013:** Parts L&F and the CSH will be changed

**2014:** Parts L&F and the CSH will be reviewed

**2015:** Parts L&F and the CSH will be consulted on

**2016:** Parts L&F and the CSH will be changed

**"The government has put in place a very ambitious target and unless they deliver massive carbon savings from existing buildings we stand no chance of doing it now." – David Strong**

chance of doing it. This is one of the measures that would have helped in doing that.”

Paul King, chief executive of the UK Green Building Council (UK-GBC), adds: “We are not going to achieve a ‘near zero carbon built environment by 2050’ – the government’s aspiration set out in its Heat and Energy Saving Strategy – by wishful thinking.

“We need concerted action, leadership and, frankly, to pull every lever within reach to transform our woefully inefficient existing homes and buildings. To drop a key measure, the so-called ‘consequential improvements’, that could really help bolster the market for energy efficient refurbishment, sends the opposite signal.

“The new housing minister is still getting his feet under the table, and I hope he can find a way to catch the rather valuable thing that has just fallen off it.”

Dr Ian Pegg of consultancy Buro Happold says the government must now find another way to tackle emissions from existing buildings – regardless of the instruments used.

“The 80 per cent reduction in greenhouse emissions could partially be achieved in the existing stock by introducing a city-wide decentralised energy network, as is being planned in London.

“This scheme has recognised that large-scale carbon savings must be centrally planned and require a partnership between private and public bodies, with real investment. This is the first step towards a low-carbon heating network to rival Copenhagen or Stockholm.

“Other opportunities to affect the existing stock would involve enabling new developers to pay into a local ‘green fund’ instead of >

## Momentous changes will impact across the supply chain

The long-awaited government consultation papers on changes to Parts L (Conservation of Fuel and Power) and Part F (Means of Ventilation) of the Building Regulations are probably the single most significant legislation affecting those who design buildings, or manufacture, install and commission building services. Some proposals may even have an impact on energy assessors producing recommendations reports on existing buildings.

The package includes draft revisions to the four Approved Documents (ADs) to Part L, and revises the detailed calculation methodology for emissions ratings of new buildings. But the overall approach of setting carbon emissions targets, with the five compliance criteria to satisfy, remains in place. As the energy targets become more onerous, it is expected that buildings will become more airtight. The package therefore includes proposals for changes to the ventilation requirements in Part F, and ADF. And a significant change is to give greater emphasis to the distinction between the regulatory requirements, set out in Part L (and F), and the guidance set out in the Approved Documents on how to meet the requirements.

To achieve the target of all new homes being zero carbon by 2016, energy efficiency standards for new homes will be improved relative to 2006 levels by 25 per cent in 2010 and 44 per cent in 2013. For new non-domestic buildings, the proposal is for a 25 per cent improvement in 2010.

The consultation asks whether this should be a flat 25 per cent for all non-domestic building types, or an aggregate 25 per cent across the stock, with some building types facing more stringent targets. Comments are invited on “the further trajectory towards zero carbon new non-domestic buildings”.

The Department for Communities and Local Government (DCLG) proposes to tighten rules for commissioning of new buildings, with a requirement to certify that the commissioning plan has been followed. It also suggests that when building control checks that the CO<sub>2</sub> target emission rate (TER) complies with the regulations, they should confirm that a commissioning plan has been prepared when the TER calculations are submitted. This recognises that commissioning is neglected too often.

Another detailed change proposed for both ADL2A and B is that energy efficiency requirements apply not only where energy is used to provide comfort for occupants, but also to any building space where energy is used to condition the indoor climate – such as server rooms and cold stores.

The majority of buildings that will be in use in 2050 are already built, and are generally less energy efficient than newer buildings. The package considers how to improve these buildings, with changes to the requirements that apply when existing buildings undergo work that is within the scope of Building Regulations. Section 6 of ADL2B sets out requirements for

consequential improvements to the energy efficiency of a building, which must be undertaken when certain “trigger works” are carried out.

An interesting addition to the table of improvements, “that in ordinary circumstances are practical and economically feasible”, is that measures contained in a recommendations report which accompanies an Energy Performance Certificate is considered to be cost-effective. A new owner of a building or the building control officer may need to rely on the content of a recommendations report to inform a decision about regulatory approval of subsequent works. This highlights the need for clients to ensure that the reports are properly commissioned and are tailored to, and reflect, the circumstances of the particular building. There may be potential for so called “drive by” recommendations reports to become a bone of legal contention if the proposed changes to this aspect of ADL2B are adopted.

**Hywel Davies, CIBSE**

[www.communities.gov.uk/publications/planningandbuilding/partf2010consultation](http://www.communities.gov.uk/publications/planningandbuilding/partf2010consultation)

**CIBSE will be preparing a response ahead of the September closing date for the consultation on Parts L and F. There may be regional and group events during the next two and a half months to consider aspects of the proposals and to contribute to the overall CIBSE response. Any members wishing to contribute to the response are invited to visit [www.cibse.org/partl](http://www.cibse.org/partl)**

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> aiming for excessive levels of on-site generation – for example Code 6 in its current form.

“Larger carbon savings could be made, for less investment, by using this fund to target energy efficiency such as additional insulation and low-energy light bulbs in the existing stock.”

**Carbon savings**

DCLG says that, if the changes proposed in the new Part L 2010 consultation document were put into practice, it would save 3.3 million tonnes of CO2 emissions a year from 2020. Warren emphasises that there are a great many elements that are worthy of praise within the Part L 2010 document – such as the proposed changes for new builds and conservatories, and the steps taken to ensure buildings comply with the Building Regulations.

Davies also believes there is much that is good about the proposals, particularly the increase in the size of the sample of dwellings to be air-tightness tested.

Indeed, Jestico is very much in favour of the 25 per cent reduction in CO2 emissions required for both domestic and non-domestic buildings: “It is a sensible step on the path to zero carbon homes and other buildings in 2016 and 2019 respectively, although the new mechanisms for calculating the emissions using the proposed ‘aggregate’ approach will take some getting used to.”

But Geoff Russell-Smith, general manager at Tarmac TermoDeck, is concerned that the new aggregate approach might cause difficulties: “It is likely that, under a new aggregated system, some buildings

could meet a lower target than others.

“But, while many new buildings built to Part L 2006 meet the target on paper, the reality is that there is often a major disconnect between the actual operational performance of a building due to factors outside the designers’ influence.”

However, the Royal Town Planning Institute (RTPI) welcomes the “tough” target. Robert Upton, its secretary general, says: “If we are to achieve our targeted reduction of carbon emissions of 20 per cent by 2020 as the minister indicated, we have to act now. The government is demonstrating its clear commitment to delivering a long-term solution to our climate change challenge and is not being blown off target by the current economic situation.

“It’s time for planners, architects and developers to step up to the mark and respond to this challenge.”

**Tool box**

To help support meeting this aggregated national target of 25 per cent, the calculation tools used to create the target CO2 emissions rate (TER) for new buildings and large extensions have been adapted. New versions of the Standard Assessment Procedure (SAP2005) and the Simplified Building Energy Model (SBEM) are now available for building services professionals to use and provide feedback.

The Building Research Establishment has developed this new version of SAP for DCLG, so that it uses monthly rather than annual weather data, with factors to address thermal mass, while



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SBEM focuses on the convergence of results with Dynamic Simulation Models (DSMs). Building typology is now linked to planning classes with simplified activity types below this.

Russell-Smith is hoping that the calculation tools and software for Part L 2010 will also recognise innovative or emerging low carbon technologies. He says this was not the case for Part L 2006, which failed to allow the use of a number of proven and effective technologies.

“This software ‘straightjacket’ has severely restricted our industry’s ability to innovate and rise to the challenge of delivering a low carbon economy.

“The government needs to understand that we will only get close to meeting ambitious targets if engineers can draw upon a full range of low-carbon technologies.”

Terry Dix, a director at Arup and chairman of one of the main advisory panels to government for Part L, does believe the overall

**“ The new housing minister is still getting his feet under the table, and I hope he can find a way to catch the rather valuable thing that has just fallen off it.”**  
– Paul King

changes will help the government hit their ambitious carbon reduction targets: “It has to help to move along this process, it’s probably the last time there are going to be these relatively easily achieved fixes. [Part L in] 2013 will be much tougher.”

He believes that the document does what it says on the tin – gets the industry to its targets using that trajectory. But he feels the difficult issue is going to be that it’s a predicated answer. Much

**Snapshot of some key Part L changes**

**CO2 performance targets**

- CO2 emissions from the actual building should be compared with a TER (target emission rate) based on a hypothetical reference building of the same shape and size.
- An aggregated 25 per cent improvement on 2006 standards for all new buildings, resulting in an overall reduction rather than a 25 per cent reduction on every building.
- All new non-domestic buildings to be zero carbon by 2019.
- The present regulatory framework is to be retained, with builders free to select their own CO2 reducing solutions.

- SAP (Standard Assessment Procedure) and SBEM (Simplified Building Energy Model) or DSM (Dynamic Simulation Model) to be retained, but with the software packages updated. Changes are currently being consulted on by DECC (Department of Energy and Climate Change).
- A separate, temporary specification is proposed for electric resistance heating in new homes. It will eventually have the same fabric specification as other fuels (not just fossil fuels) and be based on a heat pump solution. This change will be made progressively to give the electrical heating industry time

to create new technologies. For non-dwellings, the 2010 targets are based on the amount of glazing in each building.

**Limits of design flexibility**

- In new builds, builders are free to consider using renewable technologies to hit emissions based targets.
- It is proposed the present system of ‘backstops’ is to be adjusted to strike a balance between energy efficiency and design flexibility.
- Builders have the option of being innovative in their designs, which can be judged on a case by case basis.

**Efficient operation**

- Produce information using the guidance in CIBSE TM 31 Building Log Book Toolkit for non-domestic buildings to ensure the building is being operated and maintained correctly.
- A suitable set of operating and maintenance instructions should be created for use in new homes to ensure the building is being used and maintained correctly.
- The occupiers should also be given the recommendations report from the energy performance certificate.

effort has been placed on analysing the financial implications of the proposed changes, and trying to predict which sectors of the market are going to grow, which Dix describes as a “tricky business”. As regards the removal of the consequential improvements issue, Dix says that the “reasoning and direction” that goes into Part F and L needs to respect European legislation. The EPB directive is currently being redrafted.

The published consultation document also shows that DCLG wants to keep the same regulatory and compliance framework as for Part L 2006.

### Timetable

The timetable for Part L 2010 also remains. From that date, new homes will have to show a 25 per cent improvement in energy efficiency for a Code for Sustainable Homes (CSH) Level 3 dwelling. The target for a Level 4 home is a 44 per cent improvement from 2013, and a Level 6 home should be zero carbon by 2016.

However, targets have also been set for non-domestic dwellings, with an ambition for all new builds to be zero carbon by 2019 – except for new schools and public buildings, which will have to be zero carbon in 2016 and 2018 respectively.

DCLG also intends to widen its range of compliance guides to cover all building services, including lighting, ventilation, pumps and low or zero carbon technologies. These will set minimum standards for new and replacement technologies and will be available for new domestic and non-domestic projects. They will also be generic so they can be adapted for use in all regions of the UK.

They will focus, in particular,

on limits of design flexibility for new build and standards of energy efficiency for replacements, and include improved standards for the services contained in the previous guides and be updated in line with BS ENs.

Part L 2010 also looks more closely at compliance, with a number of options explored by DCLG, including improving the connection between the National Calculation Method (NCM) calculation inputs and information on construction. A two-stage calculation has been created, one on design, one on completion, with information available to the builder and building control so they can focus on these areas.

DCLG also wants Part L 2010 to adopt Accredited Construction Details (ACDs) with enhanced quality control for higher performance, the wider use of Competent Persons Schemes and self-certification schemes, and more focussed guidance for renovation work. In addition, DCLG is looking to set performance standards for people to comply with, as well as introducing substantial training and a dissemination campaign so people know and understand the requirements of Part L.

FETA (Federation of Environmental Trade Associations), the body representing manufacturers, suppliers, installers and contractors in the building services industry, is now concentrating on feeding relevant information out to its members to digest before holding a series of meetings in July and August. During these meetings, member companies will be able to share their interpretations of the documents and collect views ahead of the September deadline. ●

## Question marks remain over Part F ventilation proposals

As buildings become more air tight, they begin to reach assumed levels of permeability used in the calculation required in legislation.

This is an issue in domestic dwellings rather than non-domestic buildings, which is driving a trend towards mechanical ventilation in homes, away from natural ventilation.

Of the main changes proposed in Part F of the Building Regulations 2000, Hywel Davies, technical director at CIBSE, has welcomed the inspections of both natural and mechanical ventilation systems, but stresses it will need enforcing. He is also very much in favour of air flow rates being measured on-site as part of the commissioning process, but believes this proposal may provoke “serious pushback” from some in the industry.

However, he is sceptical of using continuously running ventilation systems in homes. “If installed in rented housing they’d better be totally tamper proof, with automatic controls that make sure that they run when required.”

Davies has also suggested that owner/occupiers of homes be given domestic log books to help them operate the ventilation system and inform them of the maintenance requirements – a step further than the new proposals for Part F 2010 go.

But the DCLG’s idea of using a checklist as evidence that the new ventilation proposals for domestic dwellings have been completed isn’t enough: “A checklist is evidence that a pen

has been in contact with a piece of paper. Someone needs to sign a certificate that this has all been done, and there needs to be real sanction if they lie.”

He also has concerns about the proposal to make all domestic ventilation systems meet Requirement F1. In the revised building regulations it states: “Only the provision (which includes replacement) or alteration of continuously running mechanical systems will be notifiable building work.” Davies says: “Fine in theory, but in practice? I don’t see any evidence of additional resources for building control to really make this happen.”

The ‘unintended consequences’ of a new proposal to create design air permeability tighter than or equal to 5 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 Pa in homes needs thinking through too, as does the new criterion for infiltration allowance for leakier homes, which is now the same for single-storey and multi-storey dwellings, according to Davies.

But the suggestion of having a new appendix which gives guidance on specifying and assessing noise levels from continuously running mechanical ventilation systems is nonsensical, according to Davies.

He says: “An appendix to an approved document is guidance, and saying that manufacturers should do things in there is too weak. If these components need to be tested, then DCLG need to require that, not suggest it would be a good idea in an appendix to a guidance document.”

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# Letters

## Very glad to be green

I'm surprised and a little saddened to discover, in letters you've published in recent months, a handful of senior CIBSE members in mid-2009 still denying the understanding that urgent CO<sub>2</sub> reduction is not only necessary, inevitable and desirable – it's also something of a unique 'gift' to us, as individuals, as a profession, and as a species. Building services engineers know a thing or two about efficiency, and about elegant (creative) engineering solutions. If we see our worth as being linked to the quantity of (fossil-burning) 'kit' that is mis-sold to our clients, then we badly miss the point. Neither is it smart to indulge in renewable-energy bashing. That's like rubbishing your industry's next new product.

We can help our clients create a golden triple legacy of credit-, carbon- and climate-resilient built-environment assets that require no fossil fuels or upkeep. This might cost a little more up front. Why not? With such hugely desirable risk-free asset legacy benefits, we'd have to be completely rubbish at selling to hide all that inner gold from clients, financiers and pension fund managers. But we do. We can also choose to ignore that our profession is part of humanity's late-in-the-day miracle auto-immune survival response. But it's so much more fun (and energising) to get on with our day jobs knowing we ARE part of something big – part of a fast-growing body of concerned citizens working hard to pull off a miracle: saving all our children from experiencing the worst of the climate crisis that lies directly ahead.

**Dave Hampton, MA, CEng, CEnv, MCIBSE**

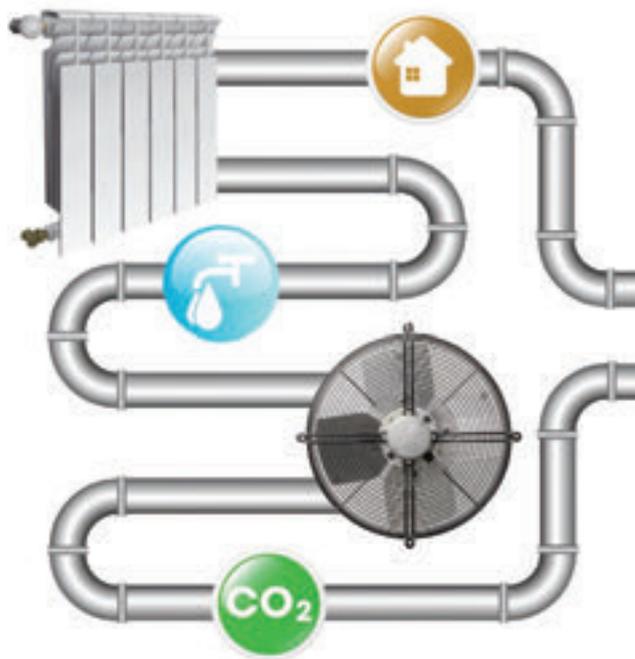
## We were misrepresented on the question of heat pumps

I applaud the entry of another heat pump sub-technology into the marketplace – CO<sub>2</sub> – which can only add to the basket of solutions to aid the renewable and low-carbon agendas (May, pages 48-52). However, I have been misquoted in this particular article.

While the commercial heat pump market last year was, as you say, worth around £300m, and the domestic market is only just emerging, the reason for the slow penetration of heat pumps is not "partly" due to them being

unable to supply hot water at the appropriate temperatures, as is implied on page 52. Hot water heat pumps have been available and utilised in various applications for decades. It is for a variety of other reasons – including there not being a demand to change from traditional technologies – that the domestic market has not grown faster earlier. It is the renewable and low-carbon agendas that are actively and rightly changing this situation.

I also appear to be disagreeing with myself on the same page! It is true that different



refrigerants will offer different temperature ranges. Refrigerants such as R410a will achieve district hot water temperatures in excess of 50 and to 60 deg C; R134a will offer DHW in excess of 60 and to 70 deg C; and CO<sub>2</sub>, as the article states, could go as high as 90 deg C. It will come down to the efficiency of the heat pump operating at these temperatures. The COPs stated in the article relate to current ADL minimum (2.0), and probable future minimum (2.2), requirements – and many heat pumps will offer 60 degrees C DHW at COPs well above these figures, so it is important to check this type of information with the manufacturer.

It is important to offer these comments, as we, the Heat Pump Association, believe that all heat pump sub-technologies can make a difference, and we would always urge specifiers to seek out the best solution for their particular

application. After all, there are so many types of heat pump available exactly for that reason!

**T R Seward, secretary HPA**

**Editor's response:** *We are extremely sorry and sincerely apologise for the misrepresentation of Terry's and the HPA's views in this article, which was entirely due to an editing error. While the article sought to reflect the industry's perspectives on heat pumps, the HPA's view was inadvertently mis-stated, and Terry's letter offers a clear expression of the related facts and arguments. We would also welcome readers' responses to this issue – please send these to: [editor@cibsejournal.com](mailto:editor@cibsejournal.com)*

## Don't bank on lending

In the interview with Eddie Myles (April, page 22) he says: "Much of the problem [with the construction industry] is down to lack of confidence caused by the banks refusing to lend money, and it will be the small and medium-sized enterprises that suffer most." When the government does not have the will to do something, it does not matter what the consultants, experts or the various committee reports say. The banks seem to rely on their respective credit committee for an approval of the report that one of the senior corporate managers has prepared for them to approve. Over many years, I have seen only one bank's credit committee member coming out of his cosy office and visit the borrower and also visit the project in question! The UK government

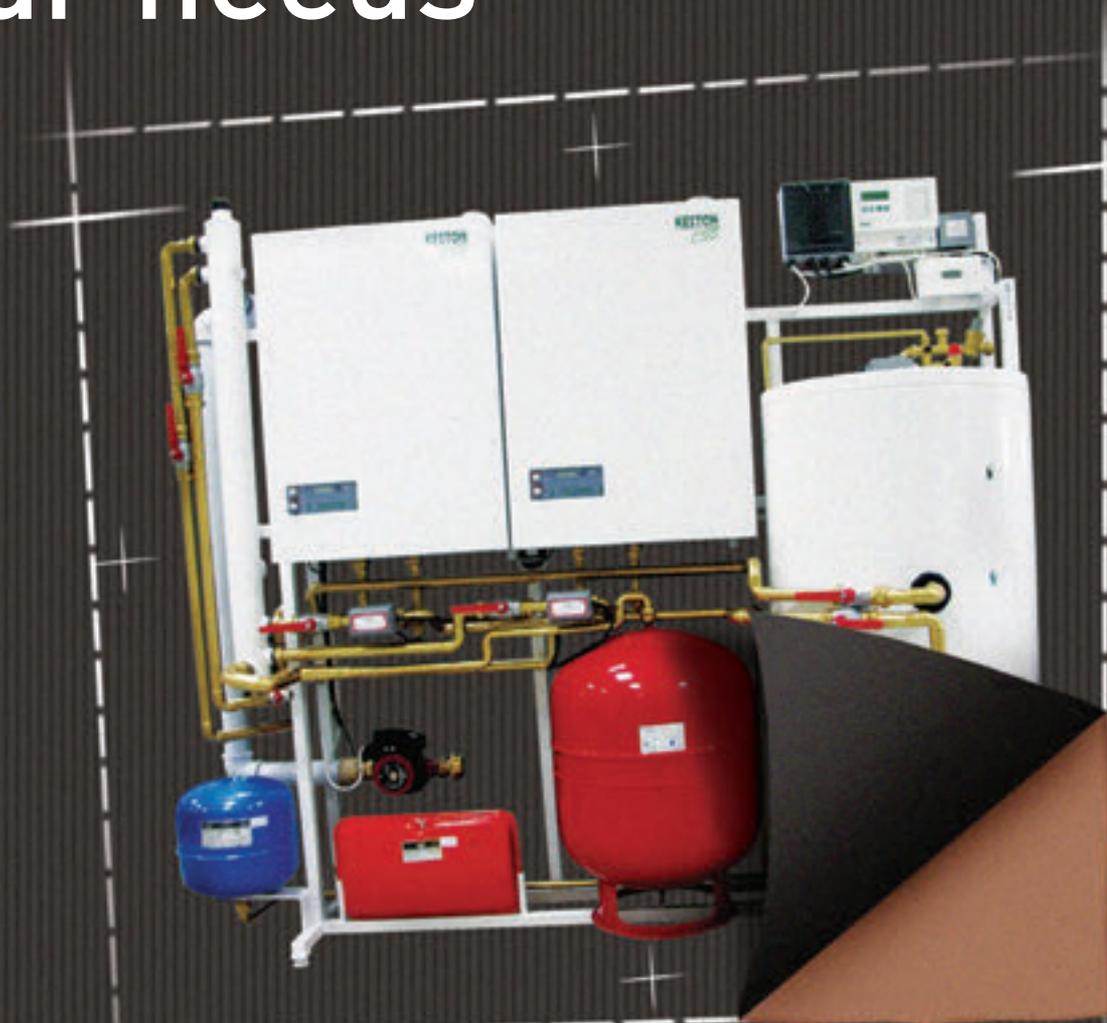
now owns a few banks and should be able to 'force' them to start lending so that the construction industry can take up the challenge to rise from the ashes. It can be done – bank managers need to be trained to be human and humane and take *calculated* risks.

**A V Shah CEng, MIET, MCIBSE**

*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](mailto: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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## The female factor

The industry has come a long way in evolving from the sexist gentleman's club it once was, thanks to the perseverance of female staff, says young engineer **Amanda Reid**



**W**hen I was younger I wanted to be a fighter pilot. That dream died a quick death when I was told you need 20/20 vision, but my desire to be challenged never changed. At college I followed the engineering path, due to my likes and dislikes. The male-to-female ration was 50:50. However, at university that ratio changed to 90:10 respectively. I graduated with a good electrical and electronic engineering degree, and applied to a few main contractors, but I didn't get the position I wanted – maybe wearing a skirt wasn't a good idea. At the same time I applied to consultants and was offered a graduate position at a leading building services engineering consultancy.

There were only four female engineers in an office of about 70 staff. Within the company I never felt as if I was held back for being a female, or treated any differently. However, I noticed a difference in treatment when I met external consultants, contractors and manufacturers.

Male colleagues in meetings would always address each other; I was often ignored and treated as someone with no authority or say. It was very disheartening. How can you change someone else's perception when you only interact with them for a few minutes? I felt as though it would be this way forever and, consequently, left the industry.

I came back to engineering just two years ago, after considering other career opportunities during my five-year absence, and noticed what a big difference had occurred in that time. There were many more female engineers, and things had become balanced in a world where, previously, men were recognised more. If I could go back in time I definitely would have persevered.

I received offers from all the firms I applied to, only this time no references were made to my being a woman, and there was no difference in pay or benefits. I then decided I wanted to gain more experience on larger projects, and so decided to venture further afield to Dubai.

The general perception of Dubai is that it can be

a restrictive country for women – but I found this to be untrue for myself. Working in Dubai also led to opportunities in Saudi Arabia, but Saudi is not quite as easy for women – especially single women – as Dubai is. Women are not allowed to drive, need to cover up by wearing an abaya and have to be accompanied when they travel.

It is a different world compared with the one I am used to. I am involved with the design of projects in Saudi Arabia from our Dubai office, and the divide and difference in treatment is evident from the design of buildings.

Now that I have worked in different countries and with people from many backgrounds, I can see that women engineers' stance in the industry varies across the world. Sometimes it's not only individual opinions you have to consider – there are also cultural differences. People also forget the social side of work can sometimes present barriers to overcome. Guys enjoy lads' nights out, which can sometimes lead to exclusion.

But do women make better engineers? And what do women bring to engineering that males don't? Having women engineers in the workplace does improve the office environment – and not just physically. Women are needed to add diversity and different ways of thinking, and to improve creativity and reliability.

The building services sector needs women to help it evolve from the 'senior gentlemen's industry' I thought it was when I first joined. I believe it continues to evolve, due to the assistance of women. ●

 **The buildings services sector needs women to help it evolve from the 'senior gentlemen's industry' I thought it was when I first joined – and I believe it continues to evolve, due to the assistance of women.** 

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## Be inclusive or die

The supply chain needs to become more integrated, and CIBSE can help by promoting trainee secondments across the industry, argues **Paul Wenden**



**M**any of the young engineers that work in my organisation are working towards chartered status with predominately mechanical or electrical institutions. When I ask whether they had considered CIBSE as a route for professional membership, the response is generally, “but CIBSE is *only* for building services consultants, not manufacturers” – which is a shame as these young engineers are developing, designing and manufacturing the next generation of building service products.

CIBSE has to increase the variety of people who participate in our community, as they offer the opportunity to tap into a rich pool of talent, bring in new voices, experiences and approaches, and add depth to existing skills and ideas.

On further investigation it appears that organisations such as IMechE promote secondments and placements across various businesses to expand experience and knowledge. I suggest that by harnessing the energy and enthusiasm of our active CIBSE young engineers’ networks – and using the industry links available through organisations such as the CIBSE Patrons – we could well develop similar, more effective schemes.

Likewise, by not being positive in broadening the scope of engineers from a variety of backgrounds, our organisation is in danger of becoming introverted, with a membership that is increasingly becoming exclusively the domain of building services design engineers, and seen as unapproachable by manufacturers.

Fortunately, there are many ways we can become more inclusive and I hope by writing this piece we can start a debate and attract even more suggestions.

One idea is to expand a highly successful scheme that Fläkt Woods has been running for many years, hosting young Arup graduate engineers just starting out on their careers. It is a long-standing arrangement and has been highly popular. Three or four students at a time come to visit the company for two weeks, with one week at its main air handling unit factory in Jönköping, Sweden, and one in the modern fan manufacturing facility in the UK. This helps them see how the manufacturing industry works, and gives them a technically-based overview of

how Fläkt Woods approaches the challenges posed by the services design engineers and contractors.

Unfortunately though, this scheme does not have a reciprocal arrangement, and for it to be truly successful I believe it should. Product design engineers and those involved with building services consultants would greatly benefit from a period spent within the designer environment – extending the knowledge of how and why things are the way they are and feeling more integrated with the whole supply chain.

I’m sure there are equivalent ad hoc arrangements with other like-minded companies, but I would propose that CIBSE promotes such schemes to all members, and involves the CIBSE Patrons in developing a framework with businesses. I’m sure that they would welcome the opportunity to have more input, building the foundations of a comprehensive collaborative partnership.

As a first step, Fläkt Woods can expand secondments by offering them to others, to CIBSE members, to CIBSE Patrons, and in turn these organisations could reciprocate, helping us all to build bridges and creating a greater understanding of each others’ strengths.

To get integrated teams, we need integrated organisations. Not only should we expand these secondments between trainee professionals from different sectors – from engineers to architects to contractors to manufacturers – we should more boldly expand involvement among the various sector trade bodies and organisations. Greater inclusion can only expand opportunities available to CIBSE, helping it to reach more potential members, increasing its profile and building support for what it is doing. ●

**To get integrated teams, we need integrated organisations, and we must expand secondments between different sectors.**

**Paul Wenden** is engineering and product management director at Fläkt Woods. He is also president of both the Heating, Ventilating and Air Conditioning Manufacturers Association, and the Federation of Environmental Trade Associations

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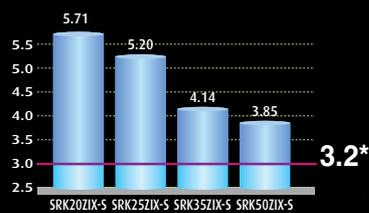


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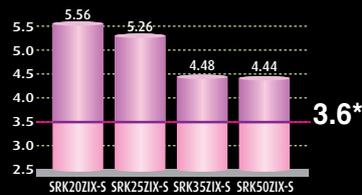
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Simon Weir

# Building bridges



Sunand Prasad (right), president of RIBA, debates the future of the industry with CIBSE president Mike Simpson

## Can architects and building services engineers really work together to push the boundaries of sustainability, or will they always be in separate bunkers? **Bob Cervi** quizzes the presidents of RIBA and CIBSE

**Q: Can we push the boundaries of sustainability in the built environment without much more project teamwork, particularly between architects, engineers and contractors?**

**Sunand Prasad, president of the Royal Institute of British Architects:** “I see the role of the architect on this issue as asking the questions. You can have different roles and still be equal. The distinct job that architects are trained to do is to orchestrate and coordinate the whole. This is not what they teach you to do in engineering disciplines. That’s a great thing. We should not have a hierarchy but we should have a division of labour. None of us [engineers and architects]

are impediments to sustainability – this costs money, we want to spend the money, and the best way to get the client to spend the money is to enshrine sustainability in regulations.”

**Mike Simpson, president of the Chartered Institution of Building Services Engineers:** “It is about following the client. But I do believe that engineers have to raise their game, because they have an enormous responsibility for sustainability. One of my fears is that, as we go through this recession, extra money for sustainability will be taken off the budget.”

**SP:** “It is in the very nature of professionals and consultants that we are advocates. We can complain, we >



Mike Simpson: building services engineers need more education on what architects are about

> can advocate, we can advise – but we don't have the means to twist the client's arm [towards more sustainability]. I can throw my toys out of the pram and walk away, but that's all I can do."

**Q: Are building services [BS] engineers still locked historically in the role of subordinates to architects and so don't have the confidence to be as much of an advocate for sustainability as they should be?**

**MS:** "I do see the situation changing. I do see a greater dialogue between architects and engineers at the concept stage. The creation of a zero or low-carbon building is tied up in its form, its construction, and so on, and I think that this is driving the two professions to work together at the early stage of a project."

**SP:** "My biggest beef isn't even about persuading clients to be sustainable, it's about persuading clients – particularly contractor-clients – to even employ a proper environmental consultant at the beginning. Maybe we could say to the client: 'We're not going to have a meeting, we're not going to start this project, until you appoint the full consultant design team and you empower it from day one.' Thinking out loud, that could be an issue [for the industry] to campaign on."

**MS:** "With any design process, design is all about teamwork, to get that agreed outcome on sustainability."

**Q: Do we need contractors and other elements of the supply chain involved in the design at the beginning?**

**SP:** "There's confusion between the supply chain and where knowledge resides. There's an increasing idea that, from day one, you need the contracting engineer, the carpet layer, the architect, the mechanical and electrical engineer involved. All these are very good people but their

specialism is not questioning a client's brief, relating it to the business operations of the client, understanding that sustainability starts with behaviour – they don't need to be at the table when we're working this stuff out, they need to be involved sequentially. The moment the design starts, the engineering disciplines, the cost disciplines, the space disciplines (planning, landscape and architecture) need to be in place. But you don't need a contractor at that point. We do need construction expertise, but we don't need the contractor. The contractor's place at the table is about power play."

**MS:** "If sustainability is driven by the client, you're much more likely to have the sort of discussions we need at the early stages. If you have a discussion with the client in terms of recouping the money spent on sustainability, say in five or 10 years, then I think you can unblock the path to building things that are good or excellent rather than average."

**Q: Is the best way to persuade the client to place a mandatory limit on their carbon footprint for buildings?**

**SP:** "That's absolutely a good idea. The UK government has now set a carbon budget, and that will have to flow down to what each of us needs to do."

**MS:** "You also have to be careful, with this whole process of carbon accountability, that we're not just shuffling numbers around a bit of paper and doing some offsetting here and there – we've got to reduce emissions and not just mess about with numbers."

**Q: Is the UK government's target of near-zero carbon homes achievable in the timescale set? Is this high target also a diversion from encouraging more everyday improvements in homes?**

**MS:** "I think the target is achievable, from a BS engineering side. We have a lot of knowledge and experience of sustainability in the commercial building sector, and this needs to be shrunk down into the domestic sector. I think the technology is transferable from commercial to domestic sectors, but we need the people and practitioners to install it. Likewise the manufacturers need to downscale the technology. This whole zero-carbon homes issue isn't about waiting for something better to come along. Let's do everything we can with today's technology. If we know we can produce near-zero carbon homes today, we should be doing it."

**Q: Are we doing it? How many new homes are near level five or six in the Code for Sustainable Homes?**

**SP:** "Very few at present. We want homes that allow people to lead zero- or low-carbon lifestyles. I don't think there's such a thing as a zero-carbon home – it could be running 16 kettles and 20 TV sets. But we can design homes now that will allow you to lead a virtually zero-carbon lifestyle if you so choose (which means a 20 to 30 per cent premium on the price). I'm certain that, in the long term, we have to be near zero-carbon in the built environment, because there are other areas that are far harder to reduce – if we're going to go on eating well and travelling, and so on, all our carbon budget will go into

■ The danger is that we as engineers spend all our time on PR rather than developing technology and design for sustainability. ■  
– Mike Simpson

these activities, which means everything else has to be zero. However, I am not that optimistic we'll achieve the [government] targets. The UK can get far on this, if we choose to, but I'm worried about the rest of world."

**MS:** "I think that the economic crisis has pushed the horizon out on this – the government has taken its eye off the ball. There is also a problem with other countries in the world. From CIBSE's perspective, and maybe RIBA's too, there's only so much you can do."

**Q: How can we significantly reduce the carbon footprint of the established housing stock?**

**MS:** "That's a much bigger challenge, given the age of some of the properties. There are certain things you can do on improving them but, ultimately, you have to educate people on using them to lead low-carbon lives, as Sunand says."

**SP:** "There are only three ways of reducing emissions. One is behaviour change, such as wearing more layers rather than turning the heating up. Another is efficiencies – the main area we're both working in. The third is decarbonising the energy. These are roughly the same order of magnitude, and we have to address all three fronts."

**Q: Should both your professions be worried that, if we get to 2050 and find we've failed to meet global targets on cutting emissions, the built environment will be blamed for failing on sustainability measures?**

**SP:** "If we've tried and failed because economic systems and governments were not investing, then..."

**MS:** "I have more confidence that, while we might not hit the targets exactly, we will be going a long way towards them. I would send a challenge out to other sectors, such as transport, on how well they've reduced carbon. I'm confident that the built sector will be much closer to their targets than some of the other sectors."

**Q: Some in the sector would ask, why can't CIBSE campaign more on these issues?**

**MS:** "As with everything, it comes down to money. I think that a public awareness campaign is better done on a built environment-wide front. We have the Construction Industry Council as one voice for the sector, and we have to make sure we all feed into that on lobbying. In addition, for the past three years CIBSE has run the '100 Hours/100 Days' campaigns, raising awareness of ways to cut carbon emissions and encouraging businesses to sign up and pledge to undertake carbon cutting activities, and directed specifically to clients and decision-makers."

**Q: But isn't this an opportunity for the BS engineering profession to raise its game, raise its profile, as environmental champions?**

**MS:** "The danger there is that we as BS engineers would spend all our time doing that [communication] rather than developing technologies and design practices for sustainability."

**SP:** "I think the great problem is that you need young talented people coming into environmental engineering

**■ My biggest beef is about persuading clients to employ a proper environmental consultant at the beginning. ■**  
– Sunand Prasad

– we're awash with them in architecture. Personally I want the professions [in the sector] to take a more political position. We have a remarkable amount of consensus about sustainability, and CIBSE should be on the *Today* programme [on Radio 4] – perhaps calling yourselves 'environmental engineers' or 'imagineers' – and arguing that you have the answers to how the world can be fixed. The kids would love to hear that, and would join. As architects we would like to help with that as much as we can, be we have our own loads to bear."

**MS:** "I think that the architects, because of their training, will always be the leaders. We're not asking them to do things on our behalf. We are working more closely together. But perhaps we need to educate BS engineers more about what architecture is about."

**SP:** "At present, none of the institutional training is multidisciplinary working. The first time we encounter each others' profession is when we are in practice. By this time, your attitudes have formed. Later in our career we should be able to be dual-professionals [crossing over between architecture and BS engineering]."

**Q: Sunand mentioned a joint campaign. Are there grounds for this, aimed at ensuring sustainability is taken on board by clients at an early stage?**

**MS:** "Personally, I think it's key to having more sustainable building going on, by having sustainability right at the beginning at the design meeting."

**SP:** "I would focus that campaign by saying to clients: because carbon criticality and sustainability are so important, we must have a new kind of team working, right up front. And therefore we require that clients ensure that this is resourced properly, so that we can do our job properly." ●

Sunand Prasad: the sector needs a joint campaign on putting sustainability at the very start of projects



Acharacle Primary School in the West Highlands of Scotland is seen as a key pilot project that could promote the use of PassivHaus materials in the UK



# Learning from passive action

The UK's first PassivHaus school has opened in Scotland. **Carina Bailey** reports on a project that could set a new trend in imported low-energy structures

**D**ubbed the 'Weetabix', Acharacle Primary is believed to be Britain's first school to be designed and built with an external fabric that exceeds the low-energy PassivHaus standards. The facility, located in Lochaber in the West Highlands of Scotland, opened in May to replace existing Victorian and add-on accommodation. The breakfast cereal reference neatly sums up the fact that its heating derives almost exclusively from the energy given off by the pupils themselves.

The seven-year project was the brainchild of Gaia Architects, a practice based in Scotland and Norway that specialises in what it describes as innovative ecological design and community architecture. Gaia sees Acharacle school as a key pilot project in the UK – one which, it hopes, will persuade UK manufacturers to offer PassivHaus materials.

The school's purpose-built solid timber superstructure was imported from an Austrian manufacturer, which could guarantee PassivHaus-standard construction. It was transported to Lochaber by lorry and built in six months.

The structure's impressive insulation means that the building needs no heating – except during the winter holidays when a small wind turbine provides about 5KW of energy to provide heat. But it is this small heating requirement that actually stops the school being certified as a true Passivhaus building, the definition of which requires no additional heating to be installed.

However, Howard Liddell, principal of Gaia Architects, argues that all the other PassivHaus measures used gives this school the highest build standards in the UK. "In certain areas it certainly seems to be ticking some very important boxes," he says.

He adds: "The wind turbine is just there for the most extreme situations, we don't expect it to be on very much. When it's not generating heat for the school it's actually clocking up a little bit of electricity into the grid so the energy is not wasted."

The turbine also provides electricity for all electrical appliances, including heating the hot water, but the school is not zero-carbon.

## Air tightness

The structure is made from small bits of timber that are joined using wooden dowels instead of glue. This system is called Brettstapel and its use on this scale is a first in the UK, Liddell says. The school's windows are triple-glazed; its classrooms are south facing to capture passive solar gains; it has super-insulation (280mm-thick wood fibre) in the walls, floors and roofs; partly uses local wood internally; and utilises rainwater in the toilets.

Using this system has given the school remarkable air-tightness, with just 0.2 m<sup>3</sup>/hr/m<sup>2</sup>.

"The guy who came to measure [the air tightness] brought two big fans. At the end, he said he could have done it just by using a hair dryer. It passed first time. It's astonishing." The result compared to the normal standard of 0.6 for PassivHaus standard building, and 10 m<sup>3</sup>/hr/m<sup>2</sup> to satisfy Section 6 of the Scottish Building Standards Technical Handbook. "So we are talking pretty significant amounts. It's three times better than PassivHaus standards," Liddell enthuses.

In a conventional building built to current building regulations the U-values have to be about 0.2W/sqm/K, but this passive build has achieved a U-value of 0.125 for the roof, 0.128 for the walls and 0.098 for the floors. The building also achieves a U-value of 0.8 for the windows and doors, compared with the expected 1.8 for normal building methods.

These measures mean the building is predicted to use about 93 per cent less energy, or 7.1 per cent of the energy needed in an equivalent building regulations structure.

## Ventilation

The school uses natural ventilation – except in the kitchen and toilets – aided by the use of hygroscopic materials, which have been used throughout the building to "iron out the peaks and troughs of moisture levels". The walls are covered by unburned clay plaster, which is extremely good at soaking up and releasing moisture, according to Liddell. Vegetable paints have also been used to make the building 'moisture-open', leaving the fabric itself to help to passively ventilate the building.

**"We need to get there very quickly – we haven't the time to make mistakes and to get feedback from academia 20 years down the line."**



The building is described as a “high-carbon sponge” that soaks up carbon dioxide – every kilogram of wood stores 1.8kg of CO<sub>2</sub>

> This is aided by using no emissive materials, says Liddell: “A big reason why we ventilate a building is the emissions from new materials in a building – paints and glues. We had a whole policy of no potentially toxic materials at all.

“That has reduced the M&E [mechanical and electrical] content of the building to 13 per cent by cost, which is a lot lower than a conventional school,” which Liddell believes to be nearer 25 per cent.

He adds: “Basically we’ve cut out the mechanical ventilation system, which is unusual for passive schools because these normally have a heat-recovery ventilation system. So, in that sense, it doesn’t formally comply with the German description of a PassivHaus building.

“That’s deliberate. We feel it’s quite important that the people using the building become involved in its energy conservation strategy, as opposed to it all being done by some magic box.”

All the furniture has also been made without using high-emission materials, such as varnishes and glazes, which makes a huge contribution to the indoor air quality, Liddell says. The school uses linoleum flooring throughout and has no PVC wiring.

### Evaluation

There is no performance data on the school as yet, although Liddell expects to have some in a few months’ time, and is contracted to carry out post occupancy evaluations (POEs) over the next two years.

The school has five classrooms with monitoring systems in each to feed back information on how the building is performing, so its 62 primary and nursery pupils can see what the temperature is, the daylight factor, and the humidity and CO<sub>2</sub> levels. The children can also see the water and energy consumption levels for the school, which has a nursery, a multipurpose hall, separate dining hall, music practice

rooms, changing rooms for both school and community use, and an entrance foyer that can be used as an extension of the school. “If it feels over temperature, they can have a look and decide if they would like to open a window or not,” observes Liddell. It’s very much a building where the user is very involved, as opposed to it being done by a magic black box. There is a degree of control being done electronically, but the primary opportunity is for them to be able to override that if they want.”

For example, automatic blinds are used to stop the school overheating in the summer, while roof lights provide a high level of daylight to help cut the use of artificial lighting and reduce the electricity load.

Liddell describes the building as like a “high-carbon sponge” that soaks up CO<sub>2</sub>, with every kilogram of wood storing 1.8kg of CO<sub>2</sub>. Liddell’s team has calculated that it will store more than one million kilos of CO<sub>2</sub>, which more than accounts for the 50,000 kg of CO<sub>2</sub> used to transport the superstructure to Scotland by lorry.

According to PassivHausUK, there are around 7,000 dwellings built to PassivHaus principles in Europe. However, the system has been slow to catch on in the UK, says Liddell. “We were looking at this system with the Finns, Swedes and Norwegians to see whether it was a technology for northern Europe, but we have had great difficulty getting industry in the UK interested. Therefore the only way we felt we could get them interested was to build [a PassivHaus structure]. “The more such buildings are built and pass all these tests, the more people will become interested in PassivHaus. But what I’d like to see – instead of having to import these buildings from Austria – is people making them in this country from British timber.” Currently, Liddell is aware of only one Scottish manufacturer offering a similar construction system that doesn’t use glue, though this, too, is currently imported.

Acharacle has already created a lot of interest, however, and Gaia Architects are now aware of three manufacturers interested in developing a British version using British timber. As for the school itself, it is envisaged that it will stand for another 100 years. So plenty of time for it catch on. ●

- [www.passiv.de](http://www.passiv.de)
- [www.passivhaus.org.uk](http://www.passivhaus.org.uk)
- [www.europeanpassivehouses.org](http://www.europeanpassivehouses.org)
- [www.gaiagroup.org](http://www.gaiagroup.org)

“The more such buildings are built and pass all these tests, the more people will become interested in PassivHaus.”

## Logistics Austro-Scottish success has cultural hiccups

The foundations of Acharacle Primary School were constructed by a Scottish contractor, MacGregor Construction, which was also responsible for all the drainage and stairwells.

The Austrian team, Sohm Holzbautechnik, was responsible for building the superstructure in an Austrian factory and then installing it in Lochaber, wall by ready-constructed wall. The Austrians were also responsible for generating the air tightness of

the building and supplying the triple-glazed windows, as well as some of the finishes.

The project took 13 months in total, overrunning because of logistical issues, with the school being in such a remote part of the highlands and experiencing bad weather. In ordinary circumstances, importing a ready-made superstructure should speed up on-site construction by 20 per cent.

A difference in culture caused a few

headaches on-site between the UK contractor and the Austrian team. For example, the UK is very stringent on health and safety – which caused “one or two tensions” because the Austrians have a much more relaxed way of working. The Austrians also have a very different work ethic to the UK, wanting to work round the clock, with shorter lunch hours and a willingness to work during weekends.

## How the standards compare

	PassivHaus standard	UK new-build common practice	Acharacle Primary School
<b>Compact form and good insulation:</b>	All components of the exterior shell of a Passivhaus are insulated to achieve a U-value that does not exceed 0.15 W/m <sup>2</sup> /K.	Limiting U-values of approximately 0.25 to 0.35 W/m <sup>2</sup> /K.	The school is single-storey and has a relatively high surface-to-volume ratio as it is spread across two wings. However, the U-values comfortably exceed PassivHaus targets: 0.125 for the roof, 0.128 for the walls, and 0.098 for the floors. The building also achieves a U-value of 0.8 for the windows compared to the expected 1.8 using normal building methods.
<b>Southern orientation and shade considerations:</b>	Passive use of solar energy is a significant factor in PassivHaus design.	Some consideration is given with regard to north/south orientation, but the improved energy savings resulting from passive site design are often overlooked.	Principle rooms (classrooms and nursery) are oriented towards the south to minimise heating requirement. Openings to the north are minimised. Fabric roller blinds fitted to the outside of the classroom windows minimise the risk of overheating.
<b>Energy-efficient window glazing and frames:</b>	Windows (glazing and frames, combined) should have U-values not exceeding 0.80 W/m <sup>2</sup> /K, with solar heat-gain coefficients around 50 per cent <sup>1</sup> .	1.8-2.2 W/m <sup>2</sup> /K typical.	Windows (glazing and frames, combined) have U-values not exceeding 0.8 W/m <sup>2</sup> /K, with solar heat-gain coefficients around 50 per cent.
<b>Building envelope air-tightness:</b>	Air leakage through unsealed joints must be less than 0.6 times the house volume per hour (this is the equivalent of an air permeability value of less than 1 m <sup>3</sup> /hr/m <sup>2</sup> @ 50 Pa).	Design air permeability of 7 to 10 m <sup>3</sup> /hr/m <sup>2</sup> @ 50 Pa. This is approximately a factor of 10 poorer than the PassivHaus standard.  Research has also shown that air permeability values for completed dwellings frequently exceed these design limits.	Air leakage through unsealed joints is 0.27 m <sup>3</sup> /hr/m <sup>2</sup> @ 50 Pa – or approximately 0.2 air changes per hour.
<b>Passive preheating of fresh air:</b>	Fresh air may be brought into the house through underground ducts that exchange heat with the soil. This preheats fresh air to a temperature above 5 deg C, even on cold winter days.	The majority of new-builds do not achieve good enough air permeability values to warrant the incorporation of a whole house ventilation system – thus trickle vents, extract fans, or passive stack ventilation is commonly used.	There is no passive preheating of incoming fresh air. The moisture and thermal mass of the building fabric contribute to creating comfortable indoor environments in order to minimise the requirement for fresh air in the first place.
<b>Highly efficient heat recovery from exhaust air using an air-to-air heat exchanger:</b>	Most of the perceptible heat in the exhaust air is transferred to the incoming fresh air (heat recovery rate over 80 per cent).		The school is naturally ventilated throughout (with the exception of the kitchen and internal shower/toilets, which require mechanical ventilation).
<b>Energy-saving household appliances:</b>	Low energy refrigerators, stoves, freezers, lamps, washers, dryers, etc. are indispensable in a PassivHaus.	Dedicated low-energy lights are provided in a number of rooms in a new dwelling – if appliances are supplied they will be generally C-rated or perhaps 'Energy Saving Recommended' in some instances (as these are widely available).	The artificial lighting system uses low energy fittings throughout, and is fitted with daylight linking sensors in principle rooms and corridors. In addition, lights switch off after a predefined period. Low energy electrical appliances have been specified by the staff for the various kitchenettes throughout the building, though it was discovered that there is currently no energy efficiency requirement for commercial kitchen appliances.
<b>Total energy demand for space heating and cooling:</b>	Less than 15 kWh/m <sup>2</sup> /yr.	Typically 55 kWh/m <sup>2</sup> /yr.	Less than 15 kWh/m <sup>2</sup> /yr: until the building has been operational for 12 months this figure is unavailable. However, it is anticipated that the wind turbine may produce more energy than is required by the heating system. Only time will tell.

<sup>1</sup>The Solar Heat Gain Co-efficient (SHGC) is provided as a guide; it can be adjusted for glazing on different facades. This can help either reduce heat loss on sheltered sides/ north facing glazing, or alternatively help to reduce the likelihood of overheating when specified in conjunction with other features/strategies (please note that the SHGC of a window usually decreases as the U-value improves).

Please note that the above information is for guidance only. Compliance with the PassivHaus standard must be assessed using the PassivHaus Planning Package. Source: [www.passivhaus.org.uk](http://www.passivhaus.org.uk)

# Lion's new lease of life

Post-occupancy analysis of Britain's first A+ rated office building, the CIBSE award-winning Lion House, shows that operational performance can match design intent. **Ewen Rose** reports



Applegards



**T**he lion has been the symbol of the Northumberland town of Alnwick since the Duke of Percy, the Harry Hotspur immortalised by Shakespeare, took to decorating the place with statues of his favourite animal in the 14th century. Lion House, the home of the local Department for Environment, Food and Rural Affairs (Defra), opened 12 months ago and subsequently won the accolade of New Build Project of the Year in the CIBSE Low Carbon Awards 2009.

Now Defra and its building services design team from AECOM's Leeds and Newcastle offices have been reviewing the building's first year of operation. As the first office in the UK to achieve an A+ energy performance rating, Lion House provides an ideal point of comparison as it replaced a tired, single-glazed, 1960s office building on the same site and houses the same staff as the original office.

One critical aspect was the orientation of the new building, which has no windows on its east and west facades in order to prevent low-angle summer solar



gain, and to maximise heat retention in winter – particularly as the building boasts insulation levels 25 per cent higher than those stipulated in the Building Regulations sheep's wool as insulation material. The windowless west elevation also has the added benefit of buffering occupants from noise created by the three 15kW wind turbines on the site.

### Orientation

The northern elevations of the 13.5m deep open plan office wings are designed to capture as much natural daylight as possible to reduce power consumption from artificial lighting; while on the south side a photovoltaic (PV) array is orientated towards the sun's path for most of the year, with solar shading provided to reduce glare and heat gain in summer. Air tightness is an impressive 3.84m<sup>3</sup>/hr/m<sup>2</sup> at 50pa.

On analysing the first year's results from May 2008 to May 2009, which included a relatively cold winter, AECOM was initially amazed at the level of heat demand – because it was virtually nil. The biomass

The new Lion House's south side is orientated towards the sun's path for most of the year

“ This shows how important it is to have building services input from day one of the concept design. ”

## CIBSE Low Carbon Performance Awards 2010

Now in their 3rd year, the CIBSE Low Carbon Performance Awards recognise and reward proven achievements in delivering carbon savings in buildings. These high-profile awards



showcase innovative and inspirational low-carbon solutions and highlight carbon reduction in both the design and management of buildings.

Entries are now invited for the 2010 awards. The award categories are:

- New build of the year;
- Refurbishment 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.

Make sure your projects get the attention they deserve! Previous winners have included Transport for London, Faber Maunsell (now known as AECOM) and i-prophets, to name just a few.

The deadline for entries is 30 October 2009, with the awards presented in February at a high-profile ceremony at London's Grosvenor House Hotel. For further information, criteria for entries and entry forms visit: [www.cibse.org/awards2010](http://www.cibse.org/awards2010)

boiler coped with this low demand when it was brought online, as it was sized to meet base loads and backed up by a gas boiler when required. During the changeover phase from the old to new office, when the biomass boiler was not yet installed, the gas boiler broke down for two days, but nobody noticed because the building's temperature never dipped below 19 deg C.

Conversely, during a hot spell last summer when the outside temperature rose to 28 deg C, there were no complaints from occupants about overheating. This is despite the fact that the building is passively cooled. The displacement ventilation also contains a thermal wheel for heat recovery, which has performed admirably to further reduce heat demand.

According to AECOM associate director Nigel Banks, who headed up the design team, if the building was rotated by 90 degrees the impact on energy use would be dramatic as heat demand would rise by 20 per cent and additional cooling would have been required. The cooling requirement would have been 40 per cent higher to maintain 24 deg C.

> “This shows how important it is to have building services input from day one of the concept design,” says Banks. “We were fortunate with this project because we were already working on Defra’s building in York, and conversations with the architect about Alnwick began before the first design team meeting – so you could say we were involved before day one.”

Full-year performance results will be available in May 2010 for the wind turbines, which could not be erected until the Old Lion House was demolished, and so have only been in place only since March. However, the focus for year one has been on minimising energy consumption as the important first step towards a truly zero carbon building – Defra’s eventual aim.

### Electricity consumption

In this respect, it is not all good news. Banks says that the building was using more electricity than anticipated and it took some time for the post-occupancy survey team to work out why. An improved building monitoring system that delivers quarter hourly readings provided the breakthrough, enabling AECOM to study electricity consumption during the night in some detail.

It appears that some printers, computers and other electrical equipment are being left switched on through the night. Also, the controls on the AHU are not ramping down fan powers as originally intended and occupants have been pulling down the internal blinds on sunny days to reduce glare but not raising them again leading to unnecessary use of internal lights.

“This is the big unknown and explains the below-expected heat demands,” says Banks. “You can’t be absolutely sure how people are going to behave in the building. We did discuss going to fully automated control of lighting, window opening and heating, but ideally you want people to have some control over their own comfort – the secret is getting them to buy into taking some responsibility for the energy efficiency of the building.”

Predicted net annual grid electricity consumption was 14,397kWh compared with 111,882kWh in the old Lion building. The monthly meter readings showed that in the first five months of occupancy actual consumption was below the predicted amount, but from that point onwards consumption rose slightly above target.

AECOM ran a series of workshops for the Defra staff before they took occupancy of the building, to explain how the systems worked and how they could contribute to its ongoing performance. However, Banks said it looked like behaviour had started to slip over time.

Now there is talk of reinforcing the messages by introducing an element of fun such as energy saving league tables between different floors and other incentives for occupants to make the mantra – ‘Don’t use it, turn it down and turn it off’ – part of their everyday psychology.

One example of how the building managers have tried to influence behaviour is by painting the inside

“We’re expecting a 25-year payback on the renewables – overall it is a cost-effective way of saving carbon.”

of the lifts yellow, which makes them pretty uninviting. People think twice about venturing in and will only do so for essential trips.

### Emissions

Gas and biomass consumption was predicted at 26,853kWh per annum compared with 170,379kWh in the old building and, in fact, the minimal heat demand has resulted in the building performing well ahead of that target.

Overall, CO<sub>2</sub> emissions have reduced by 81 per cent thanks to annual heat demand being 98 per cent down and grid electricity reduced by 38 per cent compared with 2007/08 figures in the old building.

However, there is still much further to go because the renewables have really not fully come on stream as yet. The PV array is performing “as expected”, according to Banks, but the three wind turbines have only been operating since March and the biomass is just ticking over to maintain temperatures. A solar thermal system is providing most of the hot water requirement without producing any kind of carbon footprint.

### Comparison of energy usages between former building and current buildings, including actual readings

	Old Lion House 2007/8 energy use and resulting carbon emissions	Projections for new Lion House energy use and resulting carbon emissions	Year 1 meter readings for new Lion House and resulting carbon emissions
Electricity imported from grid and used on site	218,937 kWh 92,391 kgCO <sub>2</sub> /yr	57,305 kWh 24,182 kgCO <sub>2</sub> /yr	82,942 kWh 35,001 kgCO <sub>2</sub> /yr
Electricity generated and used on site	0 kWh 0 kgCO <sub>2</sub> /yr	32,000 kWh - 4,672 kgCO <sub>2</sub> /yr	20,088 kWh -11,410 kgCO <sub>2</sub> /yr
Electricity exported to grid	0 kWh 0 kgCO <sub>2</sub> /yr	42,908 kWh - 24,372 kgCO <sub>2</sub> /yr	
Gas use	231,808 kWh 44,971 kgCO <sub>2</sub> /yr	2,686 kWh 521 kgCO <sub>2</sub> /yr	0 kWh 0 kgCO <sub>2</sub> /yr
Biomass use	0 kWh 0 kgCO <sub>2</sub> /yr	24,167 kWh 604 kgCO <sub>2</sub> /yr	1,704 kWh 43 kgCO <sub>2</sub> /yr
Net total	450,745 kWh 137,362 kgCO <sub>2</sub> /yr	41,250 kWh -3,737 kgCO <sub>2</sub> /yr	104,734 kWh 23,634 kgCO <sub>2</sub> /yr



## Collaboration

## Project team

**Architects:**  
Frederick Gibberd  
Partnership  
Frank Shaw Associates

**Cost consultant:**  
Davis Langdon

**M&E contractor:**  
Haden Young

**M&E consultant:**  
AECOM

**Main contractor:**  
Kier Northern

**Project manager:**  
Appleyards

**Structural engineer:**  
AECOM

## Lessons learnt

All this gives Banks and his team confidence that their year two target of achieving a reduction of more than 100 per cent in CO<sub>2</sub> emissions compared with the previous building's performance in 2007-08 will be achieved. Defra is also predicting its Display Energy Certificate (DEC), which was being put together at the time of writing, will give the building an A rating for actual energy consumption. This will be the building's first DEC since it was fully occupied in May 2008.

"We are expecting a 25-year payback on the renewables, which might seem like a long time, but overall it is a cost-effective way of saving carbon," says Banks. "There is an upfront price to pay for this kind of sustainable design and the cost per square metre is higher for this building than for comparable offices in the region, but you have to look at whole lifecycle costs and we are already getting the operational savings we expected."

He adds that there are important lessons to be learned from the fact that Lion House proves it is possible to produce buildings with negligible space heating loads that also receive their hot water from solar thermal.

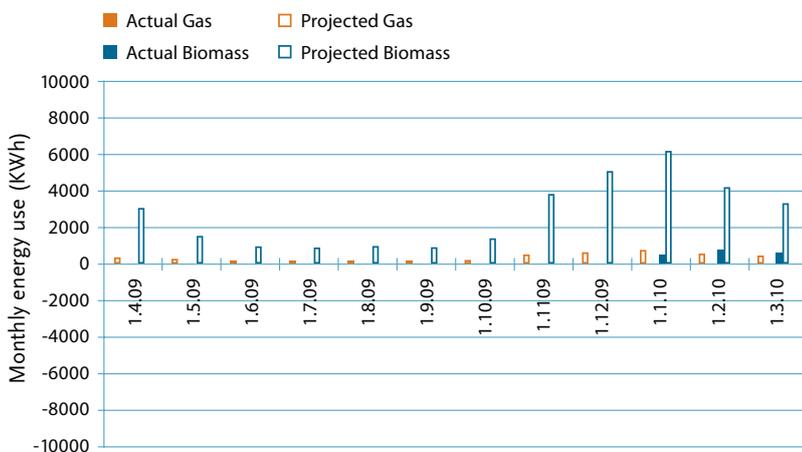
The whole focus will shift towards electricity demand as the Government's targets for zero carbon housing by 2016 and commercial buildings by 2019 loom on the horizon.

"Decarbonising the Grid and tackling embodied carbon will be far more important as a much larger proportion of our consumption will be electricity for heat pumps and the like," says Banks. "The carbon factors for grid electricity in the Part L calculations will have to come down dramatically in the next 20 years."

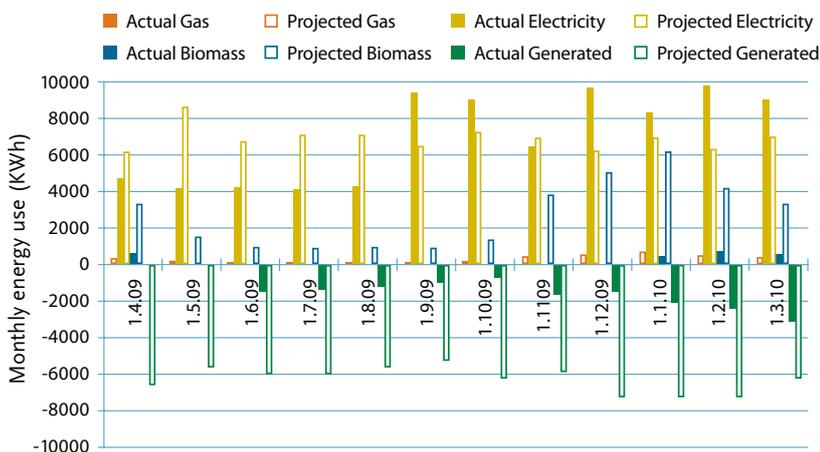
The new Lion House proves that building services engineers have the expertise to design low-consumption buildings. In the future the longer term challenge will be delivering what power remains from low carbon sources. ●

For more information on Display Energy Certificates see the new CIBSE TM47: Operational Ratings and DEC's, which describes the background to the regulations, ratings and certificates, including the most recent revisions of the CLG calculation procedure and software. It also contains extensive FAQs on DEC's and OR's. TM47 is available from the CIBSE bookshop at [www.cibse.org](http://www.cibse.org)

## The outcomes ... Year 1 meter readings



## The outcomes ... Year 1 meter readings

Summary of energy usage and CO<sub>2</sub> output in year one, based on actual readings

Annual heat demand reduced by 98 per cent compared with old Lion House readings for 2007-08

Grid Electricity use reduced by 38 per cent compared with old Lion House readings for 2007-08

Operational CO<sub>2</sub> Emissions reduced by 81 per cent compared with old Lion House readings for 2007-08

Aiming for 100+ per cent reduction, true net zero carbon in year two compared with old Lion House readings for 2007-08

Source: AECOM



# Elevating efficiency

Lifts are becoming increasing users of energy but are not included in the Part L Building Regulations. However, some key measures can be adopted to increase operational efficiency, explains **Gina Barney**

**C**IBSE Guide F suggests that lifts use between five and 15 per cent of a building's energy consumption, depending on the property's profile and the lift technology used. Part L of the Building Regulations calls for lower CO<sub>2</sub> emissions by requiring better building properties, but lift systems are not currently considered when calculating the energy use of new buildings.

If commercial property owners take notice of the need for energy efficiency – or are made to take notice by the requirement for energy certificates – then total energy consumption of a building will fall, and the energy consumed by lifts will then become more noticeable. Moreover, while modern lift systems using variable-voltage, variable-frequency regenerative drives are highly efficient, at least half of the UK stock of around 300,000 lifts are more than 25 years old and less efficient. Owners can adopt a number of measures to increase the energy efficiency of lifts.

## Idle mode

All lifts require car lighting. Some have ventilation fans and other devices such as information panels, CCTV cameras and even HVAC systems. Energy reduction could be achieved by turning off the car lighting and any auxiliary equipment, when the lift is idle and unoccupied.

The motion of a lift, the door movements and the service of passenger landing and car calls are supervised by a lift controller. When a lift is idle, these controllers consume energy in their standby mode. Measurements made on eight different lift installations indicated a range from 25W to 2kW; the energy consumption was dependant upon the controller technology and age of the equipment. At the high end, the consumption was

often the result of powering an isolation transformer or of energising DC motor windings in standby mode.

As lifts can be idle for more than 5,500 hours a year, consideration could be given to switching off at least the isolation transformer and any pre-energising motor winding power, leaving only the control electronics on, in standby mode.

## Off-peak downtime

Lifts are in peak demand in the morning, around midday and in the evening. In between these periods there is much smaller inter-floor demand, which never fully utilises its underlying capability. Do all lifts need to be in service during periods of low demand?

As passengers are prepared to wait quite long periods for a lift during peak times, it would be reasonable for them to wait similar periods when it is not so busy. This would draw on the human psychology that a consistent response to a stimulus is preferable to a variable one. An opportunity therefore exists to take out of service – or even shut down – some of the lifts in a group during interfloor activity and still provide a suitable performance.

Reducing the number of lifts in service during periods of low activity makes energy savings possible with respect to: car lighting/ventilation; controller power consumption; the number of motor starts; and motor power consumption, especially when car loads are close to the counterbalancing ratio.

## Occupancy densities

Table 1.1 of BS EN81-1/2: 1998, gives for lift car platform areas (from 0.9 sq m to 5 sq m), the rated loads (from 100kg to 2,500kg) and the rated capacity, assuming an average passenger weighs 75kg.



“ This is a win/win for owner, consultant, supplier and installer, as the payback time can be quite short. ”

**Key actions**

**How to reduce your lift's CO<sub>2</sub> footprint**

Turn off lift car lights and auxiliaries, and the power side of the lift controller, after a lift has not been used for five minutes

Shut down lifts during periods of low traffic demand

Reduce the counterbalancing weight to match the realistic number of passengers a lift can accommodate

Reduce the drive motor size to match the realistic number of passengers a lift can accommodate

Re-evaluate the counterbalancing ratio from 50 to 33.3 per cent

Reduce drive motor size to match the new counterbalancing ratio

Provide a drive controller capable of variable-speed, variable-voltage, variable-frequency control of the drive motor

> The relationship between the rated capacity and the available car area is non-linear. For example, a lift car with a platform area of 1.3 sq m is considered big enough for six people (0.21 sq m each), whereas a lift car with a platform area of 5 sq m is considered big enough for 33 people (0.15 sq m each, or six people per sq m.)

However, observations show that passengers do not fill cars to such a high density. If passengers do not load lift cars to the densities given in Table 1.1 of EN81-1/2, then for many years the drive systems of lifts have been oversized. For example, in the case of the 1,600 kg traction lift (a popular size) this oversizing is equal to 20 per cent, and for a 2500 kg traction lift, 33 per cent.

Because the drive motors are being oversized, their iron and copper losses will be a larger proportion of the energy required, leading to lower machine efficiencies. The capital costs and energy audit of the motor, its associated drive controller, wiring, and so on, will also be larger. A result of reducing the car loading values, from the rated load to the notional rated load values, is that the weight of counterweight can be smaller and would result in immediate energy savings.

**Speed drives**

The drive motor of a traction lift is required to move the load of the passengers in the car. In order to reduce the size of the drive motor, the weight of the car, plus a proportion of the maximum weight of the passengers (the rated load), is balanced by a counterweight. The commonly used value for the counterbalancing ratio is 50 per cent. For a lift with this counterbalancing, when it is half full with passengers, the motor only needs to overcome various losses in order to move the lift. However, is the value of 50 per cent correct? It has been observed that some lift designers use values as low as 40 per cent, leading to the conclusion that it has already been recognised by some designers that lifts do not fill to the rated capacity. Suppose the counterbalancing ratio were set at 33.3 per cent. What effect would this have? In the range of passenger load



Running lifts at slower speeds could improve efficiency

from zero to two-thirds rated load, the drive motor is working within its capacity. If the car fills to the rated load, then the drive motor must exceed its rating. This will cause the motor and the drive to be overloaded. There is a solution, however, which is to run the drive motor at a lower speed for car loads greater than two-thirds full.

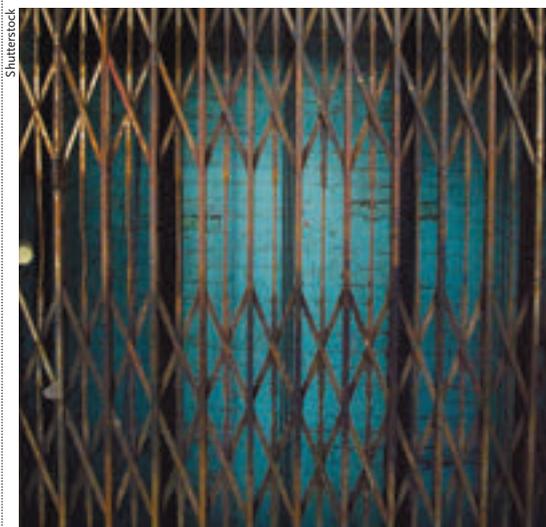
The consequence of running at a slower speed is that the lift will take longer to move between floors and this would have some effect on handling capacity in peak demand periods. However, the effect would lessen as passengers leave the car, often at the first floors, thus reducing the loading. The consequences of a lower counterbalancing ratio are:

- A smaller motor and controlling drive unit are required, leading to a lower energy usage;
- The drive control system would need to detect the car load and set the target speed to meet the rating requirements; and
- Traffic calculations would need to take into account the variable speed and increased flight times that occur.

**European standards**

The suggestions above are win/win outcomes for owner, consultant, supplier and installer, as the payback periods can be quite short.

Work is going on at the international level in ISO TC178/WG10 to measure the energy consumption of lifts (ISO/DIS25745-1: 2008) and to provide an energy classification system similar to that used for white goods such as fridges, from Class A (good) to Class G (bad). Although the energy saved for lifts is small compared with that used by other building services, it does result in lower operational costs for lift installations – and at no increase in the carbon footprint. ●

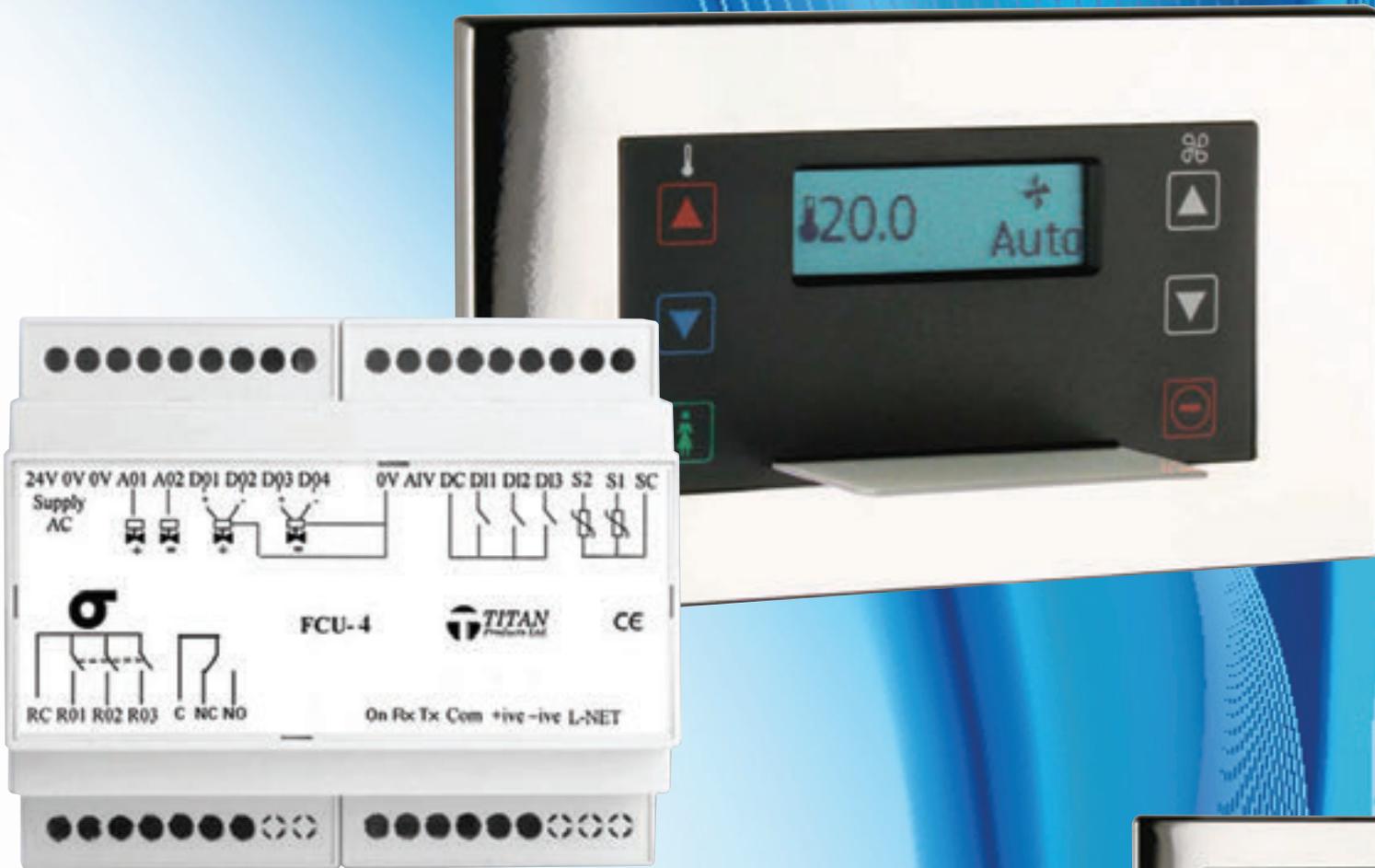


Do lifts need to be in operation during periods of low demand?

Dr Eur Ing Gina Barney is a member of the CIBSE Lifts Group committee and the CIBSE Guide D: 2010 revision panel.  
[www.liftconsulting.org](http://www.liftconsulting.org) [www.cibseliftsgroup.org](http://www.cibseliftsgroup.org)

CIBSE Guides D and F are available from the CIBSE bookshop at [www.cibse.org](http://www.cibse.org)

# BACnet Controls from TITAN Products



TITAN Products range of fan coil controllers have been designed to provide flexibility of application with the most advanced control technology. With an extensive library of control software the FCU-4 can be programmed to match the needs for energy efficiency and close control. Incorporating Native BACnet MS/TP communications the intelligent FCU-4 controller can be used as a stand-alone product or as part of an Integrated Building Management System.

TITAN Products have also developed special software for applications in Hotel bedrooms (for more information on this contact TITAN Products). For occupants who require individual adjustment of comfort conditions the FCU-4 can be used with the stylish RDU remote digital room unit which is available in a variety of different finishes.

#### Features:-

- Native BACnet communications
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- Up to 4 x 24V AC Triac outputs dependant on configuration
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Website: [www.titanproducts.com](http://www.titanproducts.com)



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# Hi-tech solutions

Control systems have helped 30 The Bond in Sydney to achieve five stars for energy efficiency in Australia



Building controls can manage everything from individual pumps through to fire and security systems, lighting, and energy management. We select some of the latest products now available for a range of key services. By **Ian Vallely**

**M**etering and control technology could help boost energy efficiency of heating, ventilation and hot water systems in commercial buildings by up to 25 per cent, according to the European Building Automation and Controls Association.

But there are even more compelling reasons for consultants to take building controls seriously. The

Carbon Trust reckons that UK businesses are losing £7m a day on wasted energy in offices. Intelligent controls, in particular, offer an excellent way to maintain comfort and save energy with minimum supervision, according to the controls industry.

However, this, in itself, can cause problems. Minimising supervision implies taking away the control of their environment from individuals; and studies have shown a positive relationship between occupant satisfaction and levels of perceived control. Local controls can also make a very positive contribution to energy efficiency, as systems are more likely to operate only when occupants need them.

The latest intelligent control technology can 'sense' environmental changes and transmit them to a controller, which can then take appropriate action. A sample of technological advances in the sector is outlined in the following pages.

## Software

● The Metasys Sustainability Manager from Johnson Controls is designed to allow real-time energy management and maintenance, helping to minimise energy costs. The software allows building management systems to interface with open protocol IT systems to better manage energy, maintenance, physical security and compliance.

[www.johnsoncontrols.com/publish/us/en.html](http://www.johnsoncontrols.com/publish/us/en.html)

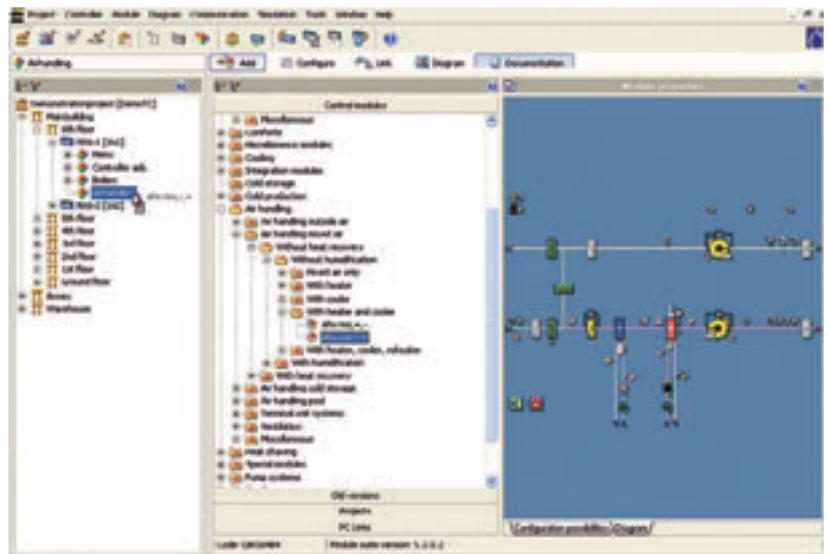
● ABB's EIB/KNX system is said to work in a fundamentally different way from conventional smart building systems, in which central controls open and close a separate electrical circuit to activate each individual device, such as a light, blind or heating element. "This conventional approach relies on hundreds of power cables to effectively distribute commands around the building," says ABB.

With the EIB/KNX system, on the other hand, a sensor or control device such as a light switch sends a control signal over a twin-core data cable or bus to an actuator, which then controls a device locally. "This approach yields a true two-wire system, without the need for hundreds of wires providing separate circuits between a central control point and each light or other device," says ABB.

EIB/KNX control systems are an open standard platform, making integration with lighting, heating and air conditioning and existing BMS systems easier.

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

● The Top Control Select (TC Select) MS Windows-based BMS application engine from Priva Building Intelligence covers project estimation, engineering including generation of graphics, simulation of applications and control strategy, and final commissioning and fine tuning. Its library of control applications is said to cover 99 per cent of commonly used UK applications, but its real power is in its freely programmable mode that can cater for any application or variation.



Benefits to the end-user or end-client include a marked reduction in engineering and commissioning time and auto-generation of plant graphics and operational description, leading to greater consistency and lower costs, says Priva.

[www.privaweb.com/opencms/opencms/en/index.html](http://www.privaweb.com/opencms/opencms/en/index.html)

● iMAT2 is a web-based energy monitoring application from Trend Control Systems designed to help building owners identify areas of energy wastage and to therefore understand what is really happening to their energy consumption.

"With iMAT2, there is now no need to develop specialist building energy management system (BEMS) know-how in order to understand what is happening within a building. iMAT2's web-based data collection and presentation system allows Trend users to easily target inefficient energy usage," the company says.

[www.trendcontrols.com/splashhandlers/index.html](http://www.trendcontrols.com/splashhandlers/index.html)

The TC Select system in action

■ Benefits include a marked reduction in engineering and commissioning time.■

## Valves and actuators

● Siemens Building Technologies has introduced a range of pressure-independent control combi valves for room and zone applications. The company claims these reduce planning, installation and commissioning costs, and boost control accuracy leading to increased energy efficient operation.

In combination with Siemens' Acvatix 'electromotoric' actuators, the combi valves are specifically designed for use in ventilation and air conditioning plants for the water-side control of terminal units in closed hydraulic circuits, and for heating zones with closed hydraulic circuits.

The valves incorporate a control valve for temperature control, a differential pressure controller for balancing pressure fluctuations in the hydraulic system, a facility for pre-adjusting



the required flow rate, and pressure test points for measuring the differential pressure integrated in one valve body.

They can be used with flow rates from 90 to 3,000 l/hr, and with differential pressure ranges from 14 to 400kPa.

[www.buildingtechnologies.siemens.co.uk](http://www.buildingtechnologies.siemens.co.uk)

## Controllers



The CentraLine controller

● Honeywell, through its CentraLine brand for building controls, has launched a controller to manage the integration of renewable energy sources with heating systems using gas or oil, and with district heating. The Smile 3 controller, which is designed for applications in small and medium-sized buildings, can be used with systems using radiators, convectors and low temperature heating circuits such as underfloor heating.

Says Honeywell: "Smile 3 ensures energy efficient integration of sources such as solar power, heat pumps and wood burners. It equalises heat sources to make

maximum use of renewable energy sources in the mix, while providing optimum energy management between heat producers and consumers.

"Smile 3 can also manage complex heating systems requiring boiler sequencing. Its OpenTherm interface can exchange data easily with certified devices such as condensing boilers."

Up to five Smile controllers can be wired together via a two-wire bus to form a control system.

[www.centraline.com](http://www.centraline.com)

● Dyalite's Ecolinx system includes the DBC905 high-frequency ballast controller, a lighting control module that has nine separate wiring lighting circuit output channels. It offers luminaire-by-luminaire dimming and on/off lighting control for applications from small offices to campus-sized installations.

The Ecolinx system is founded on Dyalite's distributed control philosophy, where control intelligence is distributed about the network in a modular fashion and linked through Dyalite's peer-to-peer communications serial bus network, DyNet.

All wiring connections to the DBC905 – whether mains input, lighting circuit outputs, or the unit's total of 10 control and network inputs – are facilitated by tool-free structured wiring ports. This 'plug-and-play' approach permits installation and post-commissioning adaptation of any Ecolinx lighting system to be carried out quickly and easily by semi-skilled or unskilled crews. This ensures optimal flexibility, speedy deployment and significant installation and maintenance labour savings over the life of the building," claims the company.

[www.dyna-lite.com](http://www.dyna-lite.com)

■ The IQView4 touch screen display connects directly to the controller's supervisor port.■

### Interface

● The look, feel and mode of operation of the IQView4 touch screen display for Trend building management systems will be instantly familiar to anyone who has an MP3 player, sat-nav system or modern mobile phone, says the company.

Featuring a 4.3in (109mm) backlit colour display, the IQView4 is as an operator interface that can be used with most Trend BMS controllers. Compatible with the IQ3xcite, IQ2 range and later IQ1series models, it connects directly to the controller's supervisor port. Since it will normally reside in plant rooms, it has been designed to allow panel mounting.

On-screen icons and buttons give access to all controller inputs, outputs, directories and alarms, with logged data being viewable in graph form.



Adjustments to the controller's knobs, switches and plant start/stop time settings are just as easily accomplished. By assigning different password levels, access rights can be tailored to an individual user's needs.

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# Products & Services

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## CentralLine boosts HVAC system energy efficiency and cost-effectiveness with Spyder and Zio

The potential energy efficiency and cost-effectiveness of buildings' HVAC systems has been given a huge boost by CentralLine from Honeywell, with its new Spyder terminal unit controller and Zio programmable wall units.

Spyder and Zio enable CentralLine Partner companies to design and install complex HVAC control systems cost-effectively, satisfying user demands for greater energy efficiency with ease of use, yet with simpler design, installation and commissioning than previously possible.

● Visit [www.centralline.com](http://www.centralline.com), call 01344 656565 or email [info-uk@centralline.com](mailto:info-uk@centralline.com)

## Dimplex welcomes extension of low-carbon buildings programme phase 2

Dimplex can now help even more schools, housing associations and other not-for-profit organisations to access low-carbon heat with the extension until April 2011 of the Low Carbon Building Programme Phase 2. What's more, the extended scheme now covers all Dimplex products registered on the Microgeneration Certification Scheme or carrying the Solar Keymark, giving applicants greater choice over the technology that's best for their project.

● Visit [www.dimplex.co.uk](http://www.dimplex.co.uk), call 01489 773336 or email [marketing@dimplex.co.uk](mailto:marketing@dimplex.co.uk)



## Grundfos customers CUE up

### Grundfos customers CUE up

The new Grundfos CUE range of wall mounted frequency converters, with e-pump functionality, for new projects as well as retro-fit/refurbishment, are the latest addition to the extensive range of speed controlled products available from Grundfos Pumps. They are complementary to the e-pump range and allow the speed of virtually any Grundfos pump to be controlled.

The series, suitable for all centrifugal pump types in every application area in a wide power range, offers a whole array of features including plug-and-pump installation, in-built control and monitoring options, automatic energy and the energy savings that variable speed operation brings.

CUEs can be used in both new and existing pump installations where an integrated solution will either not fit, is undesirable or is prohibited.

● Call 01525 775347/775312 or email [uk-sales@grundfos.com](mailto:uk-sales@grundfos.com)



## LG'S extensive condenser line up



A complete range of LG outdoor units covers all possible configurations of a/c for domestic and commercial buildings – including the world's only indoor-mounted condensing system for VRF, the Multi V Space,

which allows the condensers to be mounted out of sight, negating the requirement for planning permission.

This tried-and-tested solution has been used all over the world – including the famous Star City in Korea, the world's biggest VRF installation with more than 7,000 indoor units and 1,300 condensers.

● Visit [www.lge.com/uk/air-conditioning/index.jsp](http://www.lge.com/uk/air-conditioning/index.jsp)

## LG'S hands-on training courses

LG has made it easy for installers and specifiers to get essential hands-on experience of its wide range of air conditioning products by running free training courses at its Slough UK headquarters.

LG's state-of-the-art training facility is fully equipped with its latest air conditioning



equipment. Attendees can run the systems, learning how they work and how to diagnose faults. The training room also doubles as a showroom where specifiers and installers can demonstrate the latest LG equipment to their clients.

● For dates and details, email [Kelly O'Brien at obrienk@lge.com](mailto:obrienk@lge.com) or call 01753 876 777

## Keraflo copes with Westfield London water needs



Supplying cold water to new, high-profile Westfield London Shopping

Centre with its 256 fashion outlets shops was the remit of Silcock Dawson & Partners

as part of their mechanical services design duties.

Their cold water distribution system, relying on innovative float valves from Keraflo of Reading, Berks, involves two main storage cisterns, each with its own valve selection – one provides the domestic cold water supply while the other serves the adiabatic cold water distribution system.

● Visit [www.keraflo.co.uk](http://www.keraflo.co.uk), email [info@keraflo.co.uk](mailto:info@keraflo.co.uk) or call 0118 921 9920

## Innovative SAS International ISMs with MPO lighting for Places for People headquarters



Energy-efficient Integrated Service Modules (ISMs), featuring both active chilled beams and Micro Prism Optic (MPO) luminaires, were installed as part of a significant refurbishment project at Places for People's headquarters in central London.

Both truly innovative and visually striking, the ISMs mark the first major UK project combining active chilled beams with MPO technology.

Project engineer Chris Puttick of Fulcrum Consulting commented: "The ISMs helped us to achieve a number of key design considerations, particularly the exposure of the existing concrete soffit by elegantly combining the electrical and mechanical systems such as the cooling, ventilation and lighting."

The building utilises the exposed soffit as part of the ventilation strategy by providing night purging through the ISMs, further reducing the cooling load requirements.

● Visit [www.sasint.co.uk](http://www.sasint.co.uk), email [enquiries@sasint.co.uk](mailto:enquiries@sasint.co.uk) or call 0118 929 0900

## Significant energy savings at two new Guildford schools expected from Oventrop valve use



Oventrop valves have been selected to control the heating and DHW systems to provide

energy savings in two new schools on the same site in Guildford, Surrey. Pond Meadow is a Surrey County Council Special Educational Needs school and Christ's College is a CE-aided school.

The valves include Oventrop's Aquastrom T Plus multifunction DHW secondary circulation regulating valves which, as well as providing significant energy savings by controlling temperature and flow in the DHW systems, also facilitate hydronic balancing.

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● Visit [www.aircraftairhandling.com](http://www.aircraftairhandling.com)

## Underfloor heating specialist set for fast expansion

Timoleon, the Exeter-based underfloor heating specialist, has become the indoor environmental systems partner for Polypipe.

A delighted Rex Ingram, chairman of Timoleon, said: "We're naturally flattered that the leading name in the UK piping systems market has seen the potential of Timoleon so early in our development.

"The relationship with Polypipe gives us access to an



Timoleon's Rex Ingram

even more comprehensive range of underfloor heating solutions and the investment to put all our ideas into action much sooner.

Polypipe is one of Europe's largest manufacturers of plastic products for the construction industry, while Timoleon specialises in bespoke underfloor heating and cooling solutions for projects ranging from large individually designed homes to industrial and commercial properties.

● Visit [www.timoleon.ltd.uk](http://www.timoleon.ltd.uk) or call 01392 363605

## New school heated by LK floor heating from ground-source energy

Sharrow School, commissioned by Sheffield City Council, was joint Civic Building of the Year 2008.

Its under-floor heating and hot water for all purposes comes from 21 geothermal boreholes – energy saving and virtually carbon neutral – with only token back-up from an immersion heater to cover extra-heavy demand.

Quoin UK Ltd., based near Rotherham,

installed the user-friendly, reliable system, designed and supplied by LK Systems Ltd. of Crawley in Sussex and manufactured by parent company Lagerstedt & Krantz AB in Sweden.

● Visit [www.lksystems.co.uk](http://www.lksystems.co.uk), email [info@lagerstedt-krantz.co.uk](mailto:info@lagerstedt-krantz.co.uk) or call 0870 242 4873



## Samsung signs HRP for wholesale boost to uk air con drive



Samsung has stepped up its drive to capture a significant slice of the UK air conditioning market by forging a strategic alliance with nationwide specialist wholesaler HRP, effective from 1 July.

The move makes Samsung's DVM Plus III (VRF) range available nationally through a newly formed specialist HRP subsidiary, Samsung Air Conditioning Centre, and Samsung split systems available through HRP's extensive branch network. This follows the recent UK launch of DVM Plus III.

● Visit [www.samsungac.co.uk](http://www.samsungac.co.uk), [www.samsungaccentre.com](http://www.samsungaccentre.com) and [www.hrponline.co.uk](http://www.hrponline.co.uk)

## Orkney success for NIBE heat pumps

The NIBE Fighter 360P Exhaust Air unit has won an accolade from Jimmy Johnston, a resident in one of



Photograph courtesy of Orkney Photographic

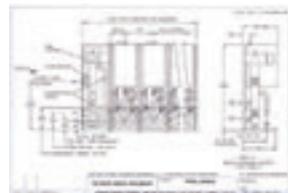
32 all-electric, affordable housing units commissioned in Stromness by Orkney Housing Association in 2006.

In a BBC Radio Orkney interview he said the family had a warm home – prefabricated wooden A-frame design, clad in Siberian Larch with a high degree of insulation – and plenty of hot water, and their bill doesn't exceed £10 a week even in the depths of winter.

● Visit [www.nibe.co.uk](http://www.nibe.co.uk), email [info@nibe.co.uk](mailto:info@nibe.co.uk) or call 0845 095 1200

## Prefabricated boiler system cuts fitting time and costs

Modupak, an extremely versatile prefabricated package comprising up to five skid-mounted 120kW condensing boilers, can supply up to 600kW of heat (or versions from 45kW up to 600kW).



Based on the Stokvis Econoflame R30 high efficiency condensing boiler, offering full modulation and ultra low NOx emissions, Modupak units also incorporate low velocity headers, pumps and controls and can include a plate heat exchanger and pressurisation set, all housed in a portable skid unit.

● Visit [www.stokvisboilers.com](http://www.stokvisboilers.com), email [info@stokvisboilers.com](mailto:info@stokvisboilers.com) or call 08707 707747

## TITAN Products launches new Comfort Control System



TITAN Products new FCU4/RDU Comfort Control System can be used in stand-

alone applications, or with its inbuilt BACnet communications as part of an integrated building management system.

The RCU/STD is a flush-mounted user interface, allowing setting and indication of temperature and fan speed, while the RDU/CR integrates a hotel card key reader and is designed for use in hotel bedrooms. It can be supplied with a matching corridor plate to incorporate the bedroom door access card reader and indication.

● Visit [www.titanproducts.com](http://www.titanproducts.com)

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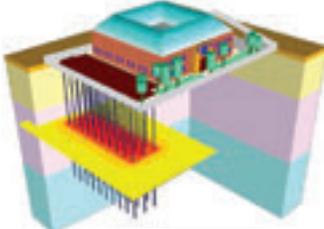
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# Events & Training

## NATIONAL EVENTS/ CONFERENCES

- **9 July 2009 UK Climate Projections for the 21st Century** Institution of Mechanical Engineers, London  
*CIBSE, IMechE and EEF put Defra's climate change scenarios into context.* [www.cibse.org](http://www.cibse.org)
- **9 July 2009 CIBSE YEN Champions Award** Royal Academy of Engineering, London  
*The CIBSE Young Engineer's Network awards recognising young engineers in large and small companies.* [www.cibse.org](http://www.cibse.org)
- **14 July 2009 Seminar focusing on R22** Mitsubishi Electric, Hatfield  
*Raising awareness of virgin R22 refrigerant gas.* Tel: 01707 278601 email: [timezreplace@meuk.mee.com](mailto:timezreplace@meuk.mee.com)
- **15 July 2009 Modern-day design in vitality swimming pools and water features** Manchester  
*Fully understanding the public health issues involved with bathing and from water features.* Tel: 0161 886 2438 email: [Paul.Angus@WSPGroup.com](mailto:Paul.Angus@WSPGroup.com)
- **27-30 July 2009 11th International Building Performance Simulation Association Conference and Exhibition: Simulation – from research to practice** University of Strathclyde, Glasgow  
*Industry applications of building simulation.* [www.bs2009.org.uk](http://www.bs2009.org.uk)
- **9-10 September 2009 The Energy Event 09 National Motorcycle Museum, Birmingham**  
*Annual exhibition and conferences focusing on energy procurement, management and efficiency.* [www.theenergyevent.co.uk](http://www.theenergyevent.co.uk)
- **16-18 September 2009 Institution of Lighting Engineers Annual Conference 2009** De Vere Royal Bath Hotel, Bournemouth  
*Current and future challenges in lighting.* [www.ile.org.uk](http://www.ile.org.uk)
- **30 September 2009 Kent Construction Expo 2009 with EcoVillage** Chatham Maritime  
*The latest in sustainable construction.* [www.theecovillage.co.uk](http://www.theecovillage.co.uk)
- **26-27 October 2009 Sustainable Innovation 09** Farnham Castle, Surrey  
*Future opportunities and challenges of low carbon innovation, technologies, products and services.* [www.cfsd.org.uk](http://www.cfsd.org.uk)
- **28 Oct 2009 Green Building**

**Summit** Auckland, New Zealand  
*How green building represents quality building.* [www.ukgbc.org](http://www.ukgbc.org)

● **5 Nov 2009 SoPHE Annual Dinner** London  
*The Society of Public Health Engineers annual dinner.*  
Tel: 020 8772 3613 email: [williams@sophe.org](mailto:williams@sophe.org)

● **18 Nov 2009 Centenary Celebration Dinner** London  
*An anniversary dinner in homage to the first dinner of the Illuminating Engineering Society, held there 100 years ago.* Email: [lpeck@cibse.org](mailto:lpeck@cibse.org)

## SOCIETY OF LIGHT AND LIGHTING

For more information on the event listed, visit the SLL pages via [www.cibse.org](http://www.cibse.org)

● **22 Sep 2009 SLL Centenary and CIBSE Annual Lecture** London  
*A celebration of light, with speakers discussing the history and design of light.*

## CIBSE/OTHER TRAINING

- **5-7 July 2009 BREEAM International Assessor training course** Ramada Hotel Doha, Qatar  
*Three-day BREEAM Assessor training course.* [www.bre.co.uk/events](http://www.bre.co.uk/events)
- **14-16 July 2009 BREEAM Education Assessor training course** BRE Global, Watford  
*Three-day BREEAM Assessor training course.* [www.bre.co.uk/events](http://www.bre.co.uk/events)
- **3-5 Aug 2009 BREEAM International Assessor training course** BRE Global, Watford  
*Three day BREEAM Assessor training course.* [www.bre.co.uk/events](http://www.bre.co.uk/events)
- **11-13 Aug 2009 BREEAM Healthcare Assessor training course** BRE Global, Watford  
*Three day BREEAM Assessor training course.* [www.bre.co.uk/events](http://www.bre.co.uk/events)
- **12 Aug 2009 Data centres – common problems one-hour webinar**  
*Highlighting the top 10 recurring problems associated with data centres and the solutions.* [www.bsria.co.uk](http://www.bsria.co.uk)
- **2-4 Sep 2009 BREEAM International Assessor training course** Moscow, Russia  
*Three-day BREEAM Assessor training course.* [www.bre.co.uk/events](http://www.bre.co.uk/events)
- **8 Sep 2009 Practical energy management** BSRIA Ltd, Bracknell  
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## The Energy Event 09

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Event sponsors include: EDF Energy; Encore International; and The Utilities Exchange. The Energy Event is carbon neutral with Carbon Clear acting as the event's carbon offsetting partner.

For more information about the event (9-10 September 2009, at the National Motorcycle Museum, Birmingham), visit [www.theenergyevent.co.uk](http://www.theenergyevent.co.uk)



CIBSE's Jacqueline Balian will speak at this year's event

energy assessment and conduct an energy survey in relation to the current building regulations, specifically Part L. [www.bsria.co.uk](http://www.bsria.co.uk)

● **27 Oct 2009 Whole-life costing – theory** BSRIA Ltd, Bracknell  
*Illustrates the important principles of whole-life costing.* [www.bsria.co.uk/training-and-events](http://www.bsria.co.uk/training-and-events)

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**MECHANICAL SERVICES, RENEWABLES AND ENERGY EFFICIENCY**

- **6 July 2009** Understanding and application of psychrometric charts – (A392) London
- **1 October 2009** Design of Heating and Chilled Water Pipe Systems (A403) London
- **2 October 2009** Design of Ductwork Systems (A404) London
- **14-16 October 2009** Mechanical Services Explained (B126) Leeds

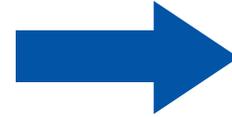
- **15 October 2009 Renewables: Solar Thermal Energy (A408)** London
- ELECTRICAL SERVICES**
- **6-8 July 2009** Electrical Services Explained – special three-day course – (A391) London
- **6-8 October 2009** Electrical Services Explained (A405) London
- BUILDING REGULATIONS**
- **7 July 2009** Building Regulations Part L2: How to Demonstrate Compliance (A394) London
- FIRE SAFETY**
- **8 July 2009** Examination of the new BS9999 on Fire Safety in Buildings (A395) London
- **23 September 2009** Overview of Current Fire Legislation and Guidance (A402) London
- **23 September 2009** Examination of the new BS9999 on Fire Safety in Buildings (B125) Birmingham
- **7 October 2009** How to Specify Ground Energy Systems (A407) London
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# CPD Programme

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## The quiet revolution in chillers

Developments in centrifugal compressors over the last five years have produced packaged water chilling equipment with considerably higher operating efficiencies than comparable compressors. The chillers are marketed in the capacity range 300 to 1,500kW; and this CPD module presents the new technology of the compressor and the chiller, together with a recent case study to illustrate the application

**B**y way of introduction, centrifugal compressors have been used in refrigeration applications for many years at the large-capacity end of the market, beyond about 500kW cooling capacity. In the air conditioning field the refrigerant R134a is now generally used, although in industrial applications propane and ammonia are often selected. The centrifugal compressor is different in operation to reciprocating, screw, scroll or vane compressors, which are positive displacement machines and achieve the pressure rise by reducing the volume of the gas. In a centrifugal compressor, suction gas enters the eye of the spinning impeller and is thrown by centrifugal force to the periphery of the impeller. The blades of the impeller impart a high velocity to the gas and build up the pressure. From the impeller the gas flows either into diffuser blades or into a

volute, where some of the kinetic energy is converted to pressure. The compressor may contain one or more impellers, therefore single or multistage, depending on the pressure ratio required for the application.

Advantages of centrifugal compressors over other types include the following:

- The impeller is the only moving part;
- Noise and vibration are low;
- Lubrication is only required for the bearings; and
- They are compact in size.

Recent features that have been introduced or developed for centrifugal chillers, and which result in energy savings, are:

- Magnetic bearings within the compressor;
- Oil-free compressor;
- Floating head pressure;
- Micro-channel aluminium condensers, that reduce refrigerant charge while increasing

the effectiveness of heat exchange;

- Flooded evaporators that ensure optimum energy transfer between refrigerant and water;
- Inverter-controlled compressors whose output can be precisely matched to the load; and
- Use of a liquid refrigerant pump system that significantly increases thermodynamic efficiency across the chiller's operating range.

### Magnetic bearings

This is a digitally controlled system consisting of both permanent magnets and electro magnets, which replace the conventional lubricated bearings. Figure 1 shows the main components of the system. The compressor shaft rotates on a levitated magnetic cushion and magnetic bearings (two radial and one axial) hold the shaft in >

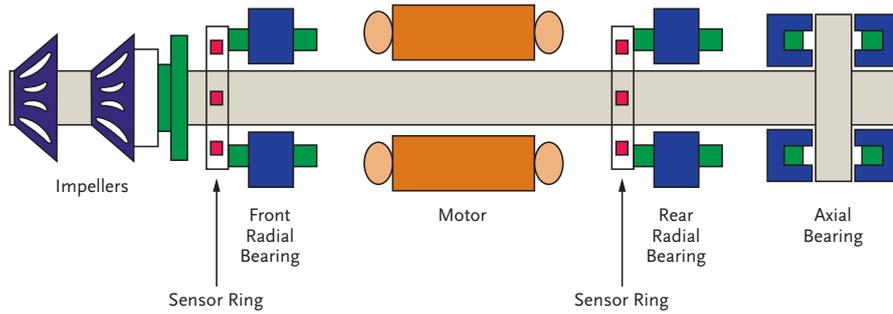


Figure 1 Components of a Magnetic Bearing System

position. Permanent magnetic bearings do the primary work, while digitally controlled electromagnets provide the fine positioning. Four positioning sensors per bearing hold the levitated assembly within a tolerance of 0.0005 mm, so that when the shaft moves from the centre point the electromagnet's intensity is adjusted to correct the position, six million times per minute. When the compressor is shut down the shaft rests on graphite lined, radially located bearings. The compressor uses capacitors to smooth ripples in the DC link to the motor drive and, in the event of a power failure, the motor becomes a generator, using its momentum to produce electricity, keeping the capacitors charged for the brief "stopping" period and providing enough power to maintain the shaft's levitation. The use of magnetic bearings also incurs more than 500 times fewer frictional losses than conventional bearings. This results in a reduction in the starting current to just 2A, removing the transient starting spikes frequently associated with screw and reciprocating compressors and the need for expensive soft start arrangements, as well as eliminating the risk of penalty charges for exceeding maximum power demands.

**Oil free compressor**

Until the development of the magnetic shaft bearing, all compressors required oil lubrication by varying degree, which meant the oil mixing with the refrigerant as it was compressed. In this scenario, some oil leaves the compressor and enters the refrigerant system. Highly efficient oil separating vessels can be fitted to the compressor discharge and return the oil to the compressor, but a small amount of oil will still enter the system and travel in or with the refrigerant, through the condenser and into the evaporator. Many air conditioning packaged chillers with D-X evaporators have no oil separator and rely on refrigerant velocity to carry oil back to the compressor. Oil adversely affects the heat transfer rate and pressure drop, particularly in the evaporator, so cooling capacity and

efficiency is reduced. Magnetic bearings eliminate the need for oil lubrication and with it the need for oil pumps, sumps, heaters, coolers and oil separators, plus the associated maintenance requirements. Figure 2 shows the components of the latest centrifugal compressor.



Figure 2 The latest development in centrifugal compressors

**Floating head pressure**

An important aspect of the control philosophy for the chiller is that the system is designed to operate with a floating head pressure, providing opportunities for savings not available to conventional designs, where head or condenser pressure is maintained at or near design condition to provide system and expansion valve stability during variable load periods. Floating head pressure allows the condensing pressure to fall during low ambient conditions, which increases the efficiency of the chiller. Matching the components of the chiller is important to maximise the potential of this new compressor. Integration of the controls and managing the floating head pressures is vital to optimise chiller performance, particularly when managing the liquid pressure amplification for free cooling (see later).

**Flooded evaporators**

A flooded shell and tube evaporator has the refrigerant in the shell covering the tubes through which the chilled water flows. It

is a more efficient heat exchanger than the D-X type, but refrigerant level has to be controlled, often by critical refrigerant charge. Centrifugal chillers have always used flooded evaporators, but oil management was always a disadvantage. Oil-free centrifugal compressors eliminate this problem and result in further increased efficiency. Features of the flooded evaporator incorporated into these chillers include:

- Being designed and optimised specifically for R134A with specially finned tubes;
- A refrigerant level sensor, which makes it possible to take full advantage of the total heat exchange surface area. This helps to create higher saturated suction gas temperatures and higher EER values while lowering energy consumption; and
- An added heat exchanger further increasing the overall energy performance levels by interchanging heat between the saturated suction gas and condensed liquid refrigerant, raising the temperature of the suction gas while sub cooling the liquid, improving the cooling efficiency and EER values.

**Variable speed compressor**

The centrifugal, oil-free compressor incorporates an inverter-driven, permanent magnet, brushless motor. Typically, traditional induction motors of this size are in the 92 per cent efficiency range, but the new compressor's permanent magnet DC motor provides an efficiency of between 96 and 97 per cent. The variable speed drive provides a speed range from 18,000 to 48,000 rpm.

**Micro-channel aluminium condensers**

The micro-channel, parallel flow, air-cooled condenser coils are designed to increase performance by up to 45 per cent, making it possible to significantly reduce condenser dimensions for a given capacity. Constructed entirely of aluminium, the coils' weight is also reduced by as much as 45 per cent while the manufacturing method reduces the potential for refrigerant leakage, which makes it easier for end-users to comply with the F-Gas regulation. Other benefits of micro-channel condenser coils include a reduction in coil depth, which lowers air pressure drop, reducing fan power required to create the design air flow rate. The smaller coils also result in a 30 per cent reduction in the refrigerant volume and a reduction in refrigerant pressure drop across the coil of 65 per cent, enhancing energy efficiency still further. The condenser fans feature low noise sickle blades that are arranged so that,

when the compressor cycles off, they have the ability to reverse and blow out dust that has gathered on the coil surfaces. This feature helps to maintain coil efficiency and overall energy consumption.

Figure 3 shows a water cooled centrifugal chiller incorporating the new compressor, available for applications using cooling towers or dry coolers.

### Liquid pressure amplification system

Figure 4 shows the principle of a liquid pressure amplification system, which can circulate liquid refrigerant from the condenser to the evaporator at low ambient temperatures, without running the compressor. For example, if the ambient is 10 deg C db, the air cooled condenser may cool refrigerant to 12/14 deg C, which could meet the cooling requirement. This has been incorporated into the new centrifugal chillers, where a 1kW liquid pump increases cooling capacity at all condensing temperatures, but has greatest effect at lower temperatures. This glycol-free alternative to conventional free-cooling is highly efficient, and dramatically reduces energy consumption while maintaining refrigeration performance. A secondary benefit of the reduced compressor run-time is extended plant life. With the low-power liquid pump taking the load, the compressor does not have to work so hard or for so long, reducing wear and the likelihood of breakdown.

### Case study

A recent project has been the replacement of chillers and cooling towers at the Dorchester Hotel in London. The original R22 chillers were in the basement with a condensing water riser to the cooling towers on the roof. They were removed in stages as they were replaced by three of the new centrifugal chillers on the roof, each with a cooling capacity of 1MW and each containing three compressors. Even though cooling towers generally deliver more efficient operation than air-cooled condensers, such is the efficiency of the new chillers that energy costs have been reduced by £10,000 a month compared with the previous system. These savings are expected to achieve a payback in the first year on the additional capital cost, compared with a conventional screw chiller. There are also savings in water treatment and chemical costs associated with the cooling towers. The analysis of the cooling load throughout the year suggests a £90,000-a-year saving compared with a screw compressor chiller – a 30 per cent saving. Two chillers were positioned on the roof of the 10th floor in space previously occupied by cooling



Figure 3 Water cooled centrifugal chiller

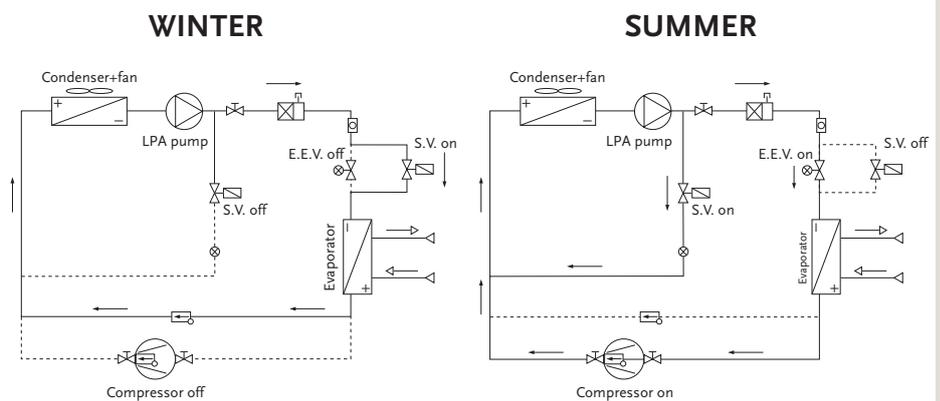


Figure 4 Liquid pressure amplification system

towers, and the condensing water riser was converted to carry chilled water. The third chiller was placed on the roof of the third rear floor, freeing up the basement plant room. There were strict planning conditions regarding noise, and it is intriguing that the new chillers are quieter than the previous cooling towers.

It is claimed that this new breed of centrifugal chillers is “probably the most efficient HFC-based chiller in the world”, able to achieve energy efficiency ratios of 10 and above. The technology can reduce end users’ power bills by between 30 and 50 per cent, while at the same time dramatically cutting carbon emissions. On some applications, the saving can cut pay-back time to less than a year. The performance claims have been independently verified by a leading consultant at a test facility in Italy. As a result

of its innovative design, the machine requires 30 per cent less refrigerant than comparable conventional chillers, reducing servicing costs and potential environmental damage from large-scale leakage.

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Steve Chaplin (Klima-Therm)

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- ACR News, August 2008, [www.acr-news.com](http://www.acr-news.com)
- DatacentreManagement, 26 January 2009, Chillers come of age
- Modern Building Services, “Geoclima develops new chiller range based on Turbocor compressor”, June 2009
- HPAC Engineering, January 2004, “Frictionless Compressor Technology”

# Module 6

July 2009

**1. Which of the following is NOT an advantage of centrifugal compressors:**

- A The impeller wheel is the only moving part
- B Low noise and vibration levels
- C Compact size for capacity handled
- D Oil lubrication only needed for main bearings
- E Sliding valve capacity control

**2. Magnetic type bearings do NOT contain the following components:**

- A Permanent magnetic bearings
- B Oil lubricated bearings
- C Positioning sensors
- D Digitally controlled electromagnets
- E Radial and axial magnetic bearings

**3. Variable speed drive for this compressor operates up to:**

- A 18,000 rpm
- B 4,800 rpm
- C 1,500 rpm
- D 48,000 rpm
- E 24,000 rpm

**4. Micro-channel aluminium condensers can increase performance by:**

- A 45 per cent
- B 30 per cent
- C 65 per cent
- D 15 per cent
- E 25 per cent

**5. The new centrifugal chillers can reduce energy bills by between:**

- A 30 to 50 per cent
- B 10 to 20 per cent
- C 5 to 15 per cent
- D 20 to 40 per cent
- E 0 to 10 per cent



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University of Bedfordshire

Facilities & Estates

## Energy and Environment Manager

Ref: FA3103

Grade 7, £30,594 - £36,532 per annum

37 hours per week, Permanent

The University of Bedfordshire is seeking an Energy and Environment Manager to maintain and enhance our commitment to carbon reduction and environmental protection.

We already have many measures in place, some supported by the Carbon Trust and some backed with Government funding, but we are fully committed to doing lots more. So, we are looking for a highly confident, proactive and committed professional with exceptional communication and negotiation skills who is able to motivate and bring together all the internal and external stakeholders to exceed our current targets.

Ideally, you will have experience of successfully monitoring and managing energy and water consumption to minimise carbon emissions as well as costs. You will also have been at the forefront of establishing innovative practices and translating those into action and to have led the publicity to promote awareness with our students and staff.

To apply: Please download information and application forms from: [www.beds.ac.uk/jobs](http://www.beds.ac.uk/jobs)

Alternatively, application forms and further details may be obtained from the Human Resources Department, University of Bedfordshire, Park Square, Luton LU1 3JU. Tel 01582 743376 (24 hour answering service) or email [employment.opportunities@beds.ac.uk](mailto:employment.opportunities@beds.ac.uk)

Please quote reference number and job title. Please note CVs will only be accepted in addition to a fully completed application form.

Closing date: 20 July 2009.

Interview date: w/c 3 August 2009 subject to candidates holiday commitments.

[www.beds.ac.uk](http://www.beds.ac.uk)



Communities & Local Government is leading across Government on issues at the heart of the community – better homes and neighbourhoods; better local services and environment; safe, tolerant and inclusive communities.

Sustainable Buildings Division is a key delivery Division within CLG. It is at the heart of our vision to create prosperous and cohesive communities offering a safe, healthy and sustainable environment for all.

The Division has a number of opportunities for construction specialists including a public health engineering specialist, to work in the team that manages Building Regulations.

## Public Health Engineering Professional

Starting salary £37,551 - £45,734  
Permanent Appointment

London based

This is an exciting opportunity for a construction professional, likely to be an experienced public health engineer, to work on a range of policy themes focussing on drainage, water efficiency and safety, and technical policy issues resolution. You will work closely with internal and external stakeholders to ensure the technical elements of Building Regulations support delivery of government policies and drive forward developments of standards and regulation within the industry.

You will be involved primarily on work related to the Approved Documents for Building Regulations Part G and Part H. Relevant experience of working on public health engineering is key, as is good practical knowledge of building construction and techniques, particularly drainage and water installations. Your ability to communicate at all levels will be paramount.

You will probably be an Associate or higher member of a relevant construction industry professional body such as Chartered Institute of Plumbing and Heating Engineering, or equivalent.

To download an information pack, please visit our website at [www.communities.gov.uk/vacancies](http://www.communities.gov.uk/vacancies). If you are unable to download the information pack, please contact Caroline Harris at Advanced Human Resources on 01992 642026, or email [carolineharris@advancedhumanresources.com](mailto:carolineharris@advancedhumanresources.com) or write to Advanced Human Resources, Fryerning Court, Beggar Hill, Ingatstone, Essex, CM4 0PD

Closing date for receipt of completed applications is 17 August 2009



Communities and Local Government is an equal opportunities employer. Applications are welcomed from suitably qualified individuals irrespective of their race, gender, gender identity, disability, age, sexual orientation, religion, marital status or preferred flexible working patterns.

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# CIBSE JOURNAL

The official magazine of the Chartered Institution of Building Services Engineers

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to find your next career move

# Pentangle

Consulting Engineers Limited

## Mechanical & Electrical Consulting Engineers

We are looking for Mechanical & Electrical engineering staff to expand existing teams of building services engineers in both our St Albans (Herts) & Brighton (East Sussex) offices.

Applicants are expected to have a high level of technical knowledge and a flair for sustainability, be conversant in AutoCAD and Microsoft applications and possess a solid appreciation of a wide range of the generally available engineering calculation and modelling packages.

Candidates will be selected on the basis of their experience in system design, specification, surveying, reporting and running projects, as well as their interpersonal and communications skills.

Please email your CV to [consult@pcel.co.uk](mailto:consult@pcel.co.uk) together with a covering letter detailing your experience and current level of knowledge and expertise.

**Status:** Full Time, Permanent

**Salary:** Dependant upon position and experience

**Education Level:** HND (as a minimum)

**Professional Membership:** ACIBSE (as a minimum)

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

Low Carbon Consultants | Building Services Engineers | Architectural Technologists



# leeds metropolitan university

an equal opportunities employer

## Estates Services

### Mechanical Engineer

£26,392 - £29,705 pa

Ref: MET/ES/ME0609

An opportunity has arisen for a highly motivated individual with appropriate knowledge of mechanical building services maintenance and design. The post holder will report to the Maintenance Planning Manager and will be responsible for the delivery of allocated maintenance and development projects and assisting in the production of maintenance investment plans.

Working closely with colleagues, the post holder will also be responsible for the development of effective planned preventative maintenance systems encompassing best practice and ensuring all assets are maintained in compliance with statutory requirements.

You will have excellent communication skills, be highly customer focused and a team player.

**Application form and further details are available from: The Met Office Human Resource, Tel 0113 8126021 or E-mail [met.personnel@leedsmet.ac.uk](mailto:met.personnel@leedsmet.ac.uk) Alternatively full details can be downloaded from the University's web site <http://jobs.leedsmet.ac.uk>**

**Closing date: 12 noon, Friday 31st July 2009**



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## Property Group

### Senior Electrical Design Engineer

£34,207 to £36,838 a year.

Ref: R00243MT

This is an excellent opportunity to join our M&E Design Team, part of Lancashire County Council's Property Group. We are seeking to recruit a highly motivated, enthusiastic, forward thinking Senior Electrical Design Engineer, who is committed to sustainable design, with a progressive engineering approach and a strong desire to succeed in a commercial environment.

This post forms part of our multi-disciplinary Building Design Unit, responsible for the design of new buildings, as well as works to Lancashire's existing portfolio of some 2500 buildings.

**Essential:** HNC/HND in Building Services Engineering

37 hours a week at Property Group / M&E Design Department, based at County Hall, Preston PR1 8RE.

**Informal discussion:** Michael Rigby on 01772 533134.

**Closing date: 24 July 2009.**

We are an equal opportunities employer welcoming applications from all sections of the community. Applications from ethnic minorities are welcome. You must be committed to equality and diversity in the workplace. We are committed to protecting and promoting the welfare of children, young people and vulnerable adults.



Apply online at: [www.lancashire.gov.uk/vacancies](http://www.lancashire.gov.uk/vacancies)



## Head of Mechanical Design Team/Senior Associate

Henderson Green is a positive and very progressive privately owned Building Services Engineering Consultancy which has seen continuous growth for 10 years, based in Southampton with a sister office in Jersey.

We have a wonderful team ethic, recognised for our commitment to staff by Building Magazine and listed in The Good Employer Guide, and offer a flexible working and benefits package.

The ideal candidate will:

- be a 'hands on' mechanical design engineer
- be ambitious and self motivated
- have aspirations to become involved with business management
- be able to lead by example
- demonstrate a strong design record (preferably in the Healthcare sector)
- have a proven track record in winning work
- open new business opportunities for Henderson Green

We can offer:

- good salary and benefits package commensurate with the seniority of this role
- genuine opportunities for long term participation in the business ownership
- the chance to take an active role in the development of the best Engineering Services Consultancy in the South

If you think you would like to be part of our team here in Southampton, please send a current C.V. to Jane Primmer at [janeprimmer@hgce.co.uk](mailto:janeprimmer@hgce.co.uk) or call on 023 8022 5900.

For more information on what we do and examples of our work, please visit our website at [www.hendersongreen.co.uk](http://www.hendersongreen.co.uk).



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# How to make the most of your job application

**Mike McNally**, business director at Hays Building Services, looks at how jobseekers can achieve maximum impact with their CVs

Although there is no 'one size fits all' solution to writing a CV, following some simple guidelines will dramatically improve the chances of getting an interview. Writing a CV is your sales pitch to an employer, so make sure that all available space is being used wisely.

Matching technical and personal competency requirements is the key to successful CV writing. This means studying the job description and person specification – a recent Hays' survey revealed that more than two thirds (69 per cent) of jobseekers are failing to tailor their CVs. The personal statement or profile will help you stand out from the crowd, which should always be the aim, given the current climate.

Employers and job roles need to be listed in reverse chronological order. Include company name, address, job title and responsibilities and stick to this format consistently throughout. Quantify achievements where relevant and write in the first person. Saying, "we generated £x profit" won't cut the mustard – the employer is interested in your personal contribution.

Mention any institute charterships, e.g. CIBSE, and include evidence that you are working towards a recognised qualification, as these are now essential requirements for most building services jobs. Other areas of expertise should also be mentioned, i.e. energy or sustainability (EPC, BREAM etc.).

## Top CV tips

- Length:** no more than two pages
- Content:** less is more
- Examples:** specific and evidence-based
- Layout:** consistent throughout
- Run a spell check
- Do not fabricate



**"Your personal statement or profile will help you stand out from the crowd."**

Be sure to highlight any transferable skills – according to another Hays' survey, almost a fifth of jobseekers (18 per cent) are developing transferable skills to facilitate a move to the public sector.

Gaps in employment history will set off alarm bells. Never criticise your previous employer or manager and, if you were made redundant, be prepared to discuss how you updated your skills, or any courses you attended. CVs need to be accompanied by a covering letter, which again needs to emphasise skills in relation to the employer's competencies. As for referees, it is sufficient to mention that these are 'available on request'.

If you're stuck for ideas, the internet is a good resource for CV templates and careers advice.

And finally, don't forget to run a spell check and ensure that those competencies are working hard for you: in your personal profile, work experience and covering letter. For further information contact Mike McNally, business director at Hays, on 0191 222 0044 or visit [www.hays.com/buildingservices](http://www.hays.com/buildingservices)

Email your latest people appointments and role profiles to [cbailey@cibsejournal.com](mailto:cbailey@cibsejournal.com)

iStockphoto.com/Indeisy

## Movers & Shakers

**Stuart Bowman** has been appointed chairman for sustainability for the UK chapter of CoreNet Global.

Bowman has been on the board for CoreNet, an association for corporate real estate and workplace executives, for the past three years as vice chairman for sustainability.



Engineering consultancy Henderson Green has expanded its team.

**Paul Lemoignon** joins as a CAD engineer, **Chris Barker** takes up his new position as senior electrical engineer and **George Morgan** is now its public health associate.



The founder member of building services engineering consultants Henderson Green

has been promoted to managing director.

Former director **Russell Pitman** has taken over the post of MD **Richard Spinney**.

Pitman was part of a team which founded the firm in 1999.



CB Richard Ellis has announced that it has appointed **Alistair Jespersen** as a senior director to

its building consultancy group.

Jespersen has more than 30 years in the commercial property industry and his primary focus at Richard Ellis will be to advise on project management of mixed-use, retail and healthcare developments.



**Alan Gaston** has been appointed by design and engineering specialist Morgan Professional Services (MPS) as head of civil

and structural engineering in Scotland.

Gaston joins MPS from Blyth and Blyth, an independent engineering consultancy where he was an associate director for civil and structural engineering.

In his new role, Gaston will be responsible for the management and delivery of the civil and structural design for large public sector projects.



(Left to right) **Rob Parkin** (projects director), **Hayley Blacker** (sales director) and **Gary Dugid** (design director)

Three members of staff have been promoted and two new people recruited at national interior design and build company, Interaction. Current employee **Hayley Blacker** has been promoted to sales director, **Gary Duguid** has been promoted to design director, and **Rob Parkin** has been promoted to projects director. Also, **Christine Coombes** has joined the company as a new member of the project development team and **Morgan Bailey** is now a CAD operator at the organisation.



**Matt Courage** (pictured), **Richard Parkins** and **Steve Dixon** have been appointed to the Board of JDP, the

Reading-based building services consultancy, as engineering, IT and commercial directors respectively.

The Scottish Government has appointed a new head in its Building Standards Division (BSD). **Bill Dodds** is now the head of BSD after standing in as acting head for several months prior to the official appointment. The move follows a formal recruitment process by the Scottish Government. Dodds' role became effective from 15 June.



## 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/awards2010](http://www.cibse.org/awards2010)



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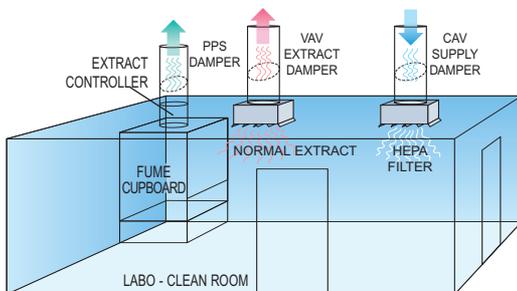


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