

CIBSE

JOURNAL



The official magazine of the Chartered Institution of Building Services Engineers

January 2011

Squeezing out more value

Tactics
for the
recession



MODEL FUTURE
Putting 'BIM' at the
heart of integration

THAT WAS 2010
So what were all
those new regs?

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Specifying the
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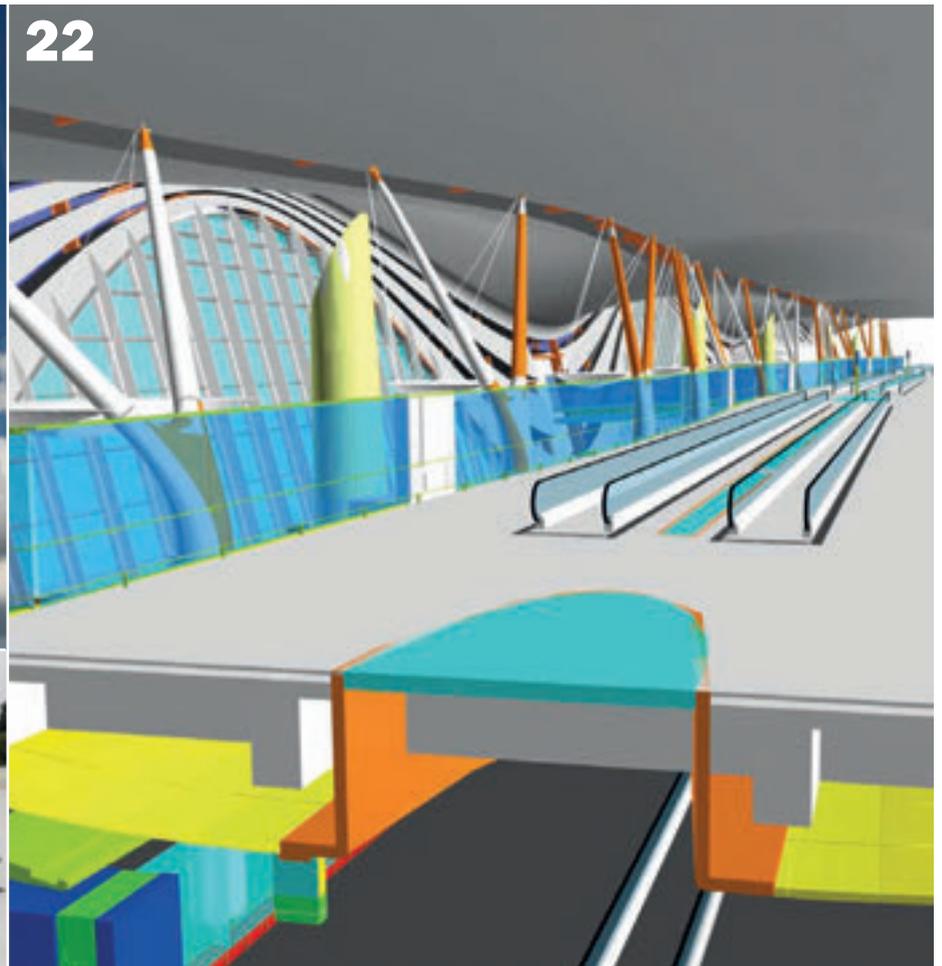
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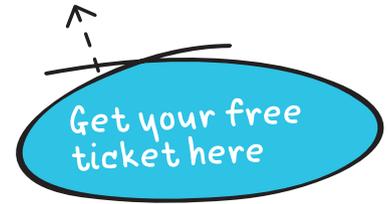
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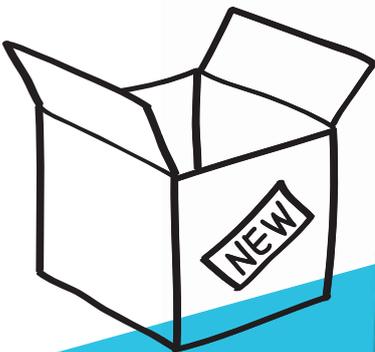
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From the editor



Can we reach Morrell's promised land?

Here's a small item that all construction professionals can add to their list of new year resolutions, at least if they're serious about making low carbon buildings a reality: 'I pledge to work with fellow professionals to transform the sector, so that it is truly green.' Don't worry, though. First, you've got 10 years to achieve this aim (but, of course, that means renewing the pledge every new year). Second, you don't have to reinvent the wheel: there's a 230-page document freely available for you to download and digest (but not at your leisure, as you need an immediate plan).

The document in question is, of course, the *Final Report* of the Low Carbon Construction Innovation and Growth Team (IGT), which is led by the UK Chief Construction Adviser, Paul Morrell. (See pages 7 and 19 in this issue.) The report does nothing short of trying to lay the foundations for a radical reform of the sector in the coming decade.

The scope, depth and complexity of the IGT report underlines just how wide is the gulf between where Britain (and the rest of the world) is at present, and where it needs to be if it is to meet the target of cutting greenhouse gas emissions by 80% in 2050.

In his opinion column in this issue, Morrell argues that, over the coming decade, enough can be done in the built-environment sector for it to be able to achieve the targets. But he also recognises that this entails 'fixing' the existing housing stock to make it energy efficient, and that means we need a lot more effort and leadership from government to make this a reality. The current Green Deal programme simply does not go far enough.

We won't know for several weeks what the

coalition government's response to the IGT report will be; but I think it's a safe bet that the scale of investment and spending that is needed to pursue the report's shopping list of 60-plus recommendations will not be forthcoming.

Some might argue that we've been here too often before – with reports from Michael Latham (1994), John Egan (1998) and Andrew Wolstenholme (2009) – and have still made little progress on achieving a collaborative construction industry supply chain. But it is important to

keep plugging away at this aspiration, and however much of the IGT's work is left to gather dust, it will be an influential and important continuation of these previous studies. If ministers and policymakers are to cherry-pick from the IGT report, then reforming the procurement process would

perhaps be the most direct way of attempting to effect fundamental change.

And let's face it, the only way that procurement can really change is for clients to make it happen. As the report puts it: 'Clients should reconsider forms of procurement that positively prevent an integrated offer coming forward.'

This is not an unrealistic aspiration: many clients in the private sector have adopted sustainability as a priority for their projects, as have local authorities and central government agencies. All of this can be built upon to push the boundaries of collaborative and green procurement. All we need now is for ministers to actually show they are determined to fulfil their pledge that the coalition government will be the 'greenest-ever' administration.

Bob Cervi, Editor
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The only way that procurement can really change is if clients make this happen

News in brief

CIBSE national conference announced for 7 April 2011

The 2011 CIBSE national conference will be staged on 7 April in London. This year it will be focused on refurbishment and the importance of building services engineers stepping 'outside the box'. A Young Engineers' Network dinner will be held in the evening. Further details will follow soon. To register visit www.cibse.org

Climate change 'deal'

A global deal on climate change is now back on track following a breakthrough at the UN's climate change talks in Cancun, Mexico, according to the UK Energy Secretary Chris Huhne. Nations involved agreed to peak emissions and an overall 2C target to limit temperature rise. www.decc.gov.uk

Planning rules devolved

The UK coalition government has launched the Localism Bill, which is set to overhaul the UK planning system and give more rights to communities. The Bill contains a package of reforms that will devolve greater power and freedoms to councils and neighbourhoods and give communities control over housing decisions. www.communities.gov.uk

AECOM new euro chief

Multi-disciplinary consultancy AECOM has unveiled its new chief executive for its European arm. Steve Morriss will lead all aspects of the consultancy's business. Morriss joins AECOM from Mouchel. www.aecom.com

Atkins goes nuclear

Engineering group Atkins has entered the nuclear engineering sector by forging a partnership with French counterpart Assystem. A France-based joint venture operation will target the international nuclear new-build market. Atkins and Assystem are already working together on the ITER international nuclear fusion research project in the south of France. www.atkinglobal.com

More off-site energy mooted for new zero carbon homes

Zero carbon new homes in the UK could be allowed to have more off-site renewables, under ideas put forward for discussion by a government advisory body.

The Zero Carbon Hub issued its ideas at a series of roadshows held in December. Its final proposals, based on these discussions, went to ministers before Christmas.

Under previous 'carbon compliance' proposals outlined by the Hub, the maximum level of onsite carbon emissions from a home was put at 70%, leaving a limit of 30% for offsite energy usage, known as 'allowable solutions'.

In its roadshow discussions, the Hub suggested that carbon compliance levels be expressed in terms of carbon emissions per square metre. Under this new approach, the levels of permitted

onsite emissions could vary between 14 kgCO₂/m²/yr and 8 kgCO₂/sq m/yr per dwelling, with different levels for houses and flats, the Hub said in its roadshow briefing note.

These levels would translate into an onsite carbon compliance level of between 40% and 64% for houses – which would mean permitting a higher level of allowable solutions.

For low-rise apartments, which are seen as presenting bigger challenges to the fitting of energy efficient solutions, the onsite levels could range from 44% (14 kgCO₂/sq m/yr) to 56% (10 kgCO₂/sq m/yr), says the Hub – with the lower figure being equivalent to the standards proposed for Part L 2013.

Hywel Davies, technical director of CIBSE, said that setting carbon

compliance levels according to CO₂ emissions per square metre might be an improvement, but builders should not be encouraged to meet the zero carbon homes target by using a bigger proportion of offsite renewables, rather than focusing on building fabric, and better energy performance.

'The big question for the construction industry is, how do we set up a regulatory regime for zero carbon new homes that doesn't end up with people – builders and home buyers – spending lots of money on mechanical and offsite solutions?'

He added: 'When it comes to seeking the most robust and effective energy efficiency measures, we need to look carefully at the building fabric and passive solutions for new homes first.' www.zerocarbonhub.org



Addition to capital's fruit salad

London's skyline could be graced with a new culinary piece of architecture in the shape of a mixed-use, 140m skyscraper dubbed the Cucumber (depicted above).

The building – for which plans have been submitted by the property developers Simon and David Reuben – will be situated in Merchant Street, Paddington if the plans are accepted.

The 42-storey skyscraper, which will be similar in appearance to the famous City of London landmark the Gherkin, will include more than 200 flats, a 90-room hotel and a top-storey bar open to the public.

Officially the building will be called 1 Merchant Square and will form part of a larger development featuring four buildings including more than 500 apartments, another hotel and 20,000 sq m of offices.

Sector needs 'radical plan' for green future

An integrated approach to the design, construction and operation of buildings is key to achieving a low carbon economy, says the Innovation and Growth Team (IGT) in its *Final Report* to the UK government.

The IGT, led by the government's chief construction adviser Paul Morrell, was set up to consider how the industry can rise to the challenge of achieving the target of an 80% cut in greenhouse gas emissions by 2050.

Launching the report, Morrell said: 'Meeting the low carbon agenda is both a challenge and an opportunity for the construction industry. It will require radical change in the way we do business, as well as government action to meet the scale of the challenge.'

Ministers are expected to respond to the recommendations in the spring. Morrell said: 'I hope this report will mark the start of a detailed collaboration between industry and government to address this complex issue.'

In more than 60 suggestions that have been welcomed across the sector, the IGT report calls for a range of actions to promote energy efficiency in buildings.

It says: 'Integration is key to deliver a nearly zero carbon built environment; the industry must increasingly be structured to be integrated in the design, construction and operation of its products and services.'

Other recommendations include new minimum standards for non-domestic buildings by 'mandating' that they have an energy performance certificate

rating of at least F.

The government should bring forward proposals for a mandatory requirement for the posting of display energy certificates in all non-domestic buildings as soon as possible.

It should also consider introducing more rigorous regulation of the refurbishment and fit-out of non-domestic buildings, says the report.

A body to take forward ideas for cutting carbon in existing homes, along the lines of the Zero Carbon Hub for new builds, should also be set up, it adds.

More generally, government should publish an 'adequately detailed programme of actions' needed to achieve the 2050 carbon target, it says. Construction

Products Association chief executive Michael Ankers said: 'The report... makes it clear that without decisive leadership and cooperation between different parts of the industry... we will not achieve the benefits.'

Graham Watts, chief executive of the Construction Industry Council, said the recommendations would need 'some complex, joined-up thinking and clear leadership by a range of industry institutions'.

Paul King of the UK Green Building Council called on the government to provide leadership. 'We need a kind of private sector-funded "Marshall Plan", to join up and refocus the industry,' he said. **See Paul Morrell's Opinion, page 19, and the BIM feature, p22**

Some key demands in the report

- Greater integration of the supply chain, from design through construction to operation, with a shared customer focus
- Greater collaboration, co-operation and integration between professions and trades, and with construction products and the materials industry
- Social housing stock should be used to kick-start larger-scale retrofit
- Government should support research into the level of non-compliance associated with the European Performance of Buildings Directive and Part L of the UK Building Regulations
- Government should address barriers to district heating networks by requiring public sector buildings to act as 'anchor loads'
- Government should commission a review of the benchmarks used to calculate DEC ratings in order to ensure they are consistent and robust
- The industry should develop a 'comparator' tool which allows companies to assess accurately the life-cycle costs of different methods of construction
- A standard method of measuring embodied carbon, as a design tool
- Government should mandate a requirement for post-occupancy evaluation of all central government projects

Source: IGT Final Report. For a copy and more information, visit:

www.bis.gov.uk/policies/business-sectors/construction/low-carbon-construction-igt

Supermarket developments 'undermine' new towns

The character and success of UK towns are being undermined by the increasing creation of mixed-used developments by supermarkets, design experts have found.

In its latest report, the Commission for Architecture and the Built Environment (CABE) describes the effect supermarket developments have on towns across the UK as a 'local liability rather than an asset, adversely affecting how a place looks and feels and whether it will thrive long term'.

It found designs to be 'weak' and still conforming to the established style of out-of-town developments. Housing and leisure needs are placed a poor second to shoppers' needs.

The report's authors state: 'In our discussions with them, it is clear that variation is seen as the enemy of the economy. This leads to big standard blocks being built in small, irregularly shaped sites, and design which bears no relationship to the neighbourhood.'

According to CABE, in many cases the apartments created in such schemes will be 'an unpleasant place to live'.

CABE is now advising local authorities to concentrate on five areas during discussions with developers to avoid developments becoming a blight on towns.

These are: relating the building to its neighbourhood; achieving strong environmental credentials; getting the housing right; creating a good public realm and reducing car dependency; and planning for the long term.

www.cabe.org.uk

Hot-bed of renewable solar testing opens in Masdar City

The Masdar Institute has been officially inaugurated in Masdar City, a clean technology cluster being developed on the outskirts of Abu Dhabi, United Arab Emirates.

The institute – the first fully operational building in the city – is claimed to be the first building of its kind to be powered entirely by

renewable solar energy. It will be used as a test-bed for sustainable technologies that could be used in future projects in the city. A 10MW solar field is located within the masterplan site to power the building and other parts of the city.

The masterplan was developed by architects Foster + Partners.



Nigel Young, Foster and Partners

News in brief

NCM published

The National Calculation Methodology (NCM) for use with Part L 2010 of the Building Regulations for England and Wales is now available. NCM, SBEM v4.1.a, its technical manual and the *NCM Modelling Guide 2010*, which implements these changes for buildings other than dwellings, is downloadable at www.ncm.bre.co.uk

Latest UK insulation figures

The Department of Energy and Climate Change has published estimated numbers of homes in Britain that have had loft and cavity wall insulation fitted. It is estimated that at the start of July 2010, 12.3m homes had loft insulation of at least 125mm, and 10.3m homes had cavity wall insulation. There are 26.5m homes in Britain. www.decc.gov.uk

Data centre Down Under

Multi-disciplinary consultancy hurleypalmerflatt has won a contract to design a new data centre in Sydney's business precinct, Macquarie Park, for telecoms provider, Macquarie Telecom.

Survey into BIM

A survey into building information modelling (BIM) by specifier of construction products and services, NBS, found that almost half of the respondents are not even aware of the tool. NBS surveyed more than 6,500 construction professionals.

www.thenbs.com

See BIM feature, page 22

Firms forced to cut prices

Accountancy firm KPMG has released its latest Global Construction Survey 2010, which shows that only a tiny fraction of companies managed to avoid price reductions. In Asia Pacific, for example, close to half of the respondents admitted to pricing at or below break-even levels. And 39% of larger organisations surveyed said they were reducing prices to near break-even levels. KPMG interviewed executives from 140 engineering and construction companies globally. rd.kpmg.co.uk

Green Deal bill 'lacks clear signals for home owners'



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The government has been criticised for expecting energy efficiency in homes to simply 'catch on' under its new Energy Bill.

Energy Secretary Chris Huhne confirmed details of how the Green Deal would work when the Energy Bill underwent its first reading in parliament last month.

UK Green Building Council's (UKGBC) chief executive Paul King welcomed the bill, but said there are still major challenges to overcome.

He said: 'Hoping that the Green Deal will simply "catch on" is very optimistic. Crucially, householders need to be given a clear signal that they will be expected to refurbish their home – either with fiscal incentives that link rates of stamp

duty or council tax to the level of energy efficiency, or we may have to bite the bullet and say people won't be able to rent or sell their home until it meets a minimum standard.'

Under the legislation, loans for financing the upfront costs will be paid by the bill payer. Financial savings will also have to be equal to or greater than the cost of the loan repayments

The Energy Bill also sets out proposals to create an Energy Company Obligation after 2012 to improve the ability of vulnerable people and those on lower incomes to heat their homes, and to provide more support to improve solid-wall properties. But no incentive or regulatory requirement has been introduced to force property owners to retrofit their properties.

Energy and Climate Change Secretary Chris Huhne said: 'I'm confident the Green Deal will catch on with the public. It'll make upgrading our nation's draughty homes a no-brainer.'

The UKGBC has also questioned why the government has failed to give targets for how many homes should be refurbished each year, fearing that without them the UK will miss its overall target of 14m home refurbishments by 2020. www.decc.gov.uk

Green Deal timetable

December 2010	Introduction of the Energy Bill to Parliament
Pre-autumn 2011	Officials engage stakeholders as they develop the technical details for secondary legislation
Autumn 2011	Formal consultation on secondary legislation
Early 2012	Secondary legislation laid before Parliament
Spring 2012	Detailed industry guidance prepared
Autumn 2012	First Green Deals appear

Huhne promises seismic shift on energy

Nuclear power generating firms will find it easier to build plants under reforms set out by the UK government. Energy Secretary Chris Huhne pledged a 'seismic shift' to regulations, with a consultation already under way and draft legislation due in the spring.

There was a 'once-in-a-generation chance to rebuild our fragmented market, rebuild investor confidence and rebuild our power stations, he said. 'Left

untouched, the electricity market would allow a new dash for gas, increasing our dependence on a single fuel and exposing us to volatile prices,' he added.

One option under consideration is a 'feed-in tariff' that would guarantee a better-than-market return for low-carbon energy generators.

This would include renewable energy and nuclear stations, as well as coal-fired plants with carbon-

capture-and-storage facilities.

Meanwhile, the EU's energy infrastructure has been described by its own European Commission as 'outdated and poorly interconnected'. In a report, *Energy infrastructure priorities for 2020 and beyond*, the Commission recommends better cooperation between EU members and new funding models to create an integrated energy policy across all EU states.

**Royal regeneration**

Phase one of the largest regeneration of Wornington Green in the Royal Borough of Kensington and Chelsea has been officially approved by planners. The scheme is expected to preserve the architectural history of the 14-acre area and reinstate historic links between Portobello Road and Ladbroke Grove. Up to 1,000 new homes will eventually be created. The scheme has been designed by PRP Architects.

LED LED

Concord was the original designer and manufacturer of architectural downlights and had a registered patent on the term "downlighter", which lasted from 1966 to 2006.

Concord's LED 150 was launched in 1996 and defined the term Low Energy Downlighter, specifically designed for the new energy saving TC-D and TC-T compact fluorescent lamps.

With over 40 years experience in downlighter technology, Concord introduces the NEW LEDLED 150 once again redefining the genre of Low Energy Downlights. LEDLED 150 provides a true economic and highly efficient replacement for existing CFL downlights offering unprecedented efficiency and unmatched luminous flux. The new LEDLED 150 incorporates new XP-G chip technology from CREE producing 130 lm/W combined with a die-cast aluminium turbo finned cooling heat sink for reduction in LED junction temperature ensuring maximum efficiency and output offering long life 50,000 hours plus at 70% luminous flux.



News in brief

F-Gas deadline looms

Refrigerant and air conditioning engineers are being reminded that they have six months left to acquire their CITB or City and Guilds qualification, under the F-Gas and ODS Regulations 2009. From 4 July 2011, only an individual with the updated qualification can work on stationary refrigeration and air conditioning equipment.

www.acrib.org.uk

Apprenticeships welcomed

The Chartered Institute of Building (CIOB) has welcomed the UK government's commitment to increase the number of apprenticeships. The government will increase the numbers of adult apprentices by 75,000 across the next five years, with more than £600m invested next year in adult apprenticeships.

Construction growth in 2013

The recovery in construction output experienced by the industry during much of 2010 will stall in 2011, according to the latest forecasts from the Construction Products Association. Further growth in output is not expected until 2013.

www.constructionproducts.org.uk

University contract

The University of Huddersfield has appointed consultancy Mott MacDonald Fulcrum as mechanical and electrical design engineer for its new Enterprise Innovation Centre (EIC).

Arup works with UN

The United Nations Office for Project Services (UNOPS) has signed a partnership with multi-disciplinary firm, Arup, to improve the speed, quality and sustainability of infrastructure projects.

Research park in Scotland

Work has started on the new BRE Innovation Park in Lanarkshire, Scotland. The two-acre park will incorporate four full-scale demonstration houses and a visitor centre, and will channel more than £2m worth of new technology investment.

CCC calls on UK to raise its carbon-cutting targets

The Committee on Climate Change (CCC) has asked the UK government to make its 2030 target for reducing carbon emissions more ambitious.

The advisory body says a review of published scientific research relating to climate change shows that 'the science remains robust and the case for action is stronger than ever'.

The CCC, whose previous recommendations on emissions targets have been adopted by ministers, has advised the coalition government to agree to reduce total greenhouse gas emissions from today's level of 574 MtCO₂ to around 310 MtCO₂ in 2030 – a 60% cut on 1990 levels, and 46% down on 2009.

This 46% reduction over the next 20 years will require a further 62% cut between 2030 and 2050 to ensure the UK meets the 2050 target of cutting emissions by 80%, says the CCC in its fourth



Lord Turner says stretching the 2030 target would cost less than 1% of GDP

'carbon budget' report. This means that previous pre-2030 targets suggested by the CCC will also have to be tightened.

It says the existing 34% target cut for 2020 should be raised to 37% – which could be further raised

to 42% 'once the EU has moved to more ambitious climate change targets'.

'We believe this "back-ending" is justifiable given the feasibility of accelerated emissions reductions in the 2030s and 2040s, if key enabling technologies and conditions (for example, a largely decarbonised power sector) are in place by 2030. But any less ambitious target for 2030 would endanger the feasibility of the path to 2050,' the report says.

The government has yet to respond to the recommendations, but the CCC says new carbon budgets should be legislated for by summer 2011, as required under the Climate Change Act.

CCC chairman Lord Turner said: 'We are recommending a stretching but realistic fourth carbon budget and 2030 target, achievable at a cost of less than 1% of GDP. Any less ambition would not be compatible with the 2050 target in the Climate Change Act.' www.theccc.org.uk

Renewables Obligation decision soon

Developers of new large-scale renewable electricity projects will find out more quickly than expected how much support they will receive under the Renewables Obligation (RO) from 2013.

The RO requires energy generators to produce a proportion of their electricity through the use of renewable sources.

Under previous arrangements,

support levels were not due to be finalised until autumn 2012, meaning developers had been reluctant to start projects with long construction periods.

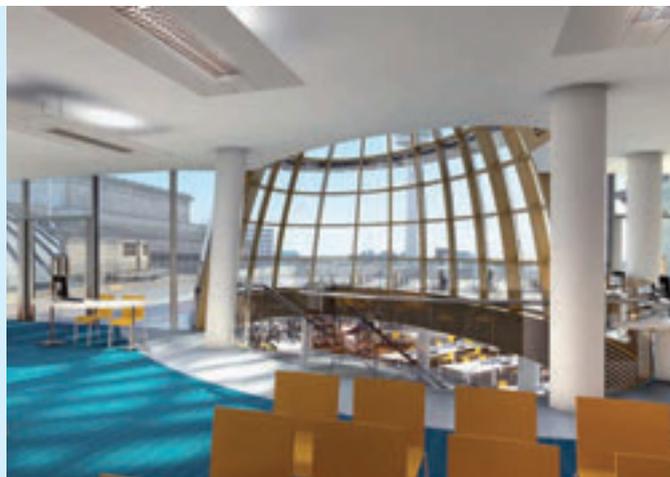
Energy Minister Charles Hendry said developers will now get an indication of the support they will receive as early as mid-July 2011. 'The previous timetable for reviewing support for large-scale renewable

electricity developments created some uncertainty for investors, so we've decided to bring it forward.'

DECC now intends to consult on the new banding proposals in summer 2011 and confirm the new bands by autumn 2011. The new bands will take effect on 1 April 2013 as originally planned, subject to state aids and parliamentary approval. www.decc.gov.uk

Off-site works spell good news for library

More than half of the mechanical and electrical (M&E) components required in one of the UK's biggest library redevelopments are set to be manufactured off site in a bid to protect the Grade II listed building. Liverpool Central Library is undergoing a multi-million pound revamp, with 60% of the M&E requirements being made in a factory. Building services provider SES secured the £8m contract for the works.



Concern over move to scrap design rules for new homes

Industry bodies have expressed concern over a decision to scrap planned new UK design standards for homes built with government funding or on public sector land.

Housing Minister Grant Shapps announced that the Homes and Communities Agency's (HCA) proposed Core Housing Standards would be abandoned.

The HCA funds affordable housing and regeneration projects.

The move aims to save developers £8,000 per home and slash the bureaucratic burden on builders. Shapps has now proposed that councils and housebuilders work together to create a transparent 'menu' of costed standards to avoid placing unrealistic burdens on builders.

But RIBA president Ruth Reed said: 'The proposed HCA standards were designed to raise the overall quality of publicly-funded housing and ensure that new homes meet



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the most basic of lifestyle needs.

'We agree that there is too much regulation in the housing sector, but the HCA standards were designed to harmonise regulation and provide clarity for industry. We are concerned that the proposed menu of options for local authorities may lead to further confusion and lower standards.'

Reed added that UK house builders have already delivered poor

homes judged to be of poor quality by the government's own design watchdog, and constructed the smallest homes in Europe.

The Chartered Institute of Building (CIOB) fears the move will simply cause confusion.

Eddie Tuttle, its public affairs and policy manager, said: 'It could be argued there is too much regulation in the housing sector, but given that the HCA standards were

Regeneration schemes scrapped

Plans for 13 regeneration schemes across England have been scrapped, after the HCA's operational budget was cut by half to £40m.

Thirteen other schemes already under way are to be completed.

The cut in funding is part of a bid to scale back Private Finance Initiative-funded housing.

The HCA will now concentrate on helping councils to maximise the impact of available funding, through its expertise on procurement and other technical services.

designed to harmonise regulation and provide clarity for industry, it is not clear what will be achieved by getting rid of them.

'The government needs to ensure that it provides strong, clear guidance which underlines the importance of design quality. The risk is that the proposed menu of options for local authorities may lead to further confusion and lower standards, especially against the backdrop of the carbon agenda.'

www.communities.gov.uk

Study highlights poor-quality homes from leading builders

Leading UK builders have constructed some of the poorest-quality housing under the first round of the UK government's Kickstart scheme, according to a study.

The Homes and Communities Agency, a housing regeneration body, says it found that some builders scored as little as four points out of 20 in the Commission

for Architecture and the Built Environment's (CABE) design assessment standard, Building for Life (BfL).

Kickstart was created to help stalled housing projects restart.

Barratts, Bellway, Galliford Try, Gladedale (SY), Persimmon Homes, and Taylor Wimpey UK all achieved four points or less.

However, the review also points

out that some developments received planning permission in 2004, when the Code for Sustainable Homes was still being refined and before CABE's BfL measure was fully established.

The review also highlights some concerns over BfL, describing it as a desk-based assessment tool that used information submitted during the planning process as the basis

for assessment. In many cases, there was insufficient information to reach a definitive BfL score, which skewed results.

In round one of Kickstart the average BfL score was 9.3 out of 20. Out of the 136 schemes assessed, 67 scored less than nine. The average score for round two was higher, at 12.

www.homesandcommunities.co.uk

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Anger over community levy U-turn

The UK government has decided to retain a 'community infrastructure levy' scheme, despite an election pledge by the Conservatives to abolish the tax.

Under the scheme, councils can raise funds from developers building new projects in their area, with the cash going to fund new local infrastructure such as parks and cycle paths.

However, under coalition government changes, a significant proportion of the funds will now be given directly to community groups.

The Federation of Master Builders argued that the move will hinder the whole building sector. Brian Berry, director of external affairs said: 'Quite why the government has now decided to adopt an approach they so roundly condemned in their own policy paper is very difficult to fathom.'

Underground search for district heating solution

Researchers are to study the feasibility of storing waste heat from power stations in mines and aquifers for potential re-use in district heating services.

The six-month £140,000 project will involve the Energy Technologies Institute (ETI), engineering consultants Buro Happold, Cambridge University, the British Geological Survey and IF Technology Group.

ETI chief executive David Clarke said: 'Most industrial processes, especially electricity generation, produce large quantities of heat which is usually emitted as waste to our rivers, sea and air.'

'One of the main obstacles for making use of this waste heat is that it is not available at the same time and place as the demand. However, it is technically possible to store very large quantities of heat energy below



Waste heat from power stations could be reused

ground in geological structures such as saline aquifers or disused mines.

'The heat could even be accumulated through the summer to be used during the winter.'

However, uncertainties currently exist around the 'effectiveness, environmental impact and ultimate capacity of such systems in the

UK', Clarke said. James Dickinson, project leader at Buro Happold, who described the project as 'ground-breaking', said: 'If the feasibility study proves successful and the approach is proven through consequent pilot schemes, it could help to reduce carbon emissions and replace direct gas-fired heating in the UK.'



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*John Bell
AKD, Edinburgh,
Glasgow and Crewe*



Engineer blasts ongoing smoke-vent 'confusion'

More clarity is needed in the industry over the effective operation of sprinklers in tandem with smoke ventilation, according to an expert.

Unnecessary concern has been prompted by the increasing installation of sprinkler systems in buildings at the insistence of insurance companies, said David Smith, chairman of the CIBSE Guide E (Fire Safety Engineering) committee and a former president of the Institution of Fire Engineers.

He told a CIBSE/ASHRAE Group meeting: 'There has been a lot of nonsense talked about whether sprinklers and smoke/heat vents (SHEVS) can work together.

'Research in the US as far back as 1974 concluded that sprinklers and SHEVS could be used together. Yet since then supporters of both technologies have spent years rubbishing each other's research.'



Sprinkler systems are increasingly being installed at the insistence of insurance firms

SHEVS are essential to maintain safe conditions in escape routes in the event of a fire and to provide good visibility for fire fighters, he insisted.

Sprinklers can get the fire under control quickly, while also acting

as an early warning system, but by cooling the fire they often make smoke damage worse. He also said that SHEVS regularly stop sprinklers operating unnecessarily so preventing damage to building contents. www.cibseashrae.org

Minister backs district heating

Local, distributed energy generation should become the norm rather than the exception in the UK, says a minister.

Energy Minister Greg Barker, told the Combined Heat and Power Association's annual conference: 'This government wants to see distributed generation become the norm not the exception – that way we can literally bring power to the people, to communities, to local businesses.

CHPA director Graham Meeks, welcomed the government's statement of support.

He said: 'This has the potential to unlock the enormous opportunity for CHP and district heating in homes, communities and industry across the country.'

But, he added, 'there is no question that the current electricity market has been more of a hindrance than a help, and we know that combined heat and power and district heating have much more value to offer in the energy system of the future.'

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*Damian Parkin
AKD, Edinburgh,
Glasgow and Crewe*

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Construction's silver lining

As we see in 2011, you would be quite right in thinking there are plenty of reasons to be depressed

Once again the news is busy with stories of struggling construction companies and redundancies across the building services industry, and it's clear we're faced with the reality of another tough year ahead.

Indeed, the latest Drivers Jonas Deloitte Crane Survey reports that construction activity here in London has fallen to its lowest level in 20 years. As an industry we can't help but be concerned. However, there is, in my opinion, a silver lining in that it will force change and produce a fitter and more effective industry. And, as an international organisation, we all have skills and experience that are needed urgently worldwide.

Hopefully, you will have read my piece ('How we are meeting future challenges', November *Journal*, page 18) outlining CIBSE's plans to develop and evolve.

It's more important than ever

– despite the pressures on our industry – that we continue to support and nurture our young talent to ensure that we have the right skills in place when the industry picks up. Without these young engineers of today, we won't have the talent for tomorrow.

For those who need a bit of cheering, I suggest attending one of our Young Engineer Network (YEN) events. It will put a spring in your step, give you a positive outlook and a belief in the future of our profession.

Looking ahead, CIBSE has also developed its Strategic Plan, which sets six strategic objectives for 2011-2016, and aim to focus our work.

The tasks ahead of us are, put simply, to broaden the institution, raise our profile, improve our links with academia while demonstrating our continuing relevance and value to society and

our members. I urge you to read the full strategic plan in the 'About CIBSE' section of our website at www.cibse.org.

As well as making plans for the future, we must also reward and recognise the achievements of today. We are exceptionally proud to once again be able to showcase a range of projects and companies that have achieved excellence over the last year at our CIBSE Building Performance Awards, taking place next month. Despite a challenging year for the industry, the standard of entries continues to impress, illustrated by the incredibly strong shortlist. These awards are a real opportunity to raise the profile of our work and achievements and I look forward to celebrating with the best of our industry talent.

So, we start 2011 with solid plans in place to rise to the challenges. The UK construction industry is at a crossroads as



Tough times may force the industry to transform, says Stephen Matthews

public-funded works decline and new opportunities are created. We must be agile, competent and enthusiastic, for there is much to do.

Finally, I would like to thank all our volunteers for their continued support and contribution, and wish you all continued success for the coming year.

Stephen Matthews
Chief executive

Membership applications deadline

The closing date to apply for the associate (ACIBSE) and member (MCIBSE) grades is 1 February 2011.

Please make sure your application is complete, and includes:

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

For details of the requirements and the application process for ACIBSE and MCIBSE membership, go to www.cibse.org/membership or email the membership department at membership@cibse.org

Travel and learn with Ken Dale Travel Bursary 2011

The Ken Dale Travel Bursary is now inviting entries for its 2011 award.

The Bursary makes an award of between £1,500 and £4,000 to a CIBSE member in the developmental stage of their career to research an aspect of building services outside their home country.

The research should be of interest to CIBSE, the entrant's employer, clients and the profession. Research that aligns with CIBSE's concern for the environment is particularly encouraged.

Through the bursary, the winner will have the opportunity to experience technical, economic,

environmental, social and political conditions in another country, and to examine how these factors impact upon building services engineering.

Last year's winner, Rebecca Warren, travelled to Belgium, Denmark, Holland, Germany and Sweden in her four week trip. She said: 'I learnt that collaboration between planners, engineers, architects and the communities they serve is not only possible, but crucial.'

'I came home with an even greater respect for my profession and with an understanding of the practical issues involved in getting carbon reduction schemes – both



CIBSE president Rob Manning with last year's winner, Rebecca Warren

big and small – off the ground.

'I also developed a greater confidence in the knowledge I already have.'

For further information and to download an application form, visit www.cibse.org/bursaries. Applications for the Bursary close 28 February 2011.

Campaigning for the wider use of DEC's

CIBSE is working with a number of industry bodies to explore the benefits of using display energy certificates (DECs) more widely.

The institution believes reducing energy consumption needs a clear measure of current consumption to create awareness and to provide a baseline against which to measure improvement: DECs provide such a benchmark.

DECs give the actual energy consumption of a building and tells occupiers and visitors how much a building uses. They are currently required in public buildings with a total floor space exceeding 1,000 sq m, occupied 'by a public authority or an institution providing a public service and frequently visited by the public'.

However, from July 2013, the recast Energy Performance of Buildings Directive will extend the current requirement to include both public and commercial buildings with more than 500 sq m in floor area.



DECs should be made applicable to commercial buildings ahead of 2013

Shutterstock

Now CIBSE is working with the British Property Federation, the British Council for Offices, the Better Buildings Partnership and the UK Green Building Council to explore the potential of introducing DECs in the private sector ahead of this extension. The institution is also reviewing the CIBSE Benchmarks that underpin the Operational Ratings used in DECs.

CIBSE will shortly be holding a workshop with interested parties to discuss the work of that review to date, and information about this will be advertised soon.

The institution is committed to working with all those in the industry who want to see more robust and effective measurement, reporting and management of energy in our buildings.

Success at Teambuild 2010

Teambuild 2010 once again drew a high standard of teams.

The event, supported by CIBSE, encourages young professionals to embrace collaborative working across the industry.

The winning team, Synergy, a group from Wates' Luton office and Morgan Sindall, Stratford-upon-Avon, impressed judges with their commitment, teamwork and good humour.

Teams were asked to plan, design and deliver a world-leading research, leisure and education development through a series of scenarios. It was judged by representatives from the construction industry, including CIBSE.

Changing climate - a new perspective

This year's annual lecture, which took place on 23 November at the Wellcome Collection, was once again a thought-provoking event.

Guest speaker Mike Hulme, professor of climate change in the School of Environmental Sciences at the University of East Anglia, explored the idea of climate change using historical, cultural and scientific analyses, and sought to illuminate the numerous ways in which climate change is deployed in public and political discourse.

He stated that climate change is not 'a problem' waiting for 'a solution, but an environmental, political and cultural phenomenon that is reshaping the way we think about ourselves, our societies and about humanity's place on Earth'. The lecture looked at what climate change means to different people



Professor Mike Hulme explores the idea of climate change during CIBSE's Annual Lecture

and why we disagree about it.

The lecture also suggested a different way of approaching the idea of climate change – opening up space and seeing it as an opportunity for innovation, change and diversity.

If you missed the lecture, it can be seen online at www.cibse.org. Presentation slides from the event are also available on the website.

SoPHE raises £1,000

The Society of Public Health Engineers' (SoPHE) seventh anniversary dinner raised £1,000 for charity, WaterAid.

The event was held at the Kensington Royal Garden Hotel in London on 4 November.

Chairman Chris Northey presented the past chairman's medal to Martin Shouler and announced the newest honorary fellow, Chris Sneath. Guest speaker Dr. Stuart Ashenden, director of academic planning at Greenwich University, spoke about the need for closer collaboration between industry and educational bodies in training the engineers of tomorrow.

The event was sponsored by: Aliaxis UK, Andrews Water Heaters, AO Smith, Blucher UK, Douglas Delabie, Gerberit Sales, GIRPI, Goodwater, Hamworthy, Heatrae Sadia Heating, Honeywell Control Systems, Horne Engineering, Hydrotec (UK), Lochinvar, Oventrop UK, Pipex, POLYPIPE Terrain, Reliance Water Controls, Roth UK, Saint Gobain PLC, Wavin and Zip Heaters (UK).

Membership subscription due

CIBSE hopes that you are taking advantage of the wealth of activities, services and benefits available as part of your membership.

Developments in 2011, such as the launch of the CIBSE Knowledge Portal, will further enhance your benefits – we hope to bring you further details next month.

If you have not already done so, please remember to renew your membership subscription for 2011, which is due on 1 January 2011. This can be paid online at www.cibse.org, where you can also update your details.

If you have any difficulty paying, call the membership subscriptions team on 020 8772 3655 or email memberships@subscribers.cibse.org

New members

FELLOW

Herbert, John Edward	Leatherhead
King, Gregory	Maidenhead
Lees, Justin Robert	Plymouth
Lui, Chi Wai	Hong Kong
Morris, David	Louth
Taylor, Richard	Nottingham
Yeung, Mai Mai	Epping, Australia

MEMBER

Agbonkpolor, Johnbull	Southall
Ahmed, Mikal Masood	London
Ampadu-Sam, Rashmi Kwasi	Mitcham
Au Yeung, Ka Leung	Hong Kong
Bain, Sheila	Glasgow
Bennett, David	Dundee
Bildstein, Gerhard Paul	Chatham
Bong, Wai Cheuk, House	Hong Kong
Brown, Peter	Epsom
Buchanan, Stephen	Newtownabbey
But, Hoo Hay Howard	London
Butler, George Thomas	Southampton
Byrne, Mark Liam	Birmingham
Carey, Michael	Barnet
Carmody, Philip	Drogheda, Republic of Ireland
Carvalho de Lacerda Moreira, Ana Rita	Abingdon
Cash, John Daniel	London
Chamberlain, Paul Alan	Pontyclun
Chan, Edward Chi Kin	London
Chau, Chun Wei, Leslie	Hong Kong
Chauhan, Dilip	Leicester
Chene, Geoffroy Denise Marie	London
Clark, Stephen David	Prestwick
Clark, Graeme Albert	Bishop Auckland
Clarke, Mary Anne	St Albans
Clifton-Climas, Jeremy	London
Collier, David	Teddington
Cook, Neil	Sawbridgeworth
Cooper, James	Poole
Curtis, Lee John	London
Daureawo, Mohammad Jassim	London
Davies, Nicholas John	Glasgow
Davies, Neil Stuart	Beaconsfield
Devlin, John Michael	Antrim
Douglas, Kenneth Joseph	London
Dye, William David	Carshalton
Edwards, Benjamin Nathan George	Perth, Australia
England, Craig	Newcastle upon Tyne

FELLOW

Chi Wai Lui	Hong Kong
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Chi Wai Lui is general manager of SUNEvision Super e-Technology

Services. He is currently involved in project management of design, build and maintenance of Extra Low Voltage (ELV), SMATV and structural cabling systems for the residential and commercial buildings in Hong Kong.

FELLOW

John Herbert	Leatherhead
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John Herbert is head of estates with NHS South East Coast. He has a broad range

of experience, more recently with the delivery of sustainable patient-focused healthcare environments.

Enstone, Michael Richard	St. Albans
Figan, Magdalena Grazyna	London
Flanagan, Sam Albert	Oxford
Foley, Daniel	Kensal Rise
Foran, Alex	Dublin
French, Ross David	Exmouth
Gapper, Mark James	Bridgend
Gholamalipour, Marjan	London
Grace, David Jonathan	Exeter
Hall, Gary	West Perth, Australia
Harrison, Nicholas	London
Hasston, Sam	Glasgow
Hingston, Nigel Malcolm	Newton Abbot
Ho, Wing Yee	Hong Kong
Holmes, Adrian	London
Horton, Greig	Bicester
Johnston, David Buchan	Stockport
Kelly, Kevin	Denton

FELLOW

David Morris	Louth
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David Morris is a regional director with Faithful+Gould. He is currently working on a

large infrastructure scheme in Africa for a blue-chip client in the petrochemical sector – the latest step in a very enjoyable and varied career.

Kenny, Damien John	London
Keyser, Carl Jacques	Tadley
Kinghorn, David Martin	Dollar
Knight, Gareth	Cardiff
Kozlowski, Radoslaw	Manchester
Lander, Nicholas James	Dubai
Lang, Leonora Joyce	London
Lee, Lap Man	Hong Kong
Lyons, Nicola Jane	London
Lysikatos, Konstantinos	Leeds
Mackenzie-Burrows, James Royston	St. Albans
MacLennan, Elizabeth	Paisley
MacPhail, James	Glasgow
Mahdavi, Ali	Bristol
Mamujee, Mustanseeer	Ruislip
Man, Kai-Yip	Hong Kong
Mangan, Alan	Republic of Ireland
Marriott, Ian	Whitstable
Martin, David Jonathan	Knebworth
McGuigan, Steven	Motherwell
Mercer, Paul Nigel	Nottingham

Moody, Timothy Paul	Wantage
Moutsopoulos, Thucydides	Greece
Moxom, Timothy John	Loughborough
Mueller, Karl Heinz	Stratford-Upon-Avon
Ng, Wai Leung	Hong Kong
Odgers, Christopher Robert	Australia
Oliver, Matthew	London
Parmar, Pradip	Middlesex
Pickering, David	Eastbourne
Pigott, Ronan	Republic of Ireland
Pitman, Graham James	Dartford
Raghobur, Komal	Purley
Ramjee, Hashil	London
Richards, Chloe Jennifer	Coventry
Riquier, Delvy	London
Robertson, Iain James	Edinburgh
Salmon, Jerome	London
Sawyers, Adrian Francis	London
Scott, Ryan	Limavady
Sealey, Gary	Leighton Buzzard
Sergiou, Spyros George	London

FELLOW

Richard Taylor	Nottingham
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Richard Taylor is director of Taylor Lifts Limited and has 16 years experience in the lift

industry. Most recently he has been involved with the re-opening of the National Lift Tower in Northampton. Richard is passionate about the lift industry and enjoys the many different challenges and learning experiences that every day brings.

Shehata, Hussein	Tokyo
So, Ka Shun	Hong Kong
Sobieski, Przemyslaw	Warsaw, Poland
Spens, Richard James	London
Spinks, Phillip Trevor	London
Stott, Nathaniel	Stockport
Summers, Marcus	Lancashire
Suthaharan, Emmanuel Felix	Middlesex
Temple, Andrew James	Beckenham
Thomas, Tristan	Bristol
Thompson, Barry Dixon	Cardiff
Tilling, Coral Jacqueline	Carlisle
Todd, Colin Thomas	Whitley Bay
Tsang, Chin Pang John	Hong Kong
Tull, Alex Philip	Didcot
Walter, Richard Michael	London
Warwick, David James	York
Watkins, Richard	Manchester
Webster, David Alfred William	Orpington
West, Brian Lee	Dublin
White, Craig Thomas	Lancashire
Wild, James	Leeds
Williams, Glynn	Wakefield
Winter, Matthew Lloyd	South Croydon
Wong, Kam Hing	Tai Po
Wong, Kwok Hung	Tuen Mun
Wong, Yat Lung Winson	Tin Shui Wai
Wong, Yuk Chun Alan	Hong Kong
Wong, Kin Chung	Hong Kong
Woo, Kwok Ching Dennis	Hong Kong

FELLOW

Mai Mai Yeung	Epping, Australia
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Mai Mai Yeung started her career at two district hospitals in London in the 1970s.

Since then, she has worked on all kinds of building and transport infrastructure projects in Australia, Hong Kong, Taiwan and India. She currently works as the associate director – aviation for AECOM in Sydney Australia.

Woods, Duncan Edward Russell	London
Wszola, Jacek	London
Yan, Wai Keung	Lantau
Yeung, Wing	Hong Kong
Yip, Kim Ming	Hong Kong
Zdaniuk, Gregory Jack	Greenford

ASSOCIATE

Adam, Steve John	Motherwell
Batham, Gary Maurice	Sheffield
Beeching, Roy Albert	Carnoustie
Brym, Alicja	Liverpool
Chyla, Wojciech Jozef	Republic of Ireland
Cook, Phillip Roy	Aylesbury
Cragg, Alan	Gravesend
Crowley, Jason	Bristol
Doherty, Chris	Manchester
Filer, Michael James	Radstock
Harrad, Daniel James	Macclesfield
Jones, Stuart	Dundee
Kalisz, Silja	Salford
Mannion, Noel	Woking
Marles, Kevin	Devon
Mufute, Stephen	Bristol
Mulholland, Steven	Dromore
Muli, Bernard	Basildon
Murphy, Richard Francis	Bath
Nawrocki, Hubert	Castleford
Nunn, Matthew Peter	Reading
Sanchez, Diego	Madrid
Sloan, Robin John	Bristol
Tracey, Graham	Republic of Ireland
Waldron, Simon Terence	Solihull
Winton, David Stewart John	Hebburn

FELLOW

Greg King	Maidenhead
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With more than 20 years experience in the building services industry, Greg is the

group manager of the Test and Microclimate centre at BSRIA, where he is responsible for laboratory testing and site investigations, leading a team involved with the testing of building services products.

Election time for members of the Board and Council

President elect:

David Fisk

Vice presidents:

George Adams, Peter Kinsella,
Peter Wong

Honorary treasurer:

Nick Mead

Members of the Board:

Stephen Lisk

Members of Council:

Fellows, Members, Associates,

Licentiates:

Mariana Trusson

Graduates, companions and affiliates
(including students):

James Mackenzie-Burrows

The Board is the governing body of the Institution and is made up of the seven officers of the institution (president, president-elect, three vice-presidents, honorary treasurer and immediate past president) and five elected members.

Under Regulation 36, the Board must nominate candidates for any vacancies arising from the annual general meeting (AGM).

The Board has also agreed that elections should be held for membership of the institution's council, a much larger consultative body, which exists to advise the Board on institution policy.

Nominations to fill arising vacancies at the next AGM in May 2011 are listed in the box (left).

Short biographical notes for each of the candidates can be found in the 'Members' section of the www.cibse.org

Members of the institution are entitled to nominate additional candidates for election according to the rules set out below:

- Fellows, members, associates and licentiates may submit nominations for the offices of president-elect, vice-president and honorary treasurer and for members of the Board. Only duly qualified individuals who have been supported by 10 nominations from fellows, members, associates and

licentiates will be added to the lists.

- Fellows, members, associates and licentiates may also nominate individuals from those grades for membership of Council.

Graduates, companions and affiliates (including students) may nominate individuals from those grades for membership of Council. Only duly qualified individuals who have been supported by five nominations from members in the appropriate grades will be added to the lists. Qualifications for each position are listed in the box (right).

- Nominations must be made in writing to the chief executive/ secretary by 4 February 2011.

These nominations must be accompanied by the written consent of the nominee to accept office if elected. The names of those making nominations will follow the name of the candidate on the ballot paper.

The qualifications for each position are:

President-elect: Fellows of the institution who hold, or have held, the office of vice-president

Vice-president: Fellows, members, associates or licentiates of the institution who are or have been members of Council

Honorary treasurer: Fellows, members, associates or licentiates of the institution who are or have been members of Council

Members of the Board: Members of all grades may be nominated (at least three of those elected must be, or have been, members of Council, and at least three must hold membership in the grades of fellow, member, associate or licentiate).

Members of Council: Must hold the appropriate membership grade for the category in which nominated, that is fellow/member/associate/licentiate or graduate/companion/affiliate (including students).

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Letters

Driving sustainable design

The Commerzbank building in Frankfurt which you profiled ('Up in the air', December, page 32) proves that our industry has had energy consumption as a focus for many years. It highlights, further, that building services engineers are – and certainly should be – the driving force for sustainable design. It is, of course, also refreshing to see one of our buildings proving its energy credentials after 12 years of operation.

Usually in the industry we discuss a building's merits based on its calculated and predicted performance rather than its measured performance. The mandatory post-construction reviews for all of the BREEAM 'Outstanding' projects are a step forward, but perhaps the concept of requiring all buildings to have Display Energy Certificates would encourage this further. How many of the current high-profile 'sustainable' developments will receive this level of scrutiny after they are built, let alone after 12 years?

Jon Waite

Senior engineer, Grontmij | Roger Preston & Partners

Quality should be at our profession's core

With reference to your editorial in the December *Journal* (page 5), the notion of 'quality' in design and realisation has disappeared from all skills formation, from apprentice to boardroom. No one has an integrated understanding of how what they do contributes to the holistic realisation of whatever they are trying to achieve at system level, or in the processes in which they are directly involved – in our case a continual reduction in the resource and carbon intensity of the built environment.

To achieve this we'd need a different type of professional: a built environment systems integrator. CIBSE has the opportunity to lead in this if its members are prepared to embrace it.

This should be the *raison d'être* of Low Carbon Consultants. It is how I saw it when I undertook the training, and it is how I

deliver it to my construction sustainability students.

This is not easy, as nowhere is the concept of 'quality' used as the central pillar supporting our society. But it has to be, as it is the first word in what we desire most: 'quality of life'. Remove this pillar and society collapses.

Derek Deighton

University Centre at Blackburn College

people with poor sight. Even the legally blind can frequently get about outdoors by day but at night they become immobile. Ordinary flashlights do not work; if the patch of light is bright enough the patch is far too small.

Ernest Wotton FCIBSE, FSLL,

Toronto, Canada

wotton@sympatico.ca



Time for another CIBSE repositioning?

Five years ago, CIBSE clearly positioned itself with the vanguard of energy awareness among engineering institutions. 'We used to do heat losses and pipe sizing – now we are into energy,' said a CIBSE president of the day. Now, however, with other institutions having caught up and some even surpassing CIBSE efforts, our institution has lost its previous competitive advantage. Given the enormity of the global battles of climate change belief and commitment, CIBSE's future could be less driven by building physics, building design and building legislation, and directed rather more towards the technologies of adapting to and mitigating the consequences of climate change. Repositioning CIBSE now for mitigating climate change effects would restore our business differentiation and also yield significant potential for developing new applications.

Ian Brown

Can we shed light on DEC's?

In your November editorial (page 5) you state: 'It is the current requirement on public buildings to display and update their Display Energy Certificates (DECs) that is having a positive impact on climate change.' This seems a reasonable assumption, but do you or others have any data with which to back it up? For the past three years I have been trying, without success, to get the Ontario government to display a DEC or something like it on their buildings; such action may just bring about the change.

I also have another request for readers: can they recommend a lighting device that would enable a person with poor sight to get about outdoors after dark? I am involved with

CORRECTION: Doug Oughton's letter in the December issue should have referred to his being chair of E4E Operational Group and not of E4E, which is chaired by Dick Olver. We apologise to both gentlemen for this editing error.

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.

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We can fix it

The construction industry has 10 years to make low carbon buildings a reality, and we need to plan now, says UK Chief Construction Adviser, **Paul Morrell**



On my first day at work as government Chief Construction Adviser in December 2009, and at the first meeting of the steering group that was overseeing the report on low carbon construction that was published last month (see page 7 in this issue), the then Business Secretary threw down the challenge: 'Is your industry fit for a low carbon future?' It's a good question, and one that my colleagues and I have been getting to grips with ever since.

For new buildings, I think we know broadly what we have to do, and we are on our way. We have a well-deserved reputation as world leaders in sustainable design. The challenge is how to broaden customer demand, and how to pay for what's needed. The data is thin, but the view of those who have developed new buildings that can claim to be net zero carbon have put the cost of doing so at 20% to 30% above 'business as usual', and we need to get that down. This will call for new ways of working and, above all, will call on the best efforts of the industry working in genuinely integrated teams – architects and engineers with contractors, and contractors with the full depth of their supply chain.

But that challenge pales in comparison with the situation facing us regarding the existing building stock. We are looking at some 26m homes and about 2m commercial and non-domestic buildings to 'fix' by 2050. That gives us around 21m minutes – so we have less than a minute per building over the next 40 years! We can laugh or cry about this statistic, or simply wonder whether it is remotely achievable – or we can get to work to see how it could be done, and done cost effectively.

We need a set of workable propositions that show how, over the next 40 years, we can progressively improve the energy efficiency of the stock by a series of sensible interventions that will prove attractive to owners and occupiers – starting with insulation and fabric performance (the probable focus of the government's forthcoming Green Deal), but then looking at each step along a journey through better controls, improved boiler (or heat pump) efficiency, lighting and electrical appliances that consume less energy, mechanical ventilation and heat recovery, microgeneration where

sensible, and so forth. And all the time we need to acknowledge that systems need to work with the grain of consumer behaviour, and support a shift to a more energy efficient life – and we need constantly to be measuring and remeasuring to confirm whether what we propose is working as intended.

So we have to engineer not just the buildings, but also whole communities. We are looking at the biggest change to our built environment since Victorian times or the reparations after the Second World War; and, as then, this is also about the need to change people's behaviour, using technology to help them do this. In summary, we need a plan for all that needs to be done, and we need leadership. When it comes to our industry, I know where the leaders of our businesses are, but it is not so clear where the leaders of the industry itself are – people who can speak for the whole of construction, and who have a picture of where that industry should be.

It certainly won't be the industry that we have now – that is far too fragmented. And we can't solve this problem when the people who do the work on the ground – who make and fit things – are not part of the process of making the decisions. What we need is a genuinely integrated process to move forward. Indeed, we need to move into a position where we are never asking a question that can't be answered by a fully integrated team, a team that includes product makers and trade contractors.

This presents a challenge to our institutions to pull down their silos and genuinely work together. As an industry, we need to develop our own plan for energy efficiency and low carbon: in the next 10 years, it really is down to us. ●

Paul Morrell is Chief Construction Adviser and chairman of the Innovation & Growth Team, whose final report is available at www.bis.gov.uk/policies/business-sectors/construction/low-carbon-construction-igt

Up to 2050
we're looking
at having to
'fix' 26m homes
– that's less than
one minute
per building

Part and parcel of the regs

Last year was chock-full of changes to regulations in the built environment. **Hywel Davies** offers a run-down of what you need to know, and may have missed



An anyone focused on delivering projects on time and to budget can be forgiven for thinking that 2010 was overtaken by constant changes to the rules governing energy use in buildings – whether it be efficiency, lighting or water use, to name a few (see ‘Key 2010 documents’ box, right). The related Approved Documents and Compliance Guides were issued earlier in the year, and contained amendments to the wording of Part L of the Building Regulations. They consolidate all the amendments made to the regulations since 2000, and make further changes to Part L that take precedence over the initial changes.

However, not all readers may be aware that the Approved Documents available to download *do not contain the updates made by the 2010 Building Regulations*. This means, in particular, that the text of Requirement L1 as it still appears in the online version is no longer correct. Specifically, paragraph c of the requirement stated that:

‘Reasonable provision shall be made for the

conservation of fuel and power in buildings by: ...
c) providing to the owner sufficient information about the building, the fixed building services and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances.’

The 2010 regulations have removed paragraph c) from Part L. Instead, very similar words appear in regulation 40:

‘The person carrying out the work, shall not later than five days after the work has been completed, provide to the owner sufficient information about the building, the fixed building services and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances.’

This text is, of course, the former requirement L1(c), transposed into a regulation. What both regulations 40 and 39 do is bring the requirement for building logbooks into the text of the regulations themselves. If anyone questions the requirement for logbooks, the answer is now to be found in the main regulations.

However, that is only half the story. We now need heating and ventilation systems with controls that can be explained simply to the users, so that they can understand them well enough to operate them ‘so as to use no more fuel and power than is reasonable in the circumstances’. It may take more than a paragraph of Building Regulations to achieve that in practice.

One other new part will be of significant interest to services engineers. Part 8 addresses ‘information to be provided by the person carrying out the work’. Regulation 38 covers fire safety information and is triggered by any work that is within the scope of Part B. Regulation 39 covers information about ventilation, and regulation 40 covers information about use of fuel and power. The former requires the person carrying out the work to give the owner sufficient information about the ventilation system, and how to maintain it, so that it can be operated as intended to provide adequate means of ventilation.

All of the documents are available as free downloads, either from the Planning Portal website or from the legislation section of the National Archives website (see weblinks box, left).

The bad news is that they amount to several hundred pages of reading! So here is a summary of the most important things to be aware of:

Changes to key documents in 2010

Parts F, J and L of the Building Regulations – revised in April 2010 and then further amended by the new Building Regulations

Building Regulations 2010 – published in September, came into force on 1 October

Part G of the Building Regulations and a new Approved Document G, finally amended on 1 April 2010 following negotiations with the European Commission

Approved Documents F, J, L1A&B, L2A&B, published April 2010, came into force 1 October

Domestic and non-domestic compliance guides, published April 2010, came into force 1 October

The Building Regulations include Schedule 1, the table of “requirements”, which is set out in Parts A to P. Some, eg. Part G, are further sub-divided, as in G1 to G6. These requirements are a part of the Regulations and are therefore a statutory requirement that must be complied with

Weblinks Legislation and official guidance documents

The Planning Portal

The Planning Portal is government’s online planning and building regulations resource for England and Wales. As well as providing downloads of all the latest Building Regulations-related documents, it also provides planning documents and can be used to make planning applications online. Visit www.planningportal.gov.uk. The site has recently undergone quite a significant redesign which makes it easier to find the Building Regulations section.

The National Archives and legislation.gov.uk

‘The National Archives’ is an executive agency of the Ministry of Justice. It publishes all UK legislation for the Controller of Her Majesty’s Stationery Office (HMSO) as The Queen’s Printer of Acts of Parliament, and Government Printer of Northern Ireland, and for the Queen’s Printer for Scotland. Visit www.legislation.gov.uk

- The carbon dioxide emissions target for all new non-domestic buildings has been reduced. The aggregate reduction across the building stock is 25%, but this means that for some building types the reduction will be higher, and for some it is lower. Buildings with high domestic hot water loads, such as sports centres and hotels, have to achieve a lower reduction than shallow plan, air conditioned offices.
- The carbon dioxide emissions calculations, along with the specification used for the calculation, must be submitted to Building Control before the start of work, in addition to the requirement to submit the as-built calculation on completion. There is also additional guidance on how to demonstrate compliance with the energy efficiency requirements.
- The notional building used for emissions calculations is a concurrent specification, based on the size and shape of the actual building with no improvement factor.
- Porches and conservatories are only exempt from building regulations if existing walls and doors are retained or replaced, and there is no heating to the space.
- Guidance on shell and core developments and fit out has been revised.
- The procedures for avoiding thermal bridging and for demonstrating reasonable provision to limit solar gain have been revised.
- There are new provisions for limiting heat loss from swimming pools.

What has preceded is a summary of the story for England and Wales. But what about Scotland and Northern Ireland? Scotland has a separate legal framework for the regulation of building work, which is supported by the Scottish Building Standards. These have also been under review in 2010.

The Building (Scotland) Amendment Regulations 2010 came into force on October 1, 2010. This has resulted in changes to mandatory standards and associated guidance, and the publication of new editions of the 2010 Technical Handbooks giving guidance for both domestic and non domestic works, both of which also came into force on October 1, 2010. The Technical Handbooks do incorporate the changes made in the 2010 amendments to the regulations. For more information, visit: www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards.

Northern Ireland has separate regulations, which follow the England and Wales regulations. The Northern Ireland regulations have not yet been amended to reflect the latest changes to the England and Wales regulations.

The Welsh Assembly Government has been granted devolved authority over the regulation of building works in Wales, and the current plan is for separate regulations for Wales to be introduced from the end of 2012. The *Journal* will be following the progress of this policy over the coming months. ●

Hywel Davies is technical director of CIBSE



We now need heating and ventilation systems with controls that can be explained simply to the users



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Other dimensions

Building information modelling is not just about applying 3D design. According to its proponents, BIM could pave the way for truly integrated project teams. But, finds **Bob Cervi**, key obstacles still lie in the way

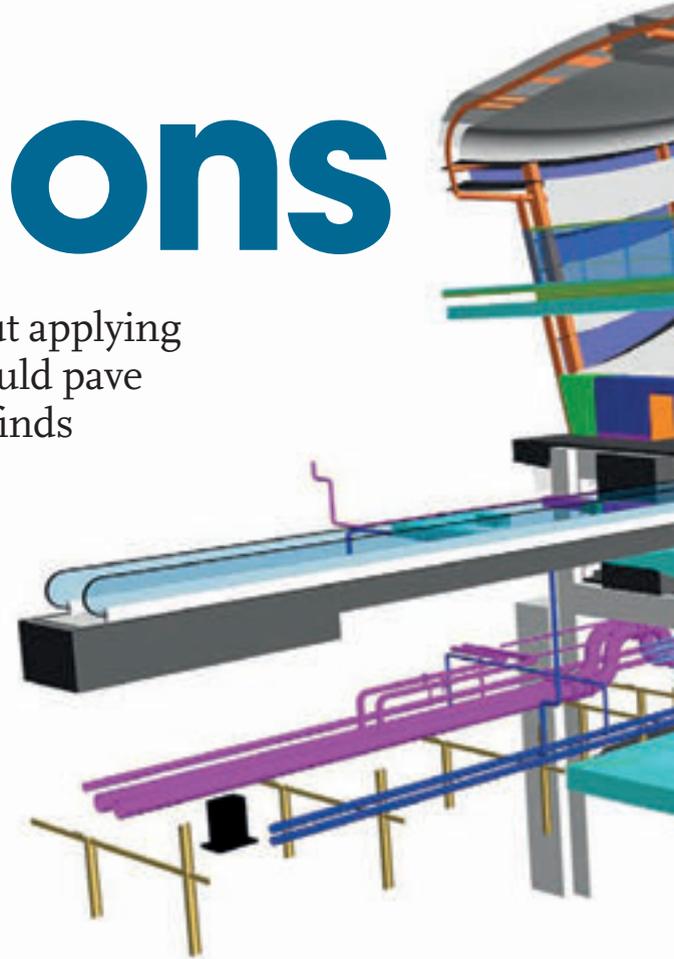
Do new buildings and retrofits usually live up to their design intentions? If not, how can we make the design more 'future proof'? One answer to these questions might lie in a process that has been discussed for years, but which is now gaining wider currency in the construction sector: 'building information modelling' (BIM).

One indication of BIM's growing recognition is the recent work of the UK Low Carbon Construction Innovation & Growth Team. In its Final Report issued in December, this industry advisory group calls upon the UK government to make it mandatory for all new central government construction projects costing above £50m to adopt BIM (see News, page 6, and Opinion, page 19). Why? Well, mainly because, as the report puts it, 'BIM... has the greatest potential to transform the habits... of the industry' as regards co-operation within project teams and across the supply chain.

The central role that such 'integrated' teams can have in the success of green developments has also become more widely recognised. But BIM isn't just about collaboration between different professionals: according to industry experts, it has the potential to transform the whole construction process.

However, at present there is no single industry-wide definition of BIM (See 'Definitions' box). This is one among a number of issues, relating to standards and standardisation, that may need to be tackled if the process is to be more widely adopted. A working definition of BIM used by CIBSE is 'a digital representation of physical and functional characteristics of a facility creating a shared knowledge resource for information about it, forming a reliable basis for decisions during its life cycle, from earliest conception to demolition'

According to software provider EDS, BIM is essentially an 'integrated design process' that can

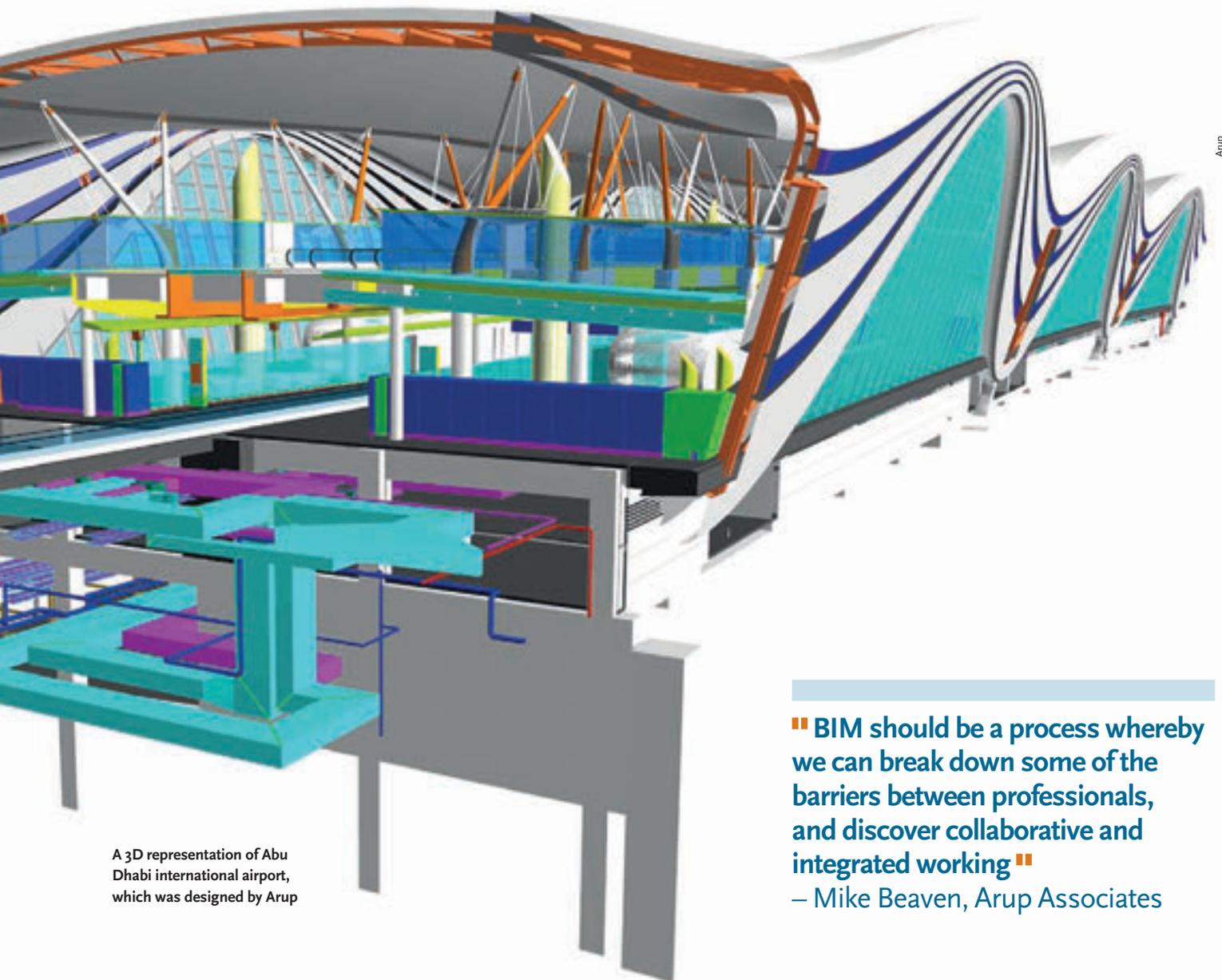


generate and manage building data during the whole project life cycle: 'It uses 3D, real-time, dynamic building modelling software to increase productivity in building design, construction and maintenance period.'

Mike Beaven, head of engineering at Arup Associates, says his firm is already using BIM as an early-stage design and visualisation tool. It has been applied to projects such as Abu Dhabi international airport and the new B SkyB television studios in London. But he stresses that fully-fledged BIM – something the industry has yet to achieve – encompasses the whole project life cycle, from project conception, and early-stage simulation, through to 'integrated' design, building construction and post-completion operation.

'BIM is still a target. Technology-wise we're getting close, but process-wise we're just not there yet,' says Beaven.

The BIM 'holy grail', he says, is being able to pass 'enriched' data on building performance on to clients. 'If the client and end-user can benefit from this transfer, this becomes a huge opportunity for us to add value to our service to clients,' says Beaven,



A 3D representation of Abu Dhabi international airport, which was designed by Arup

“BIM should be a process whereby we can break down some of the barriers between professionals, and discover collaborative and integrated working”
– Mike Beaven, Arup Associates

who recently addressed a CIBSE seminar on BIM.

In these recessionary times, BIM is also seen as a means for construction professionals to be able to offer clients ‘more for less’ – by conducting more efficient design and speeding up the project-delivery process. But achieving these efficiencies requires more effective collaboration between designers and contractors, and between these and their clients. Says Beaven: ‘BIM should be a process whereby we can break down some of the barriers between professionals. Through BIM, we can discover collaborative and integrated working.’

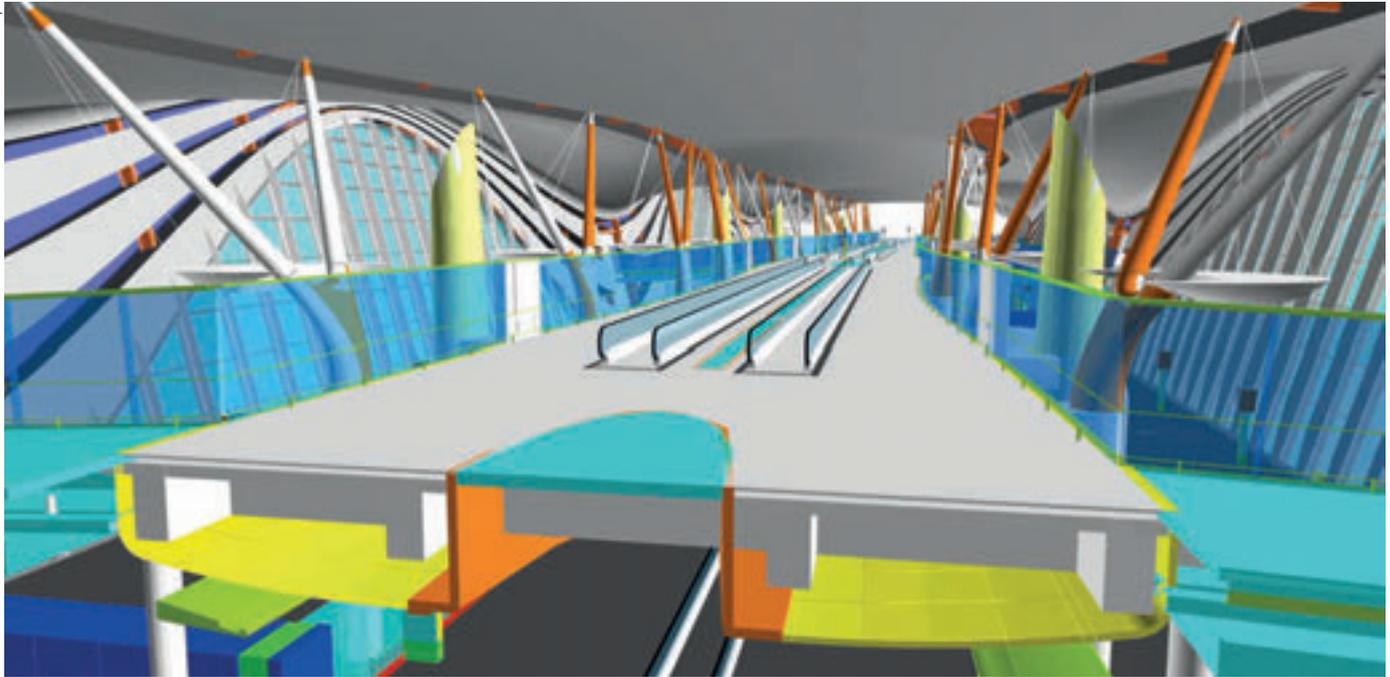
Beaven argues that the industry is being pulled towards BIM by clients’ increasing expectations of a more seamless and collaborative project framework – which is bound to change the way the industry operates in future. ‘What we do with BIM is in our gift. My hope is that BIM will enable us to build more sustainable, cheaper, better more effective buildings for people that use them – and will help our designers to fly.’

One client-contractor that claims to be pushing the boundaries on BIM is Laing O’Rourke (LOR). Its engineering leader, Sam Collard, says the group has around 40 construction projects that use BIM. Doing so has enabled LOR to identify glitches in designs.

‘We have taken the models used by the designer and contractor for a project, and are able to identify the “clashes” in them,’ says Collard, who adds: ‘This isn’t a confrontational process; in fact, it delivers a far more engaged environment.’

Collard insists that the contractor on a project must be able to ‘engage’ with the design model: ‘There is no excuse for the designer not giving the model to the contractor – as long as there is an agreement that the contractor will not use the model for downstream activities for which the model wasn’t intended.’

He admits that none of LOR’s BIM projects have a facilities management (FM) ‘output’. This is because, >



Full-blown BIM is still an aspiration but every new project in which it is applied as a design tool – such as with Abu Dhabi international airport above – is a step closer to it, says Arup Associates

> he says, at present clients don't want to extend BIM to the FM-operational control of their buildings. However, clients are interested in whole-life cycle costs of a building, he adds. Ultimately, BIM depends on collaboration: 'If designers can work collaboratively with contractors – and find a way through the contract – then I think we can move BIM forwards.'

Collard also insists that issues of intellectual property, ownership and copyright should not become obstacles to the proliferation of BIM: 'Let's not be precious about the software. As an industry, we need to come up with a generic set of BIM object libraries – then this technology will fly.'

However, one potential hindrance to the take-off of BIM is the range of rival proprietary BIM database and software services that do not fully 'interoperate' with each other. Says Anne King, a director at industry research body BSRIA: 'If we don't push for interoperability, we'll have to deal with numerous different systems that we will have to buy and train for ourselves.'

BuildingSmart, an international 'alliance for interoperability', aims to promote open-standard software for BIM that can be freely shared by all. It has developed a BIM data-sharing format called Industry Foundation Classes (IFC), which allows the data to be used across different software applications. The aim of this type of open standard is to have all the BIM applications 'under one bonnet'.

Sarah Graham, a business development manager for BIM software provider IES, admits that, when it comes to achieving interoperability, 'it is still early days'. She adds: 'In an ideal world we should have IFC, and everything under one bonnet, but in terms of practicalities it's quite a bit more difficult to achieve.'

CIBSE, along with some other industry institutions, is a member of Construction Project Information Committee, which promotes best-practice guidance

on project data. Jacqueline Balian, managing director of CIBSE Services, says: 'CIBSE has committed itself to trying to help industry with the adoption of BIM. We're planning to set up a BIM working group with representatives of all interest groups.'

Meanwhile, BSRIA, which will join the working group, is looking at reviewing its Design Framework document in the light of BIM developments.

King believes that the industry is moving forward on BIM – which might now have reached its 'tipping point'. But she adds: 'We still have to get through a lot of barriers to do with skills, ownership, delivery standards, data sharing, and so on. I believe the holy >

Modelling The architect's view

We have certainly found problems with exporting our BIM information to other software, because these aren't interoperable. My advice is to test the interoperability of the systems you're using in advance. I think the challenge for architects is to take the knowledge we have had from CAD over decades, and to move it to BIM (where appropriate). BIM is not just for big projects; we use it for smaller ones such as home extensions.

We have analysed different BIM software systems available in the marketplace and have found they all had strengths in some areas and weaknesses in others. In the end we chose one system – ArchiCAD. We also found that we needed to train users of the system; not to do so risks constraining their ability to do design.

Since using BIM, we have found that the automatic generation of drawings mean that we can produce them in about one-third of the time.

Paul Coates works for John McCall Architects in Liverpool, UK

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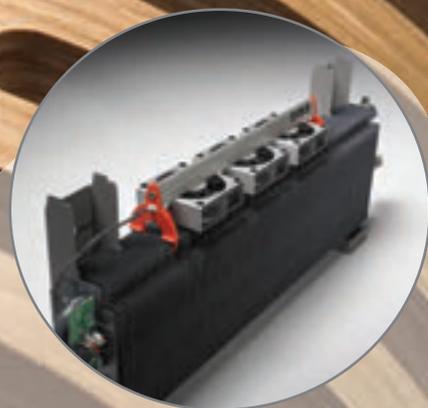
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“CIBSE has committed itself to trying to help industry with the adoption of BIM. We’re planning to set up a BIM working group with representatives of all interest groups” – Jacqueline Balian, CIBSE

> grail for BIM is for facilities managers to be able to get as-built models [for effective building operation].’

Another obstacle to the spread of BIM in the industry is simply the sheer lack of awareness that it exists. An industry-wide survey conducted by NBS – the body responsible for the National Building Specification – a few months ago found that 43% of those sampled did not know about BIM. A similar number were aware of it but were not using it. Only 13% said they were using BIM. However, half the survey said they would be moving to adopt BIM within the next three years. It’s no surprise, then, that the sample also strongly felt that BIM is the ‘future of project information’.

Stephen Hamil of NBS said of the findings: ‘It’s clear we need to get the message of BIM’s value to the 43% not involved with it.’ He said NBS would be looking to do industry roundtable discussions on BIM this year, to raise awareness.

David Churcher of BSRIA believes BIM could be turned into a project management tool, not just a design one. But he questions whether there’s a paradox at the heart of BIM: ‘BIM creates greater seamlessness, but we still have individuals at their workstations who need individual tasks to do on a project. So how do we manage the transition to seamlessness while still being able to tell someone: ‘This is what you do today and tomorrow, and then you hand it over to X’? I still

can’t get my head round this.’

Perhaps this points to another fundamental issue about the attempt at creating a truly integrated design and construction process: which agency/professional takes the lead responsibility for the process? Or do we not need such leadership if all parties involved are collaborating to a high level? As with the other issues that still need to be resolved – not least a lack of software interoperability – these questions may well work themselves out as BIM is rolled out across the industry in coming years. ●

See CIBSE Journal, January 2010 edition, page 48 for previous article on BIM.

BIM Different definitions point in same direction

- Shared digital representation of physical and functional characteristics of any built object (including buildings, bridges, roads, etc) which forms a reliable basis for decisions

BS ISO 29481-1 2010 SMART BSI Publication

- BIM is best thought of as a digital representation of physical and functional characteristics of a facility... and a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.

National Institution of Building Sciences

- ... ‘an intelligent simulation of architecture.’ To enable us to achieve integrated delivery, this simulation must exhibit six key characteristics. It must be: (a) Digital, (b) Spatial (3D), (c) Measurable (quantifiable, dimension-able, and query-able), (d) Comprehensive (encapsulating and communicating design intent, building performance, constructability, and include sequential and financial aspects of means and methods), (e) Accessible (to the entire AEC/owner team through an interoperable and intuitive interface, and (f) Durable.

Chuck Eastman, The BIM Handbook

- A new approach to being able to describe and display the information required for the design, construction and operation of constructed facilities. It is able to bring together the different threads of information used in construction into a single operating environment thus reducing, and often eliminating, the need for the many different types of paper document currently in use.

BuildingSMART

- Building Information Modelling (BIM) is the process of generating and managing information about a building during its entire life cycle.

buildingSMART BSI Publication

Source: Stephen Hamil, NBS



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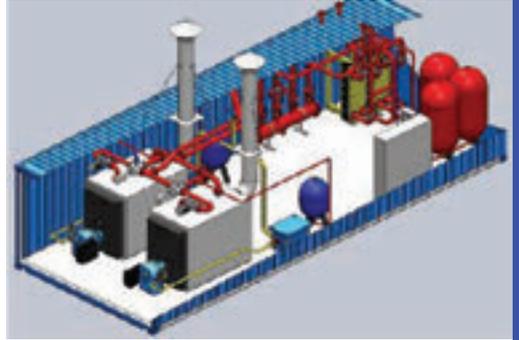
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Squeezing out more value

Engineering firms are under increasing pressure from clients to provide more for less. So what are their top tactics for survival? **Mark Jansen** finds out

In these tough economic times, engineering consultancies are striving to innovate and find new ways of working that will help them survive. 'Everyone has to do more for less,' muses Neil Pennell, head of engineering and sustainability at property developer Land Securities. 'But that doesn't mean things have to go into a downward spiral. You have to look at doing things more effectively and efficiently.'

Bob Spittle, chairman of environmental engineering at BDP, says the outlook for many consultancies is grim: 'I think it's going to get worse before it gets better. Companies have been managing to hang on, but there's been some crazy fee-bidding in recent times and I think some firms will fall by the wayside.'

'The ones that survive will be those that are able to innovate, to re-model their businesses and to add value.'

Pennell believes that the clever use of 'standardisation' is key to offering clients more for less: 'Too often, we re-invent the wheel. Standard products and solutions applied in a creative way are the way forward.'

AECOM says its work in the healthcare sector exemplifies this approach. The consultancy has recently been working on a healthcare project in Dublin where the team needed to work out the ventilation requirements of a hospital operating theatre. The Dublin team was able to track down some colleagues in Sydney who had worked on a similar project and had already completed many of the complex calculations.

'We managed to make use of their information, things like CFD [computational fluid dynamics] analysis for the right air flow rates,' says AECOM director Carl McKenzie.

AECOM is also re-applying the lessons learned from its installation of a ground-source heat pump at Goodmayes Hospital in Essex to other schemes, such as a new hospital project in Canterbury. 'Things like the design flow rates, the design temperatures, the controls, how to set it up, all of them take a bit of time [to work out] and they can be translated directly across [from one project to another],' says McKenzie.

He concedes that knowledge-sharing was already happening before the recession, but believes it has taken on a new urgency: 'Now, we see that it's a necessity, whereas before, people saw it as a sort of option. The company intranet is becoming a design tool, rather than just sitting in the office.'

Cost reduction

Clients are also asking for AECOM's advice on the likely cost of healthcare projects, McKenzie points out. 'Clients are looking for the engineering consultant to get involved with the budgetary aspects of the schemes they are developing ... most QSs [quantity surveyors] are not that comfortable with engineering,' he says (but adds that Davis Langdon, the cost consultant acquired by AECOM in August, is an exception).

Spittle agrees that 'QSs are building-orientated rather than engineering-orientated', but stresses >





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Some engineering firms are outsourcing work to the Far East to cut costs

> that the whole sustainability agenda is changing this situation.

Like many firms, BDP has been forced to make savings, shedding 13% or 16% of its staff in the 12 months to June as turnover dropped £5m, although it also managed to double its pre-tax profit in the same year. BDP is concentrating on low-cost ways to make buildings more sustainable. 'If you have an architect who appreciates it, you can produce a very efficient building envelope,' says Spittle. 'It's not a technical solution – it's applying good design to achieve great results. Technological solutions can be quite costly.'

Pennell notes that some engineering consultants are outsourcing work to cheaper parts of the world, but

“It's going to get worse before it gets better. There's been some crazy fee-bidding recently, and I think some firms will fall by the wayside”

seems relaxed about the trend: 'It's the way forward, I guess. Manufacturing has moved to the Far East to a large extent and we've concentrated on a knowledge-based economy, so I guess our consultants are focusing on the higher-level design inputs into buildings, and looking to produce the drawings and calculations in a more cost-effective way.'

Spittle is less comfortable: 'Some firms are doing it as a way to reduce costs. We also do a little, but we are wary of it. You've got to be so careful, there are big risks to design quality, in my view.'

Pennell is confident that refurbishment will be a major growth market for mechanical and electrical consultants, because Britain has legislated for an 80%

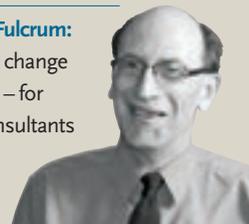
What to do in a recession

Steven Bentley, Gifford:

'We are constantly looking to add value. In the present market, there's a lot of competition and providing a traditional service isn't enough.'

Andy Ford, Mott MacDonald Fulcrum:

'[A shift to refurbishment] will change the industry quite significantly – for example, with engineering consultants working more closely with facilities management companies.'



Carl McKenzie, AECOM:

'We now see [knowledge sharing] as a necessity, whereas before, people saw it as a sort of option. The company intranet is becoming a design tool, rather than just sitting in the office.'

Neil Pennell, Land Securities:

'[Doing more for less] doesn't mean things have to go into a downward spiral. You have to look at doing things more effectively and efficiently.'



Bob Spittle, BDP:

'The ones that survive will be those that are able to innovate, to re-model their businesses and add value.'

reduction in carbon emissions by 2050. That will be impossible without massive improvements to existing buildings, he argues.

Land Securities is about to start work on three significant refurbishment projects, although Pennell won't be drawn on the details. Meanwhile the UK government is working on a 'Green Deal' to enable homeowners to borrow money to make their homes more energy efficient and repay the loans from savings on energy bills. It is also considering a similar incentive scheme for commercial property, with Pennell recently attending a brainstorming session on how it could work, organised by the Department of Energy and Climate Change.

Pennell believes commercial refurbishments will gain further momentum once a link is established between energy efficiency and higher property values, although he accepts that this has yet to happen. 'When a real link becomes apparent, people will want to invest,' he says.

Andy Ford, technical director at Mott MacDonald Fulcrum and president-elect of CIBSE, also sees refurbishment as a potential growth market, and says the firm is working on plans to exploit it. 'I think it's >



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going to be all about existing buildings and reducing their carbon impact. We're studying it at the moment and thinking about our reaction,' he says.

Ford points out that project management group John Laing announced in October its intention to raise £270m on the stock market for an 'infrastructure fund' that will take on contracts for the upkeep of schools, hospitals, social housing and other government buildings. Barclays announced a similar fund in the same month, with hopes of raising £650m.

'That strikes me as an interesting development,' says Ford. He believes a shift to refurbishment would 'change the industry quite significantly' – for example, with engineering consultants working more closely with facilities management companies to identify the most effective improvements to make to a portfolio of buildings over time.

However, Ford isn't getting carried away: 'We're not there yet, not by a long way. We've often said it would be nice if there was more long-term thinking in the industry, but it may be just a fantasy.'

Added value

In the shorter term, there is mileage in consultants looking to save clients money by making more effort when handing over a finished building – the 'soft landings' approach. This entails providing better training to ensure the client knows how to operate the building efficiently and helping with any problems that arise.

'Our industry has a record of handing over buildings poorly,' says Spittle, 'but we're applying soft-landing thinking to a great many projects now; it's becoming much more widespread. If we put more effort into the handover, it costs us a bit more money up front, but the benefits can be huge – you have a happier client, a more efficient building and far fewer problems. But you have to be willing to invest the time,' he adds.

Engineering consultancy Gifford is using technology

to offer extra services, particularly to clients with large estates that need constant management and maintenance. It has combined laser survey scanning with 360-degree photographic imaging to create what Steven Bentley, building services director, calls 'laser-aided modelling'.

Clients access the service via the internet. They see a 360-degree view of the building and can interrogate its internal and external geometry.

New building services can be plotted accurately alongside existing services and clients can also use the data to undertake embedded carbon accounting, or implement maintenance protocols. One client is

" We are constantly looking to add value. In the present market, there's a lot of competition and providing a traditional service isn't enough "

already using the service to manage the installation and maintenance of engineering services to a building located on an island thousands of miles into the Atlantic. This type of software has traditionally been used for new building projects, but Gifford believes it could help clients manage their existing estates.

A British university has requested a simplified navigation model, provided by Gifford, which can be used by lecturers to read instructions for meeting room equipment, as well as for estate management. This was developed after Gifford had used the laser survey data whilst advising the university on facade remodelling for one of its buildings.

Engineering consultancies will need all their ingenuity to survive the downturn. As Bentley put it: 'We are constantly looking to add value. In the present market, there's a lot of competition and providing a traditional service isn't enough.' ●

Good tactics to save money are essential for surviving the recession

Getting through the recession

Save money by re-using information from previous projects

Give more advice to clients on engineering costs

Use low technology first for sustainability

Consider outsourcing overseas

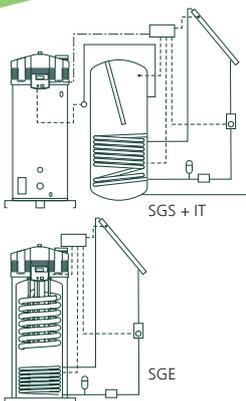
Target the refurbishment market

Use software to offer building management services

Invest more time in building handovers

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Bright solutions?

Solar panels continue to spread across the rooftops of Britain, but is the best technology being specified? Tim Dwyer looks at the options and considers which types of panel work best in different applications

Solar collectors have never had such prominence across the UK landscape. Building owners and operators of all types ranging from home owners to 'green field' speculators have been excited into taking advantage of the potential to directly utilise the sun's heat for hot water (thermal panels) and electricity (photovoltaics). The key driver behind this reawakening is the need for Britain to meet its legal requirement to produce 15% of its energy by renewable means by 2020.

Solar collectors were already well established in the UK for those with an enthusiasm to apply renewable technologies or simply seeking to meet the demands of environmental rating schemes. In the UK, the average annual solar irradiation varies between around 1,200 kWh/sq m on the south-west coast of England, and up

to 900 kWh/sq m in Scotland. A properly designed and installed solar system can maximise the capture of this power and potentially translate 60% of it into useful energy for hot water systems or 15% into electricity for photovoltaics (PVs).

Solar PVs

PV panels are principally based on 'thin film' and 'crystalline' types. The Amorphous Silicon thin film can be mounted on flexible materials and operate at 8% conversion efficiency (solar radiation to electricity); whereas the rigid, more expensive Polycrystalline and Monocrystalline silicon cells have a conversion efficiency of 15% and 17% respectively.

Hybrid PV that combine the two types can reach 20% efficiencies. The individual cells are typically backed >

Feed-in tariffs boost PV market

The introduction of feed-in tariffs in April last year initiated a boom in installations of PV panels. FiTs provide 25 years of subsidy with annual 'generation tariffs' commencing at 41.3p/kWh for installations on existing buildings (up to 4kWp – a large house installation) and ranging down to 29.3 p/kWh for 'solar farms' no larger than 5MWp.

The generation tariff will reduce by 8.5% annually after 2012 (with the aim of encouraging early growth in the market) – and just in its first six months the energy regulator Ofgem has recorded almost 40 MWp of new PV systems (for more than 15,000 installations).

Due to the presence of the National Grid, so long as PV panels generate electricity and there is a suitable connection, any excess energy generated may be exported for use elsewhere, and benefit from the 'export tariff'.

The practical limitation on the size of PV installation is normally capital cost and space. The cost being about £3,500 to £6,000 per kWp with rough power area of 0.15kWp/sq m.

- > and mounted into frames to make panels suitable for mounting on buildings. There are also new materials continually under development including 'paint-on' PV, thin film carbon 'graphene' based cells and organic cells that could transform applications by reducing costs significantly.

PV panels perform ideally when mounted normal to the incoming solar radiation. The performance of panels can significantly degrade if part is in shade and the panel's output will benefit by ensuring good ventilation around the panels to keep temperatures as low as possible. Most PV systems are roof mounted, with tilt angles of 10° to 50°, to provide best access to the sun across the days and seasons. However, many buildings can only accommodate south-facing wall-mounted systems (that will still give access to 70% of the summer sun).

Used in creative ways, feed-in tariffs (see box) can effectively be used as a means of cross-financing building refurbishment. For example, PV can be used as a cost-effective means of improving the performance

PV panels providing rainscreens at Blandford School, Dorset



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Arrays of evacuated tubes supplying domestic hot water to a supermarket in the West Midlands

of building facades. See bottom left for an example of Blandford School, where architectural panels with integrated PVs are used on a south elevation to stop the penetration of rain while also having a predicted electrical yield of 6,250kWh and a likely FiT payment of over £1,900 per year.

This will be in addition to any savings that will be made from the savings from the reduction in grid electricity used as well as the income from selling surplus electricity to the grid during times of low load that, typically in a school, would be in the holiday periods and weekends. The amount paid for the electricity passed back into the grid will be determined by the FiT export tariff that has a minimum value of 3p/kWh guaranteed for 25 years.

Just about every building has a space that will accommodate PVs and aesthetics aside can benefit from both the free electricity as well as the FiT. Some buildings present particular challenges, but since the underlying application is mature there are a variety of ready-made solutions. For example, although every building has a roof, and many commercial roofs are flat, there can be difficulties in fixing arrays where roof membranes cannot be perforated. Fast fit, lightweight panels that require no fixings can provide a solution while keeping the roof loadings at below 12kg/sq m (see page 36).

Solar thermal

The UK government's Spending Review in October 2010 confirmed that the Renewable Heat Incentive (RHI) will go ahead in June 2011. Currently it is thought that 1% of the heat for buildings is generated from renewable sources, and the goal is to increase this to 12% by 2020, 'shifting renewable heat from a fringe industry firmly into the mainstream', according to the Department for Energy and Climate Change (DECC).

The final details for the scheme, including RHI tariffs and technologies supported, are expected to be available from the DECC website (www.decc.gov.uk) early this year. The RHI is likely to create a similar surge in interest in solar thermal technologies as has been witnessed in PV. Certified systems that are being installed now will be eligible for RHI support when it comes on line.

Solar thermal water heating systems are principally based on evacuated tubes or flat panels evacuated tubes and flat panels, with evacuated tubes (ETs), seemingly >

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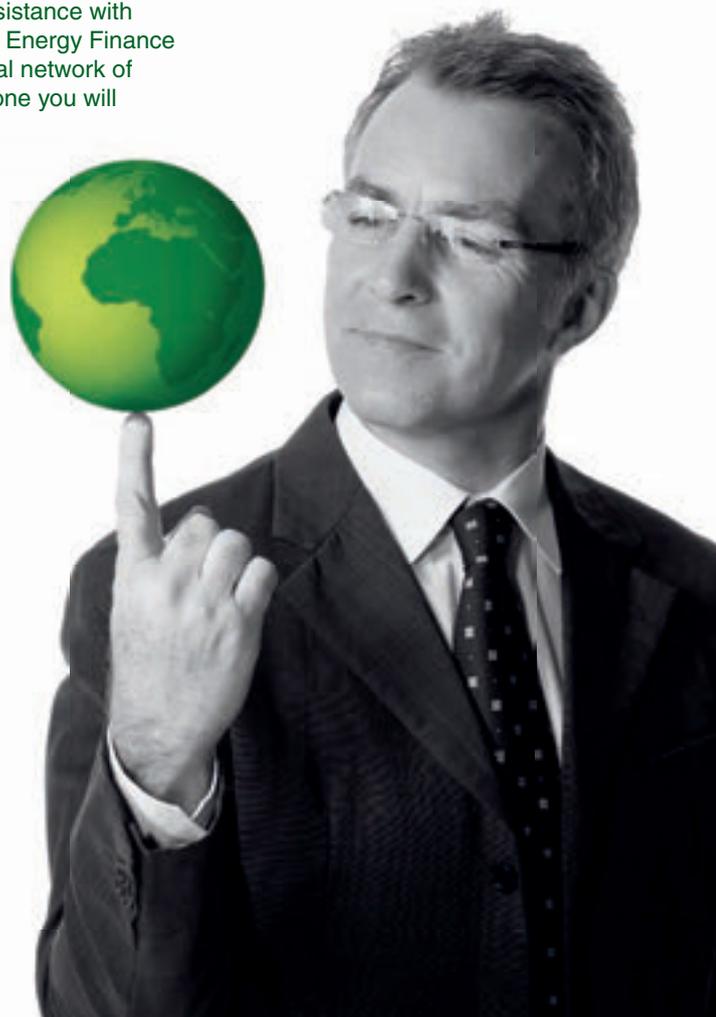
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PVs mounted without roof penetration with a weight under 12kg/sq m

> dominating new installations (see page 34, top right). This is probably because ETs are far less sensitive to orientation and tilt and can effectively be used almost horizontally – and they are also abundantly available from China. For domestic applications, solar thermal panels (or collectors) can practically provide 30% to 50% of hot water needs (known as the ‘solar fraction’) – this being highly dependent on location and application. This is augmented by a complementary heating device for periods when there is insufficient solar energy available.

Effective systems need to consider lifetime operational needs. The excessive installation costs and associated embodied carbon of oversized panels that are not fully utilised can significantly outweigh any potential benefits. In many cases the thermal collector is sized to minimise system stagnation – this is the point at which the collector is not passing any useful heat into the hot water system and any heat passed by radiation from the sun into the collector is matched by its heat loss (to its surroundings) – at this point the collector is 0% efficient (and may well become extremely hot). This occurs where the panel has already fulfilled all the hot water demand – the larger the panel the quicker this will occur.

Sizing

Experience in Germany has shown that systems were commonly oversized, being based on inappropriate hot water usage data and solar irradiance that was exceeded in practice. In buildings (other than single family homes) the average hot water consumption was significantly less than ‘standard’ tabulated values – with apartment blocks

frequently using half of what is normally predicted based using ‘per person’ values. Combined with poor materials, this led to overpriced, oversized systems that failed to meet financial expectations that were more likely to stagnate (see Solar Thermal Systems, Peuser et al, 2002.)

The methodology that is needed to size a solar thermal system is quite different from that used when considering a conventionally fuelled hot water plant. Conventional systems are sized according to peak demand (frequently winter) with additional capacity to provide potential for future expansion and safety margins (for unspecified extra peak load demands). A solar system that is effectively matched to the building should be sized with a proper understanding of the whole operating period – it is frequently the case that a solar system will be sized for the period of lowest demand acting as ‘lead’ to a complimentary heating source.

And whether it’s solar PV or solar thermal, all materials and installation should comply with the Microgeneration Certification Scheme (MCS) requirements to be eligible for subsidy (visit www.microgenerationcertification.org).

The increasing uptake of these solar technologies is easy to observe – simply take a stroll along a suburban street and look at the roofs. The community’s investment in subsidising the cost of the installations (through indirectly

Effective systems need to consider lifetime operational needs. Oversized panels also need to be avoided

increased fuel prices and government incentives) is accelerating acceptance of solar technologies. And this is before the RHI kicks in.

The demand for renewable power generation and heating systems is driving additional need for trained technicians and workers in the supply and sales chains. Each megawatt of PV is predicted to create in the order of 40 jobs, plus a further 10 in manufacturing (most of which are currently outside the UK). (See ‘Carbon Emission Reductions as a Driver for Economic Regeneration’ BRE IP 5/10, BRE February 2010.)

But will it be enough to play its part in allowing the UK to make the substantial shift to meet the 2020 renewables target and, more importantly, will it be used by the profession and the public alongside initiatives such as the Green Deal to truly reduce the building’s carbon footprint? We will have to wait and see. ●

FURTHER READING An excellent introduction to the evaluation, design, installation, commissioning and operation of solar systems is CIBSE Knowledge Series booklet 15 *Capturing solar energy*

For a brief introduction to some of the issues surrounding the design and selection of commercial solar thermal solutions, see the CPD article in the February 2009 CIBSE Journal (available at www.cibsejournal.org)



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Rooftop experiment

How viable are smaller-scale wind turbines in certain urban environments?
Sandeep Ahuja and Tony Day conducted a study in London to find out

Micro-wind turbines are seen as an important renewable technology that could help to cut energy use and carbon emissions in urban areas. This technology has been adopted as one of the green solutions for the new Strata SE1 tower development in central London, for example.

Moreover, with local authorities setting planning targets in recent years that include a requirement for a proportion of renewables to be located on site, the viability of smaller-scale turbines has become a key issue for specifiers.

For years London has made it a requirement that new developments generate 10% of their energy from on-site renewables, under the Mayor's London Plan. In light of this, the London Borough of Southwark developed a research project in partnership with academics at London South Bank University and others to test the viability of deploying small-scale rooftop turbines in the capital.

The measurement processes and the test results have important implications for the use of this technology in this type of environment and are only available due to the close interest and co-operation of the manufacturers.

The site chosen by the interdisciplinary research team was Ashenden House, part of the 1970's Heygate Estate in the London Borough of Southwark. The building, which has 11 storeys that sit on top of apartments on the New Kent Road, lies within the Elephant and Castle regeneration area.

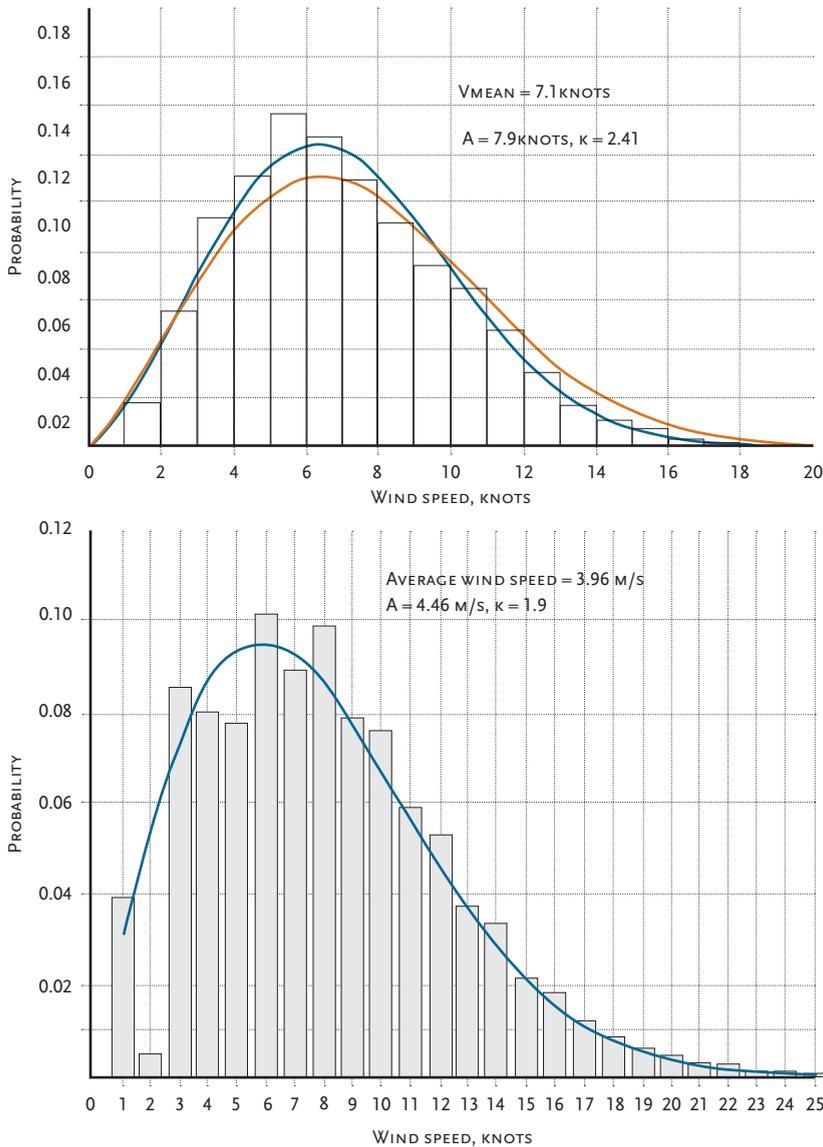
The project's main aims were to compare the performance of the different turbine technologies used and assess the on-site technology's energy yield – with a view to disseminating the findings and conclusions to planners and design teams.

Current prediction methods and manufacturers' data >



The horizontal-axis 6kW Proven wind turbine that was installed on the Ashenden House building, London, in June 2007

London South Bank University



Comparison of wind speed data acquired from the Met Office for Heathrow, with actual wind speed measurement at the site. The Heathrow data, presented in the bottom graph, is from December 1997 to November 2007, while the blue curve on the anemometry data graph at the top is from June 2008 to May 2009. The orange curve shows the measured wind speed from June 2007 to May 2008. In the diagram, A is the scale factor and K is the shape factor in Weibull function as follows: $f(u)=k/A (u/A)^{k-1} e^{-(u/A)^k}$

> were also looked at, as were the impacts of constraints relating to size, weight, and maintenance requirements of the turbines. In addition, the impact of noise, pre- and post-installation, was considered, and an attempt was made to gauge the reaction of the local community to installations.

Planning permission was granted in December 2006 to install wind turbines on the roof of Ashenden House and specialist concrete footing and steel mounting frames were fitted. A horizontal-axis Proven WT 6000 turbine was installed on the roof in June 2007 that had a rotor diameter of 5.5m, rated at 6kW with wind speed of 12 metres per second, and a cut-in wind speed of 2.5 m/s.

The installation cost was about £30k. Wind speed,

turbine power, noise and vibration levels were monitored by installing data-logging equipment in the vacant flat below the wind turbine.

In June 2008, the second phase of the project commenced. The Proven turbine was relocated further along the roof above an occupied flat, and in its place a Quiet Revolution QR5 turbine was installed. This is a vertical-axis turbine rated at 6.2kW at a wind speed of 4.5 m/s, a rotor diameter of 3.1m and a height of 5m. The cost of the installation was higher at just over £40k (including some shared costs for mounting).

The tests

A three-axis Gill ultrasonic anemometer was mounted at hub height of the turbine and about 10m from the turbine, and wind speed data from this anemometer was recorded every second.

A Multicube multifunction transformer meter was used to register power produced at one reading every second. A Sunny-boy controller logged gross yield readings at 15 minute intervals. Data analysis was performed using the freely available SCILAB numerical computational package.

Wind speed data was collected during both test phases, and the measurements were compared to data obtained from the CIBSE Test Reference Year (TRY). The closest site for which this data was available was the Met Office at Heathrow airport for a height of 10m. To compare this data to actual wind speed measurements, the CIBSE TRY data were corrected to a height of 41.5m, the height at which measurements were conducted, using correlations available in the literature.

To get a good estimate of wind speed distribution, CIBSE TRY data for almost 10 years – from December 1997 to November 2007 – was used. The Weibull probability distribution function was found to be the most accurate method of modeling all types of wind speed data, although Rayleigh distribution was also found to be suitable when only mean wind speed data was available.

The results from the Heathrow data and the actual measurements are shown in the diagram. The average wind speed for Heathrow was found to be 3.96 m/s, while the measured average wind speed at Ashenden was slightly lower, at 3.82 m/s, from June 2007 to May 2008, and 3.64 m/s during June 2008 to May 2009.

The results

The power produced by the turbine was measured and recorded using a SMA Sunny Boy Controller Plus. This data consisted of the energy yield from each inverter and the summed energy yield.

During phase one, the annual energy produced by the turbine was 4,200 kWh for the vertical axis turbine. Using 2006 Building Regulation grid carbon factors, this is equivalent to an annual carbon saving of 2,386 kg CO₂. The measured annual power yield compared well with the calculated value of 4,051 kWh from the wind speed data.

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Research project team members

London Borough of Southwark – Instigator and funder of the project, and responsible for data dissemination

Brian Dunlop Associates and Gas Dynamics – Responsible for planning application, technical co-ordination, instrumentation selection, commissioning, data acquisition software, quality assurance and data processing

London South Bank University – Acoustic and vibration monitoring, analysis and reporting, wind and energy monitoring, research programme

KCCC – Site survey, design and construction of footings and mounting frame, installation of anemometer mast

Photon – Lead installer, site manager, turbine assembly, erection and electrical installation

- > The standard method of calculating power from wind speed data was employed for this calculation. The actual annual power produced by this turbine was 36% less than that predicted by the power curve provided by the manufacturer.

During the second phase, two problems arose with the vertical axis turbine: first, the turbine speed (rpm) was capped; second, the turbine had an overly sensitive vibration switch. This resulted in the turbine being unavailable for 36% of the time – up to 24

February 2009. This impacted on the net cumulative energy balance adversely. However, from 24 February onwards, the period during which the QR5 turbine was fully operational, it still consumed more power than it produced.

Towards the end of the project, the manufacturer of this turbine advised the team that QR5 is suitable only in locations where the mean annual wind speed is in excess of 5 m/s – clearly making this turbine unsuitable for this location.

During phase two, turbine noise level and vibrations in the flat below it were also measured. These data show that there were no noise or vibration impacts and, overall, the turbines were well received by local residents.

Conclusions

London Mayor Boris Johnson has an ambitious energy strategy and associated carbon savings to make London more green, and there is no more visible 'green' icon than a rooftop wind turbine. And so these tests were undertaken in London's Elephant and Castle area to see the real performance of both vertical and horizontal axis example wind turbines in the heart of the city.

Importantly, it proved that there are real challenges in predicting inner city wind using out-of-town historic weather data.

Although no specific acoustic treatment had been

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The horizontal-axis turbine was replaced with a 6.2kW vertical-axis Quiet Revolution QR5 (above)

undertaken, the residents in the flats were not affected by any noise or vibration from the roof-mounted turbines – in fact, road noise was far more dominant. Only the horizontal axis turbine showed any potential for saving carbon, and this saving was relatively small at under 2.5 tonnes CO₂ per year (about the same as a small occupied house produces).

As a means of primary investment to reduce carbon emissions, applying £30,000 of capital outlay to save 2.5t of CO₂ annually may be seen as effective, but it is not good value unless more efficacious options have been fully exhausted.

This site is almost in the bottom of the London basin; members of the research team are now examining wind turbines operating 6.5km north of this site (in Islington) on one of the high points on the side of the basin, where horizontal-axis turbines appear to be operating at far more encouraging outputs. There is a need for more comprehensive studies of both technology and installation, but it would seem there are opportunities for urban roof-mounted turbines, if these are located outside the relative calm of the city lowlands. ●

Sandeep Ahuja and **Professor Tony Day** work in the Faculty of Engineering Science and Built Environment at London South Bank University (LSBU). They would like to thank Tony Moseley, London Borough of Southwark; Brian Dunlop, BDA; Marc Zanchetta and Craig Walton, Gas Dynamics; Steve Dance, LSBU

■ There are opportunities for urban roof-mounted turbines, if these aren't located in city lowlands ■

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Part L 2010 – new buildings

The aim of achieving 'zero carbon' buildings in Britain is at the heart of the revisions to the Building Regulation and the related guidance. This CPD explains the changes in the Approved Document to Part L 2010

The Approved Document (AD) Part L has been extensively revised to provide guidance in support of the Building Regulations that came into force in October 2010, and these are firmly aiming sights at 'zero carbon' new buildings. The desire, as shown in Figure 1, is that all new homes should be 'zero carbon' from 2016, and non-domestic buildings from 2019, with rather less firm ambitions for the existing building stock (even though this probably contributes more than 90% of the real carbon challenge).

The principal elements of Part L have not altered but there are some significant developments in how different types of building will be treated, and there is a strengthening of areas such as compliance to ensure that there is less of a gap between buildings as they are designed, and buildings as they are constructed and operated. This article will concentrate on non-domestic buildings and mainly on AD Part L2A – *Conservation of fuel and power in new buildings other than dwellings*.

The development of AD Part L 2010 has led to changes not just in the expectations for buildings' thermal performance but also the methods that may be applied to comply with the requirements. As each iteration of the AD is developed, there is a greater emphasis on meeting the requirements based on carbon emissions from buildings, rather than providing a prescriptive set of design attributes. The aim is to achieve an overall national average reduction in CO₂ emissions of 25% compared with Part L 2006 standards. However, some building types will be expected to achieve more than this – and others less – with the intention of delivering the national target when applied across the building mix, and of trying to ensure that all new non-domestic buildings achieve the required level of improvement at approximately the same cost of carbon mitigation.

Establishing the benchmark

As with Part L 2006, for each new building a Target CO₂ Emission Rate (TER) is evaluated that relates to a minimum acceptable building

performance. This number represents the minimum energy performance requirement for a new building where the annual energy use is converted into equivalent emissions of carbon dioxide per year, per square metre of the total useful floor area of the building (kg/sq m/year). The National Calculation Methodology (NCM)^[1] provides the standard for the TER calculation, and the 2010 revisions are reflected in the Simplified Building Emission Model (SBEM) software as well as in other approved modelling software (as listed at www.ukreg-accreditation.org) that comply with the NCM. Unlike the previous AD (2006), the target emission rate from the building is the notional building emission rate based on a building designed to meet 2010 requirements with standardised fabric thermal performance, usage patterns, plant efficiencies and fuel CO₂ emission factors. (And not, as previously, a reduced value based on a building designed under the 2002 regulations).

There are five criteria in Part L (see Figure 2) but only the first criterion is a regulation >

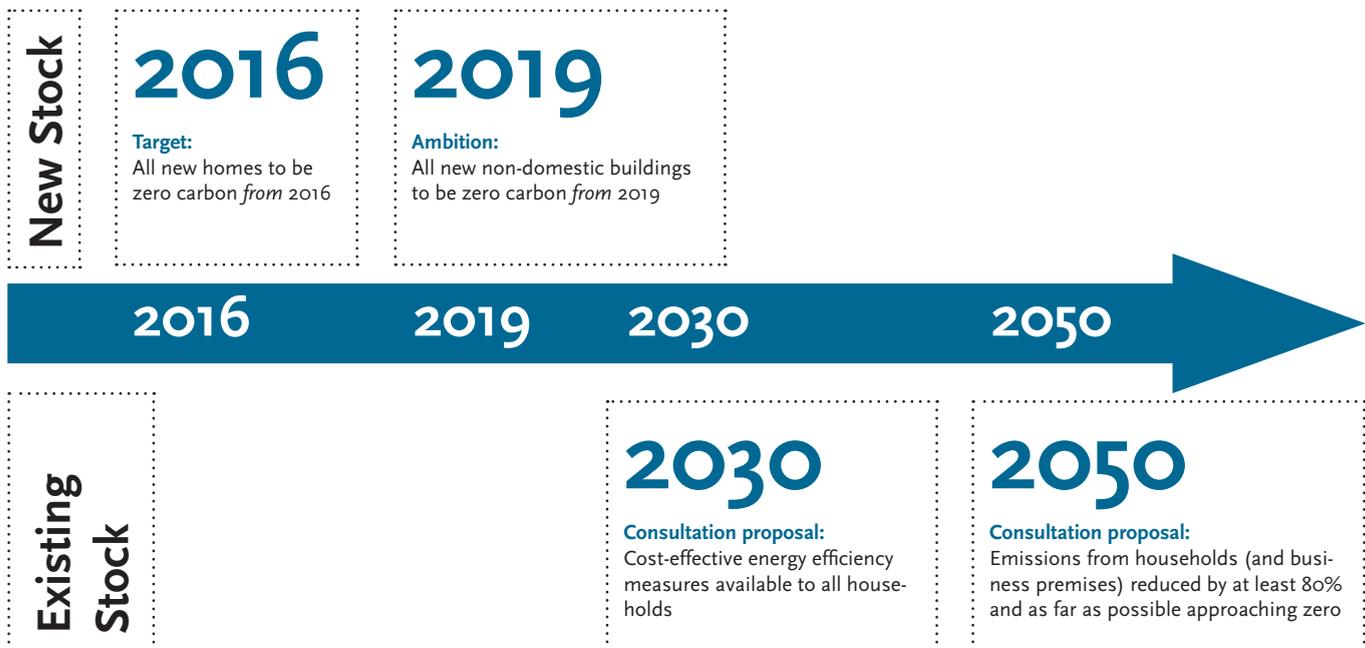


Figure 1: The expectation for building performance (Source: Ant Wilson, AECOM 21/10/2010)

> (the remainder are guidance), and this criterion is the fundamental requirement that the BER must not be greater than the TER. This reliance on guidance is a principle of the AD, which aims to limit prescriptiveness and encourage innovation to meet the requirements (whilst also limiting worst case performance of individual building elements and systems).

One of the most important changes for the evaluation of building performance under the 2010 revision is that there is better discrimination in the categories of building types and activities. SBEM (and compliant modelling software) offers 29 different building types (such as retail, secondary school and launderette) and this is used together with an appropriate choice of one of more than 70 activity areas (such as classroom, laboratory or meeting room) to define the operational characteristics of individual spaces.

The combination of building types and activity are used by the calculation method to define appropriate values of:

- Occupation densities and associated sensible and latent gains
- Heating and cooling set-points
- Set-back temperatures for unoccupied periods
- Lighting standards
- Fresh air ventilation requirements
- Heat gains from equipment.
- Humidity requirements
- Hot water requirements

The application of values more closely describing the actual project will allow the notional building to better represent a benchmark for the building under

Figure 2: The five criteria for Part L2B Compliance

1. **BER<=TER:** this is the only regulation and must be tested as part of the early design work as well as post completion.
2. **Design flexibility – with limits:** AD L2A includes tables of limiting minimum thermal performances. *The Non-domestic Building Services Compliance Guide* provides updated and extended minimum operating efficiencies for systems.
3. **Limiting the effects of ‘solar gain’ in summer:** method altered and now provides an equitable comparison between naturally ventilated and mechanically cooled buildings. Encourages innovative design.
4. **Quality of construction & commissioning:** extra credits will be given in the TER/BER evaluation if there is ‘robust’ evidence of quality assurance procedures in design and construction. Commissioning must be planned during design stage.
5. **Providing information / O&M instructions:** follow the requirements of CIBSE TM31: *Building Log Book Toolkit* [2]. Recommendations for further building improvement post occupancy must be provided.

consideration. When modelling the spaces, the fenestration of the notional building is now categorised as one of three types: side-lit, for use with buildings such as offices; top-lit, for warehouses; and no-lit, for buildings such as performance theatres. They are intended to create a more representative notional building. Improved definition of glazing will assist in evaluating new limits on solar gain

per unit area of the façade of a new building, with the intention of limiting the need for air conditioning, or to reduce the required capacity for installed systems. A limiting criterion has been added that applies to any space that is occupied and/or has mechanical cooling where the solar gain (aggregated from April to September) must be evaluated and checked against a benchmark value. This overcomes the anomaly of the previous regulations, where naturally ventilated spaces with high gains would struggle to comply whereas the same spaces with mechanical cooling were exempted. For designers to achieve the greatest flexibility and to encourage innovative applications – including external shading, solar control glass and thermal inertia – an approved Dynamic Simulation Model (DSM) would be needed (in place of SBEM). The freely downloadable NCM modelling guide [3] provides a useful (and accessible) reference to explore how the detail of the notional building is modelled.

Evidencing compliance

Once the design of the new building is complete, a copy of the predicted Building Emission Rate (BER) must be lodged with the Building Control Body (BCB), along with the specifications that will enable the building to meet the TER. This is to allow the BCB to identify aspects of the design that may materially affect the eventual performance of the building and so allow key attributes to be monitored through the whole project development. Following construction of the building, the as-built BER must now match or exceed the as-designed BER. This would

include input from building permeability tests and performance details that have altered during the procurement and construction process. The SBEM software that generates the BER will identify the design features that are critical to achieving compliance. If changes are made to the specifications lodged with the BCB, a list of changes must be handed over with a certificate signed off by a 'suitably accredited' energy assessor. Developers have the freedom to vary the specification, so long as the same overall level of CO₂ emissions is achieved or bettered. This may be seen as one of the most significant elements of Part L 2010, and looks set to fundamentally change approaches to 'value engineering' and alterations to specifications as construction progresses. This is an attempt to ensure that the actual building and its carbon emissions match those presented at the design stage.

Systems performance

The new *Non-domestic Building Services Compliance Guide* replaces the *Non-domestic HVAC Compliance 2007* guide, and the guide now encompasses lighting as well as pumps for heating and cooling systems.

It clearly states that 'it is important to note that many of these recommended minimum standards will need to be exceeded if the building regulations target carbon dioxide emission rate (TER) for new buildings is to be met', and so these values should not be used as design 'rules of thumb'. The values of minimum seasonal efficiencies for heat generating plant have been slightly enhanced (by a few per cent) to take account of expectations of improved operation and biomass boilers are now explicitly included (75% seasonal efficiency compared with 86% for individual gas boilers).

Minimum standards for pumps have been included in this section in recognition of their making up a significant part of the background continuous energy use.

Lighting systems for principal areas in buildings have had minimum efficiency lifted by nearly 20% to 55 luminaire lumens per lamp watt and display lighting must be at a minimum 50% more efficient than the 2006 regulations at 22 luminaire lumens per lamp watt.

Operation and post-occupancy

There has been much discussion as to how well buildings truly perform once they are occupied when compared to the design expectation. Part L requires that 'effective controls be provided'. This includes controls to ensure that if a building has heating and

cooling, they cannot operate simultaneously in a given space with default condition for central plant being 'off'.

To provide a strong motivation to ensure that buildings perform as expected, commissioning and log books will play an increasingly important role. A commissioning plan should be handed to Building Control at the design stage that may use templates of BSRIA's Model Commissioning Plan to document the process. On handover of the building, the owner should receive a building log book which contains information about the fixed building services and their maintenance requirements 'so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances'. The log book should also include all the information used to calculate the TER and BER.

Recommendations contained in the Energy Performance Certificate (issued on construction of a new building) must also be included so that the owner is aware of any steps that can be taken to further improve the energy performance of the building. Energy efficiency levels claimed for any fixed building service should have test data certified by a notified body. Part L 2010 documentation states that it is 'reasonable' for Building Control to accept this information at 'face value'.

Metering of energy consumed continues to be a requirement, with a new rule that 'output of any renewable electrical energy generation system is to be separately monitored'. The methods for monitoring are set out in CIBSE's TM39: *Building Energy Metering 2009*.

The elephant in the room

It is widely accepted that if the UK is to meet its emissions reduction aspirations, there is a need to address the performance of existing buildings.

Under Part L2B: *Existing non-domestic Buildings*, the basic principle for existing buildings continues to be that whenever building work is carried out, elements of this work should meet certain minimum standards. There is no CO₂ target given, except for very large extensions to existing buildings. However, when carrying out building works, there is a requirement to make additional improvements to the fabric and services of the whole building to improve its energy consumption, and ensure the building complies with Part L.

The factors that trigger these consequential improvements are the same as for Part L 2006. Part L 2010 documentation states that the improvements should be 'practical and economically feasible', and sets out examples

of these. Potential improvements include upgrading heating, cooling or air handling systems that are more than fifteen years old; or installing energy metering.

Conclusion

The new regulations will provide an incremental improvement on the performance of new buildings, with the aim of reducing carbon emissions by 25% compared with 2006 values. Lessons have been learnt from the experience in applying previous regulations, resulting in a more representative benchmarking procedure whilst enhancing the opportunities for measurable innovation.

By providing greater emphasis on properly informed building commissioning and operation, and through evidencing actual building performance, the actual outcomes may have more chance of meeting the aspirations set in the virtual world of computer models. Time (and practice) will tell if this increment is enough in the quest for 2019 'zero carbon'.

© Tim Dwyer

With thanks to Mitsubishi Electric for providing material for this article.

References

1. National Calculation Methodology (NCM) <http://www.ncm.bre.co.uk/>
2. CIBSE TM 31 Building Log Book Toolkit, CIBSE 2006
3. NCM modelling guide (for buildings other than dwellings in England and Wales) 2010 Edition May 2010 - www.2010ncm.bre.co.uk/filelibrary/NCM_Modelling_Guide_2010_edition.pdf

Further Reading

All the documents associated with the Building Regulations are freely downloadable through www.planningportal.gov.uk/approveddocuments

To read about the NCM see www.2010ncm.bre.co.uk This is the website for the Simplified Building Energy Model (SBEM) including a user manual and software.

An excellent manual that considers the implementation of Part L is BRE's *Guide to Part L of the Building Regulations - Conservation of fuel and power 2010 Edition*

The CIBSE TM 31 *Building Log Book Toolkit* provides detailed guidance on the scope, structure and contents of the log book, who should write it and who should keep it up to date including standard templates and worked examples.

Module 24

January 2011



1. When is the aim for new non-domestic buildings to be 'zero carbon'?

- A 2010
- B 2012
- C 2016
- D 2019
- E 2020

2. Which of the five criteria is a regulation?

- A BER<=TER
- B Design flexibility
- C Limiting the effects of 'solar gain' in summer
- D Quality of construction & commissioning
- E Providing information / O&M instructions

3. What is the minimum seasonal efficiency for biomass boilers?

- A 25%
- B 50%
- C 75%
- D 86%
- E 92%

4. By how much is it aimed to reduce overall carbon emissions compared with the 2006 regulations in new buildings?

- A 5%
- B 10%
- C 15%
- D 20%
- E 25%

5. What should be the minimum efficacy of lighting serving the main areas of buildings?

- A 20 luminaire lumens per lamp watt
- B 22 luminaire lumens per lamp watt
- C 50 luminaire lumens per lamp watt
- D 55 luminaire lumens per lamp watt
- E 75 luminaire lumens per lamp watt

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Aircraft Air Handling's 260mm-high classroom ventilation units: silenced to nr25; plate recuperator 60% efficient; air volume 0-500 litres. Heating: LPHW/ELECTRIC. Cooling: CW/DX. Larger air volumes and bespoke units are available.

● For more info visit www.aircraftairhandling.com



BG Controls wins two top Chamber of Commerce awards

Leading building controls specialist BG Controls has scored a double whammy at this year's Barnsley & Rotherham Business Awards and has been awarded the 'Business Growth Award' and the 'Excellence in Manufacturing Award'. The Awards, run by the Chamber of Commerce, saw the cream of South Yorkshire firms doing battle for 10 prestigious prizes. This year's winners were announced at a black-tie award ceremony hosted by BBC's *Look North* co-presenter Harry Gration at Rotherham's Magna Centre recently.

● For more information call 01909 517460 or visit www.bgcontrols.co.uk



Solar hot water from MHS Boilers at Teddington School

MHS Boilers has recently supplied 36 square metres of ELCO AURON DF evacuated tube solar collectors and two stainless steel pre-heated solar vessels to the new Teddington School, situated on the banks of the River Thames opposite Trowlock Island, in Middlesex. The £37 million school, which opened for the new school term in September, was built by Mace. BDP was the architect, as well as civil and structural engineer, building services engineer, lighting and acoustics consultant, interior and FF&E designer and landscape architect.

● For more information visit www.mhsboilers.com

Titon products are waves ahead at conversion of historic Beachy Head lighthouse

The recently opened Belle Tout Lighthouse hotel at Beachy Head has been fitted with Trimvent Select trickle vents and grilles and Titon Autolatch window restrictors. Defender and Sterling hinges by Securistyle and tri-coated RAIL espagnolettes by Maco have also been supplied by Titon. As part of the conversion the hotel was fitted with Accoya timber-framed windows that were chosen for their strength, durability and a minimum life span of 60 years.

● For more information call 01206 713800 or visit www.titon.co.uk



Dimplex heat pumps to create mega heat at college

A college campus under construction in Luton has used Dimplex ground source heat pumps to help meet its twin objectives of energy efficiency and sustainability in a large-scale 1.5MW installation. As part of the Building Schools for the Future initiative, the £56 million development will see a new Luton Sixth Form College built on the site of the existing facility. Part of the brief for the new building was a commitment to sustainability, so renewable heating was a high priority.

● For more information call 01489 773336 or visit www.dimplex.co.uk

Stokvis delivers safe and simple hot water across Liverpool campuses

An eight-year programme of improvement work carried out across a wide diversity of buildings occupied by the University of Liverpool on three separate campuses has seen Stokvis Energy Systems supplying its plate heat exchangers to guarantee both the quality and security of the domestic hot water provision. Dozens of Econoplate units have been installed in students' halls of residences, lecture buildings and administrative offices located on the city centre, Sefton Park and Leahurst Campus site.

● For more information call 08707 707747 or visit www.stokvisboilers.com



New unit extends control to larger air handling units

Mitsubishi Electric has announced a new range of City Multi VRF Controllers for Air Handling Units (AHU), including a new size 500 unit, which allows connection to much larger AHU's and increases the range to 11-56kW cooling capacities. The new PAC-AH-M-J range, as well as supporting larger air handling units, also provides a higher level of air temperature control for both supply and return air systems, while adding new control options and

interfaces enabling connection to the extensive range of the company's VRF equipment.

● For more information call 01707 282880 or visit www.mitsubishielectric.co.uk/aircon



HygroMatik products installed in the new Circle Bath Hospital, Bath

HygroMatik products have been installed at the new Circle Bath Hospital. Designed by architects, Foster + Partners, Circle is a privately funded initiative, which is building a chain of health campuses in the UK that will place patients at the centre of a new approach to healthcare. A HygroMatik rooftop box was fitted to provide steam-generated humidification to a constant volume ventilation system supplying imaging rooms including: MRI, X-ray and endoscopy suites. HygroMatik is particularly well known for its high levels of customer service offering.

● For more information call 02380 443127 or visit www.hygroamatik.co.uk



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Church warms to superior DRU heating

DRU Kamara powered flue gas wall heaters have been deployed as the main source of heating as part of a prestigious £1 million church refurbishment project in Birkenhead, Merseyside. Wirral Christian Centre has been active on the Wirral since 1973, running a Christian community centre with child day care facilities from a building that was originally the local children's hospital.



To accommodate its growing congregation, it recently acquired the formerly derelict Oxtou Congregational Church. The building has been completely restored and can now accommodate a congregation of up to 500 people.

● For more information call Niall Deiraniya on 0161 7938700 or email n.deiraniya@drufire.co.uk

Natural ventilation control evolves with WindowMaster Motorlink

WindowMaster, Europe's largest provider of natural ventilation solutions, has launched its MotorLink automated window solution onto the open market in the UK. It provides a safe window control option for the facade and building controls industries.



The operation of buildings accounts for 40 per cent of all energy consumption in Europe. Because this energy is still generated primarily from coal-based

sources it creates high CO₂ emissions. Automated natural ventilation or hybrid systems with mechanical and natural ventilation can help reduce the carbon footprint of a building.

● For more information call 01536 510990 or visit www.windowmaster.com

Innovation and efficiency from Clyde's new Alkon boilers

The new Alkon range of aluminium condensing boilers from Clyde Energy Solutions offers an exceptional price/performance package for its class.

Available in wall-hung and floor-standing models, Alkon boilers have a fully modulating pre-mix gas burner, together with an integral pump, which also modulates to match flow rate to heat output for even greater operating efficiency. All models are fitted with a combustion air fan and venturi for highly accurate control and mix of volumes of gas and air prior to ignition.



● For more information call 01342 305535 or visit www.clyde4heat.co.uk



New Cooper Lighting and Safety bulkhead luminaire features tough IP65 housing

Cooper Lighting and Safety, a business unit of Cooper Safety, has introduced a new version of its popular Patriot bulkhead compact fluorescent luminaire, offering a choice of sizes and additional lamp options to complement its renowned vandal-resistant IP65 polycarbonate housing. Providing a robust, durable and energy-efficient lighting solution for use in interior or exterior applications, Patriot 2 is equipped with opal or prismatic polycarbonate diffusers and a high-quality gasket for life-long IP65 protection against the ingress of dust or water.

● For more information call 01302 303200 or visit www.cooper-ls.com

Ventilation testing to Part F of the Building Regulations

The Kestrel 4200 Pocket Air Flow Meter has been designed specifically for HVAC applications. Features include an automatic volume air flow measurement, external temperature sensor, relative humidity measurement, absolute pressure and more. They have powerful data logger capability that records 1,600 sets of measurements at user-selectable time intervals. This data can be viewed onscreen, or uploaded to a PC for in-depth analysis via a user-friendly USB interface or via Bluetooth.

Units come with a certificate of conformity and a five-year manufacturer's warranty.

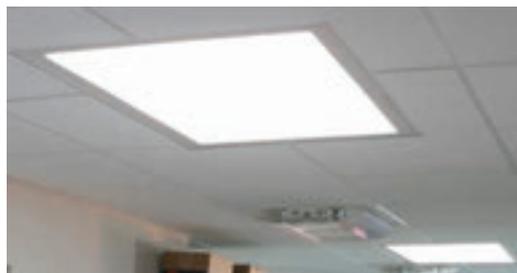
● For more information call 01590 679755 or visit www.r-p-r.co.uk



Passivent goes large with daylight

An innovative development in rooflight technology, that provides a realistic, effective option to maximize natural daylight in commercial and public environments, has been pioneered by Passivent Ltd. The company, already the UK's leading supplier of strategies for controlling natural forces to minimize energy consumption while creating appropriate working conditions, offers its new Sunscoop Square Ducted rooflight which provides almost as much natural light in even the darkest areas of a room as a bright summer day.

● For more information call 01732 850 770 or email info@passivent.com



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Cooper Lighting's new recessed adjustable spotlights provide low-energy highlighting

Cooper Lighting and Safety, a business unit of Cooper Safety, has introduced a new range of recessed adjustable spotlights that offer the lighting designer a versatile solution for highlighting in retail, commercial and hospitality environments. Available in single, twin, triple and quad configurations, the RXA spotlights use the latest multi-die LED technology to reduce energy consumption and



maintenance costs while providing high-quality illumination with no UV or IR output. The spotlights can be specified with beam angles of 16°, 24° or 40°.

● For more information call 01302 303200 or visit www.cooper-ls.com

Space Ray introduces new super high-efficiency tube heaters

Space-Ray has introduced a super high efficiency line of ECA approved qualified gas-fired radiant linear and U-tube heaters, with capacities from 23 kW to 47 kW. Available in both natural or propane gas, the CE-approved ADU/ADL Advantage Series High Efficiency Radiant Tube Heaters have a higher radiant efficiency rating than comparable heaters for more efficient, comfortable and cost saving heating. The five new ADL Series tube heaters are available with a linear design, while the five new ADU Series heaters come with a u-tube design.

● For more information call 01473 830551 or visit www.spaceray.co.uk



Dimplex moves towards zero carbon with new solar PV packs

Dimplex Renewables is adding to its extensive portfolio with the launch of a range of solar photovoltaic (PV) packages. Containing polycrystalline modules and everything required for installation, the kits offer a complete PV solution for residential and light commercial buildings, providing clean, locally-generated energy and reducing carbon emissions. The kits contain everything that's needed to install and connect the modules, including G83 approved inverter, roof mounting system, cabling, isolators and generation meter.

● For more information call 01489 773336 or visit www.dimplex.co.uk

Titon chosen for award-winning green development

Titon's HRV1 Q Plus and HRV2 Q Plus are being installed in 105 two and three bedroom homes at the multi-award winning Linden Homes' Graylingwell Park development in Chichester. The ultra efficient ventilation units (with heat recovery) have efficiencies of up to 91% and are helping all the houses on the development gain carbon neutral status. The site won the 'Best Low or Zero Carbon Initiative' and Galliford Try/Linden Homes 'Best Housebuilder 2010' at the recent Housebuilder Awards.

● For more information call 01206 713800 or visit www.titon.co.uk



Durapipe Superflo cools its way to success

Durapipe SuperFLO pipework has been specified within a new manufacturing facility at the headquarters of a world-leading printing company in Cambridge. Printing solutions company Xaar, briefed leading environmental control specialists Comec, to construct a temperature controlled 'clean room' environment within the new inkjet manufacturing facility. The room needs to be dust-free and at a consistent temperature in order for the spray-on printing process to work most effectively. Comec has been extremely impressed with the performance and quality of SuperFLO pipework in the past.

● For more information call 01543 279909 or visit www.durapipe.co.uk

CIAT launches new Airduo range

CIAT Ozonair Ltd has launched AirDuo, a range of split air-to-air cooling units and reversible heat pumps designed to combine high efficiency with environmental friendliness. The range comprises 14 models with cooling capacities from 20 to 135 kW and heating capacities from 22 to 145 kW. All models employ R410A refrigerant and have casing made from polyester-painted, galvanised sheet steel panels on self-supporting frames. Depending on size, models also feature either one or two independent refrigerating circuits and one or two new generation high output scroll compressors.

● For more information call 01883 621015 or visit www.ciatozonair.co.uk



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Eyekon for eye appeal

This wall mounted version of the recently launched Thorn Eyekon range of exterior bulkheads really emphasises the excellent eye-appeal the range embodies. Designed for use with compact fluorescent (9W- 55W) or metal halide (20W-70W) lamps the circular fitting offers, in addition to two sizes and three colour options, a choice of four bezel styles to suit every kind of exterior scheme. The bulkheads are vandal resistant, too – the tough diffuser being attached firmly to the die-cast aluminium body by tamper resistant bolts, forming an IP65 seal.

● For more information visit www.thornlighting.co.uk

SE Controls global expansion

Taking its extensive knowledge in adaptive natural ventilation and smoke control, SE Controls has furthered its network of partners around the globe by appointing a new company in Brazil. SE Controls already operate in South Africa, China, Hong Kong and Bahrain, where there is rapid growth in building construction. Each partner takes the the same set of core competencies as SE Controls – namely design, manufacture, distribution, project management, installation, commissioning, maintenance and training. Together with the latest modelling software, solutions can be easily identified, specified and implemented.

● For more information call 01543 443060 or visit www.secontrols.com



JS Air Curtains Olympic heat

JS Air Curtains has supplied eight Rund air curtains for the new concourse entrances at the Olympic rail links at Stratford and Ebbsfleet International stations. Two entrances at both stations had identical air curtain systems installed, each consisting of two 1.5m Rund air curtains. Peter Capron, of Morgan Sindall, said: 'This high profile project in the shadows of the Olympic Village demanded air curtains that would complement our entrance façade design. The Rund model from JS Air Curtains fulfilled these requirements.'

● For more information call 01903 858656 or email mverney@jsaircurtains.com

Victaulic launches installation-ready Style 177 QuickVic Flexible Coupling

Victaulic, the world's leading manufacturer of mechanical pipe joining systems, has introduced the Style 177 QuickVic® Flexible Coupling to Europe. An extension of Victaulic's popular patented installation-ready product line, the new coupling installs in half the time as standard flexible grooved couplings and features the same high-performance capabilities. Installation-ready technology – with no loose parts and no requirement to disassemble before installation – gives contractors, engineers and owners a competitive edge that is unmatched in the industry.

● For more information visit www.victaulic.com/installationready



National Savings and Investments cuts lighting consumption by 40 per cent, thanks to Ex-Or

NS&I is benefiting from a 40 per cent cut in lighting consumption at its offices in Blackpool. This follows the installation of lighting management systems from Ex-Or carried out during an upgrade designed to reduce operational costs and improve energy efficiency. Ex-Or's MLS Digital Managed Lighting System played a significant part in helping NS&I lift their Energy Performance Certificate rating of the building from a D to a B rating, and to raise its BREEAM ranking from "pass" to "very good".

● For more information call 01942 719229 or visit www.ex-or.com

Grundfos helps Tyneside get new health and fitness centre

The Blyndon area of Gateshead has benefited from the opening of a new £18m healthcare and leisure complex. These shared facilities are a joint NHS and local council development. Leisure facilities include a large fully equipped fitness suite, a 6-lane 25m metre pool, plus a learner pool, a multi-purpose room and changing facilities. Supporting the infrastructure and ensuring that the M&E pump requirements meet the high standard of the new facility are a wide range of Grundfos energy-efficient pumps.

● For more information call 01525 850000 or email uk-sales@grundfos.com



New Impro door controller from BPT

BPT Security Systems has launched a fully upgraded door controller for use with its top range Impro IXP220 and IXP400i access control systems. A highly cost effective terminal, the Impro iTRT has been designed to provide access control to one door in Full Anti-Passback Mode using two readers on the door, or two doors in single entry mode by using one reader per door and push button to exit. The iTRT controller works with Wiegand, Antenna, Infrared, RF and third-party readers including MiFare for a truly flexible system.

● For more information call 01442 230800 or visit www.bpt.co.uk



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Greenest building in China adopts Flexible Space concept

AET Flexible Space has announced its participation in the Parkview Green development, Beijing. A recent winner of the MIPIM Asia 2010 'Green Building' Award, this landmark project has won architectural and environmental acclaim and is on track to become China's first building to achieve the highest-level LEED (Leadership in Energy and Environmental Design) Platinum certification. The rating system sets the highest standards for environmental sustainability, and Parkview Green proposes to achieve an overall 40% decrease in energy use, saving an estimated 5,000 tonnes of carbon annually.

● For more details call 01342 310400 or email gbt@flexiblespace.com

Prysmian wins £15 million turnkey contract

World-leading cable manufacturer Prysmian Cables & Systems has won the contract to supply and install the land connection route for Gwynt y Môr – one of the largest offshore wind farm projects under construction anywhere in the world. At £15 million the contract is the largest so far awarded in the UK by RWE npower renewables and represents a significant investment in the local economy as all the cable will be manufactured at Prysmian's plant in Wrexham, north Wales.

● For more information call 01238 0295029 or visit www.prysmian.co.uk



Oventrop takes control of Bolton's New College and sixth form development

Now open for business, Bolton's new £70 million College and Sixth Form development, comprising three educational buildings on one campus, uses a broad mix of Oventrop valves for heating and cooling control. These include Cocon Q pressure independent 2-port control valves, differential pressure control sets, TRV/Combi 4 combinations for radiators and Aquastrom T Plus multi-function DHW valves as well as a wide selection of general valves. The College is one of the North West's largest providers of vocational training and further education.

● For more information call 01256 330441 or email sales@oventrop.co.uk



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Events & Training

NATIONAL EVENTS AND CONFERENCES

- **12 Jan 2011** BIM – the building designer's dream ... or a communications nightmare? London
ASHRAE and the HVCA meeting. www.cibsetraining.co.uk
- **12-13 Jan 2011** The Arc Show London
Architecture, retail and commercial lighting. www.thearcshow.com
- **26-27 Jan 2011** University of Salford's energy house and retrofitting conference Salford
How to sustainably retrofit existing housing stock. s.d.waterworth@salford.ac.uk
- **09 Feb 2011** CIBSE Building Performance Awards London
The best-performing buildings and people in the sector. www.cibseawards.org
- **17 Feb 2011** Planning for solar farms: making money by cultivating a greener world Watford
Planning requirements and benefits of installing large-scale PV. events@bre.co.uk
- **01-03 Mar 2011** Ecobuild 2011 London
Sustainable design, construction and the built environment. www.ecobuild.co.uk

SOCIETY OF LIGHT AND LIGHTING

- **12 Jan 2011** Young Lighter of the Year London
Winner to be announced at Arc 2011. www.sll.org.uk
- **27 Jan 2011** SLL Lighting Masterclass Cardiff
The Low Carbon Challenge. www.sll.org.uk
- **24 Feb 2011** SLL Lighting Masterclass Norwich
The Low Carbon Challenge. www.sll.org.uk
- **24 Feb 2011** LED Lighting High Wycombe
Lighting control, lumen values, watt energy. www.sll.org.uk
- **15 Mar 2011** Is Light a Hazard? London www.sll.org.uk

CIBSE REGIONS

- **13 Jan 2011** Making M&E services easier and safer to install, use and maintain Bristol

An exploration of recurring issues. millham.orchard@tiscali.co.uk

- **18 Jan 2011** Society of Façade Engineering – evening technical meeting London
Further details to be announced. sfe@cibse.org

- **18 Jan 2011** Services Infrastructure & Smart Metering Northampton
Further details to be announced. densel.davy@ntlworld.com

- **19 Jan 2011** CIBSE HCSE meeting: achieving practical carbon reductions in supermarkets Croydon
Presentation by Tesco looking at the opportunities available. David.Frank@tesco.com 07801 869586.

- **20 Jan 2011** Thermostatic Control Energy Manchester
Speaker: Bill Smith, of Home Engineering. Malcolm.Atherton@home-engineering.co.uk 0161 872 4811.

- **01 Feb 2011** Commissioning and its interface with BREEAM Cardiff
Speakers: Martin Slape and Paul Fennings. jno@neiloliver.plus.com

- **08 Mar 2011** BREEAM Cardiff
Review of the current requirements and future anticipated changes. jno@neiloliver.plus.com

- **12 Apr 2011** NEC3 form of contract Cardiff
Overview and review of the NEC3 field of contract documentation. jno@neiloliver.plus.com

CIBSE/OTHER TRAINING

- **13 Jan 2011** CPD Part L update for LCEAs Birmingham
Looking at the updates to Part L. www.cibsetraining.co.uk
- **27 Jan 2011** CPD Part L update for LCEAs London
Looking at the updates to Part L. www.cibsetraining.co.uk
- **31 Jan 2011** Air conditioning inspection for buildings London
How to undertake inspections and become accredited by CIBSE. www.cibsetraining.co.uk
- **07-08 Feb 2011** Low Carbon Energy Assessor EPC Training London
www.cibsetraining.co.uk
- **18 Feb 2011** Opportunities to generate income from the Renewable Heat Incentive Watford
An overview of the RHI. events@bre.co.uk



Th!nkFM will be launched at the East Midlands Conference Centre

FM conference to make delegates Th!nk

The British Institute of Facilities Management (BIFM) has announced the launch of Th!nkFM – a skills sharing and networking hub for FM practitioners.

The event will be staged on 5 to 6 April 2011 at the East Midlands Conference Centre in Nottingham.

The conference, *Delivering value in facilities management: innovation and adaptation for today's economics*, should prepare delegates for changing times by delivering skills, data and industry contacts.

Three 'hubs' will be created around the venue, each dealing

with a specific and relevant FM subject area. Within each Hub will be a conference room, a reading/data area, and a networking and learning stand where delegates can meet experts and share best practice with colleagues.

Hub One will deal with the financial cuts facing all businesses, Hub Two will delve into communication and technology affecting industry, and Hub Three will investigate sustainable business.

For more information call 08701 632804, email conference@thinkfm.com or visit www.thinkfm.com

CPD TRAINING

Visit www.cibsetraining.co.uk, call 020 7675 5211 or email eventbookings@cibse.org.

BUSINESS SKILLS AND MANAGEMENT

- **19 Jan 2011** Successful Design Management London

ELECTRICAL SERVICES

- **12 Jan 2011** Building electrics basics 1: choosing electrical supplies London
- **13 Jan 2011** Building electrics basics 2: distribution systems and equipment London

- **25-27 Jan 2011** Electrical Services Explained Newcastle

BUILDING SERVICES AND ENERGY EFFICIENCY

- **25 Jan 2011** Part L Building Regulations Manchester

FACILITIES MANAGEMENT

- **12 Jan 2011** Effective Maintenance Management London

FIRE SAFETY

- **14 Jan 2011** Smoke control: matching the method to the building London
- **19-21 Jan 2011** Detailed technical design of fire alarm systems London
- **26 Jan 2011** Fire detection and alarm systems for buildings – BS 5839 part 1 London
- **MECHANICAL SERVICES**
- **17-19 Jan 2011** Mechanical Services Explained Manchester
- **LIGHTING**
- **20 Jan 2011** Lighting basics 3: interior lighting applications London

CIBSE Training course programme for Jan-July 2011 now available online www.cibsetraining.co.uk

Send your event details to cbailey@cibsejournal.com

Senior Mechanical Engineer

£30-£35p/h, Middlesex

Our client is involved in innovative Building Services solutions and is the preferred choice with clients seeking low energy designs within the education, commercial, retail and healthcare industries. All applicants should possess the ability to demonstrate a strong interest in and experience in the execution of sustainable solutions, and will be responsible and accountable for the overall design, technical delivery, quality and management of projects within defined budget and timescales.

BAR 519/PA

Senior Mechanical Engineer

To £42p/h, London

Due to significant project wins on major overground and underground rail infrastructure projects, our client requires an additional Building Services engineer within their railway division. The successful applicant will be expected to design elements of projects to encompass 'on time and to budget' design outputs, ensuring all design detail is in compliance with LUL and British/European Standards and processes. The ideal candidate will be a degree qualified, chartered engineer, with previous experience as CRE on Network Rail Projects.

BAR 512/PA

Intermediate Electrical Engineer

Circa £30k + benefits, London

Our client is a leading multidisciplinary property and construction consultancy. The company employs 175 staff in 11 offices worldwide and requires an engineer to join and support their 25 strong MEP team. The successful candidate should be degree qualified with the ability to demonstrate experience in detailed design and documentation of electrical building services. In addition you should be IT literate, well presented, with excellent interpersonal, communication, and organisational skills.

BAR532/CB

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Princes Risborough - Associate Electrical Engineer, Senior Mechanical Engineer, Electrical Engineer and Mechanical Engineer

Bristol - Electrical Engineer, Mechanical Engineer

Applicants must have the experience and qualifications appropriate to the positions sought, plus well developed communication skills and a strong work ethic. Senior candidates should be able to demonstrate their ability to take projects successfully from inception to completion.

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Please note that candidates applying through recruitment agents will not be considered.

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For initial contact please write in enclosing their CV to Mehmet.Ozturk@mw Walsh.co.uk

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Happy New Year to our clients and candidates from the team at Blueprint!

Principal Building Energy Consultant | Surrey or London | £NEG! | ref: 8951
Our client is a blue chip practice with an impressive track record on some major UK and International schemes. They are looking for a qualified and experienced energy consultant with experience of EDSL TAS building energy modeling. Ideally degree qualified you will also have experience of other packages such as IES or Equest. Being certified as a Level 5 Low Carbon Energy Assessor would also be beneficial.

Sustainability / Environmental Engineer | Surrey | £NEG! | ref: 7478
Our client requires an experienced engineer to bolster and develop their green Building Design sector. Experience of passive and active solutions to sustainable building design and a grasp of the relevant regulations is ideal. You will be technically excellent and able to sell ideas / solutions to clients and colleagues.

Mechanical Design Engineer | London | to £50K+ | ref: 8774
Our client is looking to recruit a senior / principal level engineer to help build and develop a growing team. You will be technically sound, able to liaise with clients, carry out detailed design work and have worked with signature architects. This is a real opportunity to join a successful company and progress your career.

Senior Electrical Design Engineer – Data Centre | London | £NEG! | ref: 6412
Our client is an International consultancy looking to recruit a senior engineer. You will ideally be Chartered and have significant experience, with a particular focus in the data centre sector. Excellent support and development will be provided.

M&E Design Engineers – Airports | London | £NEG! | ref: 8823
We have several clients with existing and new Airport projects based in the UK and Overseas. We will be looking for intermediate, senior and principal level candidates in the New Year to be based at Heathrow or London. Previous aviation experience is an advantage. Contract or permanent.

For more information or a confidential discussion please contact Mark Butter

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You'll need technical design skills, and an interest in low energy and passive building design.

Senior / Principal Building Services Engineer, Edinburgh

Our ideal candidate will bring extensive experience of working on Healthcare projects.

Graduate Electrical Engineer, Birmingham

A great development opportunity, working on a range of project types. We're looking for the ability to learn new skills quickly, as well as some previous consultancy experience.

INTERNATIONAL ROLES

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SUSTAINABILITY AWARDS



INVESTORS IN PEOPLE

Variety is the spice of life

Building services veteran **Norrie Christie** reflects on a life of diversity since he joined the sector in 1959

'It's the numerous facets to building services that make it so interesting,' says Norrie Christie, a mechanical engineer working in the Glasgow offices of consultants, Rybka. He should know; he's been involved in the industry since 1959.

'I commenced with Kelvin Heating and Ventilating Co, a local contracting firm, but disliked my first day so much that I reckoned I'd leave at the end of the week.

'However, by the weekend I'd changed my mind.'

During that first week he was exposed to a variety of activities, from estimating to draughting, and he met architects and consultants, as well as suppliers.

Fifty-one years later, he says it's being constantly exposed to changes that retained his interest – plus a few changes of scenery.

'Building services has taken me all over Scotland, and it allowed my wife and I to experience life overseas for 12 years while working in Hong Kong, Qatar, Botswana and Saudi Arabia.

'In these locations, client needs and requirements differ widely and are dependant on weather conditions, ease of procuring spares and the level of local expertise in maintaining equipment. Installations in the Hebrides and Western Isles need to be robust, whereas sophistication is the order of the day in the Middle and Far East, while in the African bush, simple, easy-to-maintain systems are best suited.'

Christie refers to the constant need to adapt to changes as adding colour to life.

'It was certainly colourful working in Hong Kong. I was the only gweilo (foreigner) in an office of 450 Chinese, and with projects in Macau, Japan and mainland China, I learned to adjust quickly to change. One week you're hearing Cantonese, the next it's Portuguese, then Japanese and Mandarin.



"I disliked my first day so much I reckoned I'd leave at the end of the week. By the weekend I'd changed my mind"

'Uncertainty with language created difficulties and uncertainties, however, the common factor throughout was fellow engineers.

'Engineers tend to be the same the world over. They think out of the box, question what they're doing and are generally genuine folk.'

He returned to Scotland in 1996, where his quest for variety has been met working on design in the office and on site as a resident engineer.

The diversity of projects has been extensive too: a 1,600-seat concert hall, various schools and hospitals, a shooting lodge in the Scottish highlands and clean rooms in Ireland and England.

'The building services industry has been good to me,' adds Christie. 'It embraces such a wide range of activities. It also enabled me to meet the Emir of Qatar and the President of Botswana.'

Email people appointments/role profiles to cbailey@cibsejournal.com

Movers & Shakers



Bailey Maintenance, part of building services provider NG Bailey, has appointed **Jon**

Lucas as its strategic accounts director. Lucas will spearhead plans to expand the business. He was previously operations director at Carillion plc.



Building services provider SES has appointed its former chief operating officer, **Peter Lewis**, as its

new chief executive. He will be responsible for implementing the overall company strategy and the delivery of its longer-term growth plans. He first joined SES in 2001.



Building services company, Kimpton, has recently appointed two new staff.

Michael Leatherbarrow (left) is Kimpton's new key account manager, who will act as energy assessor to clients, while **Ross Mander** (right) will effectively fulfill the role of corporate social responsibility officer.



Keith Smith has been appointed as the British Electrotechnical and Allied Manufacturers

Association's (BEAMA) new installation sector deputy director. His key responsibilities will include co-ordinating activities across the industrial, single phase and cable management product groups of BEAMA, as well as taking the role of secretary to its Anti-Counterfeit Working Group.

The University of the West of England has awarded the Honorary Degree of Master of Arts to **Max Crofts** in recognition of his national and international leadership as president of the Royal Institution of Chartered Surveyors (RICS). Crofts was appointed as branch representative to RICS Junior Organisation National Committee

in 1972. He went on to be elected national chairman in 1981.



Carbon reduction company, Sustain, has appointed **Craig Jones** as senior associate. He will

advise clients in the building industry on embodied carbon. Jones joins from the University of Bath, where he created a building materials database called the Inventory of Carbon and Energy, which is used by more than 10,000 people worldwide.



Left to right: **Mark Alston**, **Steven Jeffers**, **Cedric Rodrigues**, **Michael Langan** and **Stephen Walshaw**

The energy management division (EMD) of sustainable power group, ENER-G, has appointed five senior managers to drive an international expansion programme. **Mike Langan** has been appointed general manager of ENER-G's consultancy division, CMR Consultants. **Steven Jeffers** has been promoted to general manager of ENER-G Efficiency. **Mark Alston** has joined from Centrica to lead the newly-created ENER-G Procurement business. The ENER-G Metering and Data Solutions business is now headed by **Stephen Walshaw**, and the ENER-G Controls business has appointed **Gary Dowsett** as director of business development and marketing.

Matt Jones BEng (Hons) CEng MCIBSE MIET has accepted an invitation to join Hoare Lea's partnership. Jones joined Hoare Lea in 2000. He will carry on operating from Oxford, where he will assist in the day-to-day running and development of the office, while also continuing with his heritage work.

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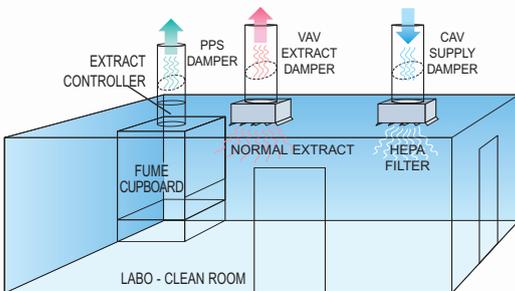


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