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JOURNAL



The official magazine of the Chartered Institution of Building Services Engineers

November 2013

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Saving lives



With fuel poverty on the rise, it's essential industry starts delivering on low-energy homes. **Nigel Banks** says there are already technical solutions available to carry out 'deep retrofits' at a reasonable cost

Let me introduce you to Jim. Jim is terminally ill and, as a result, is permanently hooked up to a dialysis machine, so he spends nearly all his time at home. He lives in a social housing property in Rotherham which, thanks to his landlord, has a new boiler, double glazing and loft insulation. However, he still can't afford to heat his home when it's cold outside.

Jim, like one in five homes in the UK, can no longer afford to heat his home. If you want to know what this is like, try turning your boiler off for a week this winter. Mine broke last year. Trying to keep warm takes over your life: you huddle around an electric heater; spend as much time as you can away from home, and it affects your physical and mental health.

On average over the last five years at least 7,800 people have died every year due to living in cold homes – four times more than the number who died on British roads in 2011.

My company Keepmoat obtained funding from the Technology Strategy Board to reduce carbon emissions from six homes in Rotherham by 80% and take them up to the 2050 standard. Jim's house was one of these but he didn't want to be disturbed during works, so we came up with a plan that meant we would only spend four hours inside his home, yet reduce energy bills by 75%. How was this achieved?

- Digging a trench around the foundations of his house and insulating the ground beneath
- Wrapping his house in external wall insulation
- Replacing the glass with triple-glazed units
- Topping up the loft insulation
- Extending the eaves and using super insulants to prevent thermal bridging,
- Sealing around service penetrations

- Upgrading his lighting
- Fitting 3kW of solar PV to his roof

All this cost about £25,000, but I believe Jim lived a longer, happier life thanks to his warmer home. Spending £25,000 on every house in the UK isn't affordable; it would cost £650 bn (more than total government annual income from all taxes). However, this was a sixth of the budget of the other homes retrofitted in the competition, which didn't do as well (following detailed monitoring, Keepmoat delivered three of the top four performing homes out of the 37 which were successfully monitored).

I believe we can hit the similar performance for about £10,000 per house, which would cost about £260 bn, or £7 bn a year between now and 2050. £7 bn a year is a lot of money but we currently spend £36 bn/yr in bill payments to our big six energy firms, and the NHS spends more than £850 m/yr treating illness and disease from cold homes.

Deep retrofit to the UK housing stock is 'a no brainer': it is one of the most cost-effective ways to reduce carbon emissions, tackle fuel poverty and ensure energy security. We have all the technical solutions we need to do this.

However, how do we persuade people like Jim to endure the disruption, or even be bothered to get the works done? Here's some tips:

- Do a good job on a key community leader's home, others will follow and a tipping point will be reached
- Make improvements during other work (and bring consequential improvements into building regs)
- Demonstrate added value, improve aesthetics, or improve quality of life – that gets local traction.

NIGEL BANKS MCIBSE is group sustainability director at Keepmoat

CONTENTS

4 THE RULES OF THE GAME

A complete guide to the legislation that affects the building services industry

10 CLOSING THE GAP

Four manufacturers suggest ways of closing the performance gap in our sponsored feature

14 PRODUCTS AND SERVICES

The latest news and offerings from industry suppliers



PLAYING BY THE RULES

Under the government's Red Tape Challenge, legislation is being overhauled to reduce burdens on business and drive the economy forward. Don't worry, there's plenty left.

Andrew Brister reports on regulations still in play



The government is no fan of regulation. Indeed, the coalition is committed to the removal of red tape in an effort to get the economy moving. And with construction accounting for more than 6% of the UK's GDP, it's no surprise to see changes to Building Regulations reflecting this ambition to remove the administrative burden on companies.

The amendments, some of which came in on 6 April, followed a consultation exercise carried out in 2012. Don Foster, the then minister in charge of Building Regulations, has claimed that the changes will save some £50 m by reducing red tape and freeing up businesses.

Measures include the harmonisation of fire

safety requirements across the country by scrapping local fire safety acts. Up to now, local authorities have demanded specific, but often different, measures on top of the Building Regulations. The removal of these 23 acts will make it much simpler for building companies to comply.

There has also been a relaxation of some of the more stringent requirements relating to Part P – which covers electrical safety. This will allow smaller-scale electrical works to be undertaken by electricians who aren't registered with approved schemes without having to be checked by Building Control.

The latest moves follow the government's earlier decision to abandon plans to require 'consequential improvements' to the

energy efficiency of a dwelling when other building work, such as loft extensions or windows and boiler replacement, was undertaken. Research from the Energy Saving Trust suggested that consequential improvements would put off 38% of small and medium firms and 34% of households from going ahead with building work on their property.

Yet, despite these dilutions, readers need to keep abreast of a raft of legislation, coming from both the UK and the EU. We take a look at some of the more relevant ones here. ➤

Part L, zero carbon and Allowable Solutions

CIBSE members need no introduction to Part L of the Building Regulations. It remains the key legislative tool in the government's drive towards energy efficiency in dwellings and other building types. Part L will be featured in greater detail in next month's issue, but it's worth highlighting some of the key points here.

This summer the government finally unveiled eagerly awaited amendments to Part L's energy standards, but delayed introduction until April 2014. They were originally scheduled for October 2013.

The government predicts the changes will help lower fuel bills and deliver savings of £16 m per year for businesses, along with 6.4 m tonnes of CO₂ through a 6% improvement on 2010 housing standards for new-build homes. This is slightly below the 8% target originally planned.

The CO₂ target for new non-domestic buildings has also been strengthened, with a 9% improvement on 2010 standards. The original government proposal was for a 20% uplift for non-domestic buildings.

Part L is a crucial step towards the 2016 zero carbon

homes target, and the 2019 zero carbon target for all other building types.

With 2016 looming large on the horizon, housebuilders are calling for clear guidance on what is permitted and the government recognises that it will not always be cost-effective, affordable or technically feasible for housebuilders to reduce all carbon emissions through on-site measures like fabric insulation, energy efficient services and renewable energy generation.

Step forward so-called 'Allowable Solutions' – off-site projects or measures for reducing carbon emissions that housebuilders may support to achieve the zero carbon homes standard. Consultation has just finished on government proposals on the main principles, price caps and processes for the delivery of Allowable Solutions.

In tandem with this, the government is also consulting on its Housing Standards Review. The government believes that there are too many housing standards, in addition to the Building Regulations, that slow down development of new homes.

The review could see the end of standards such as the Code for

Sustainable Homes, Secured by Design, Lifetime Homes, Standards and Quality in Development and the Homes and Communities Agency's Housing Quality Indicators.

The move could also end planning laws that have enabled local authorities to set energy efficiency standards on developments in their area that exceed Building Regulations, as well as ask for a proportion of energy used in developments to be from renewable or low carbon energy sources – the so-called Merton Rule.

While the non-domestic zero carbon target is some way further off, the UK Green Building Council (UKGBC) has recently launched a task group to help define and build support for a definition of zero carbon that works for industry. The task group will examine the technical detail of the zero carbon definition – including metrics, the Allowable Solutions framework, the issue of unregulated energy and the relationship of zero carbon to the EU's 'nearly zero energy buildings' 2020 policy (see overleaf).

See CIBSE response to Allowable Solutions and Housing Standards Review at cibse.org/technicaljournals

Nearly zero energy buildings

The EU's carbon reduction plan sets ambitious targets for energy efficiency and environmental impact – by 2020 it is looking to achieve a 20% reduction in carbon emissions (from 1990 levels), a 20% share of energy produced by renewable sources and 20% reduction in primary energy use.

The EU refers to 'nearly zero energy' in its 2020 targets. Directive 2010/31/EU – the EPBD (Energy Performance of Buildings Directive) recast – requires

that 'Member States shall ensure that by 31 December 2020 all new buildings are nearly zero-energy buildings; and after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero energy buildings'. Member States shall 'draw up national plans for increasing the number of nearly zero-energy buildings' and 'following the leading example of the public sector, develop policies and take measures such as the setting of targets in order to stimulate

the transformation of buildings that are refurbished into nearly zero energy buildings'.

A nearly zero energy building is defined in Article 2 of the EPBD recast as 'a building that has a very high-energy performance. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby'.

Products not compliant with minimum seasonal efficiency legislation cannot carry the CE mark and thus can no longer be imported

Ecodesign requirements

To help achieve the 2020 targets, the Energy related Products (ErP) Directive has been introduced, specifying minimum efficiency requirements that must be integrated into energy-using products.

The ErP Directive (2009/125/EC: Ecodesign) is a compulsory programme that established eco-design requirements initially for residential lighting and consumer electronics – but from 2013 has introduced them for air conditioning systems too.

Products not compliant with minimum seasonal efficiency legislation cannot carry the CE mark, and thus can no longer be imported or sold in Europe (see below).

On the lighting side, extensive changes such as the phase-out of the incandescent lamp as well as new requirements for fluorescent and high intensity discharge lamps, have had an effect on the product portfolio of

manufacturers and ultimately on the choice of the specifier and end-user.

From 1 September 2013, minimum efficiency requirements for directional lamps (having at least 80% of its total light output in a cone of 120°) and LED lamps (including LED modules) came into effect. The energy labelling for lamps will be newly regulated and broadened in scope, and will be newly introduced for luminaires from the 1 March 2014.

On the air conditioning side, so far only products of less than 12kW are governed by the ErP Directive – typically high-end residential and light commercial applications.

Energy efficiency

The government has just consulted on the Energy Savings Opportunity Scheme (ESOS), proposed as part of the UK's implementation of the EU Energy Efficiency Directive. It aims to enable companies to identify opportunities to save money on energy bills through improved energy efficiency.

Under the scheme, which delivers the energy audit requirements of the Directive, large private-sector enterprises will be required to undertake ESOS assessments to identify cost-effective ways to invest in energy efficiency, helping reduce energy bills and increase competitiveness.

Article 8 of the Directive requires all Member States to introduce a regime of regular energy audits for 'large enterprises' (non-SMEs) to promote the uptake of cost-effective energy efficiency measures. These audits must be undertaken by 5 December 2015, and then every four years thereafter.

The scheme is intended to stimulate uptake of cost-effective ways to save energy. DECC believes that the proposed scheme will drive take up of energy efficiency improvements, and estimates that the additional energy savings could benefit the UK by £1.9bn.

Those organisations already collecting data under the Carbon Reduction Commitment (CRC, see overleaf) will be able to use that data under the ESOS. Also, those organisations whose energy use is predominantly in buildings will be able to use information from Green Deal assessments or Display Energy Certificates within the scheme.

CE marking

The construction industry is facing the most significant change for a decade in the way in which products are sold in Europe. From 1 July 2013, under the Construction Products Regulation 2011 (CPR), it became mandatory for manufacturers to apply CE marking to any products covered by a harmonised European





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➤ standard (hEN) or European Technical Assessment (ETA). Failure to do so will mean that products affected by the change will no longer be placed on the EU market.

This is a major change, as affixing of CE marking under the provisions of the existing Construction Products Directive (CPD) has always been voluntary in the UK. For those already CE marking under the CPD, the

F Gas and Biocidal Products Regulations

With HCFC gases, otherwise known as F gases, set to be phased out from 1 January 2015, those operating air conditioning and refrigeration equipment containing such gases need to act now. While it will be possible to operate such equipment after the phase-out date, it will not be possible to service the equipment or refill the gases. A strategy for all plant, such as gas replacement, needs to be devised to avoid being caught out.

Those using air conditioning systems containing biocides also need to be aware that the EU Biocidal Products Regulation (BPR) entered into EU law on 1 September this year. Biocidal active substances and biocidal products are defined as any product that exerts an effect on harmful organisms. This 'effect' is expansively defined to include destruction, deterrence, rendering harmless, or preventing the action.

The most significant impact on industry is likely to be the introduction of a 'recognised suppliers list'. This is a list of all suppliers of biocidal active substances that have contributed to the cost of the active substance approval, and is maintained by the European Chemicals Agency (ECHA). Starting on 1 September 2015, only biocidal products containing active substances supplied by a recognised supplier can legally be placed upon the EU market.

Those using air conditioning systems containing biocides need to be aware that the EU Biocidal Products Regulation entered into EU law on 1 September

transition should be straightforward.

It's worth remembering that CE marking is only a consistent way of expressing a product's properties. It is effectively a passport, allowing a product to be placed on the market in any member state. Rarely – if ever – is CE marking evidence that the product is fit for a particular purpose.

Responsibility for ensuring that a product has the correct characteristics for a particular application rests with designers, contractors and local building authorities.

Greenhouse Gas Reporting

You could be forgiven for thinking that the CRC Energy Efficiency Scheme (formerly known as the Carbon Reduction Commitment) had fallen by the wayside. Certainly, now that the league tables are no longer to be published, it is less high-profile in the press. It still exists, in a simplified form designed to provide greater business certainty and less overlap with other schemes. Phase 2 is expected to lead to a 55% reduction in administrative costs, which equates to £275 million up to 2030.

Organisations that participate (those consuming over 6,000 MWh of electricity per year) within the CRC are required to monitor their energy use, and report their energy supplies annually. Participants must purchase and surrender allowances to offset their emissions. Allowances can either be bought at annual fixed-price sales, or traded on the secondary market. One allowance must be surrendered for each tonne of CO₂ emitted. The allowance price in Phase 1 has been set at £12 per tonne of CO₂.

From 1 October 2013, the Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013 requires all UK quoted companies to report on their greenhouse gas emissions as part of their annual Directors' Report. That requirement affects all UK incorporated companies listed either on the main market of the London Stock Exchange, or a European Economic Area market, or whose shares are dealing on the New York Stock Exchange or NASDAQ.

The government encourages all other companies to report similarly, although this remains voluntary. **CJ**



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CLOSING THE GAP

Designs that work on paper often fail to cross the finish line in the low-energy race. Performance coaches from four manufacturers share their strategies to produce a winning building



6 Winning strategy: More control in temperature regulation and energy use

**Stuart Turner,
Hamworthy Heating**



Hamworthy Heating is a manufacturer and supplier of commercial heating, hot water and renewable energy solutions. It provides end-to-end support to create practical solutions for heating and hot water systems in all types of buildings. Visit www.hamworthy-heating.com, email sales@hamworthy-heating.com, or call 08454 502865.

New commercial buildings are designed and built to be as energy efficient as possible, but existing buildings are where the real challenges lie. With energy overheads typically accounting for 85-95% of the total costs over the lifecycle of heating and hot water products, there is good reason to look carefully at the system and product to see how they will deliver ultimate performance.

At Hamworthy, we believe that upgrading to condensing modular boilers and improved controls will give best value for money and tangible benefits right away, in the form of reduced fuel bills and more comfortable building temperatures. And, since modulating condensing boilers are generally used to back up renewable energy sources, follow-on investment in renewable technologies can be added.

Controls are vital for regulating temperatures and managing the energy use of a building. The building can be split into zones, operated by a central Building Management System, to closely match the heat demand of the different areas.

External temperature sensors and weather compensation controls will enable the system to respond according to changing conditions, reducing the amount of energy consumed and

lowering the system operating temperatures when the temperature outside increases.

Combine this with intelligent room sensors and water temperature demand can be controlled to even more consistent low levels, making best use of the condensing performance of a boiler (a typical condensing boiler will operate most effectively at return temperatures less than 50°C).

Improvements to the building fabric, although not so easy in existing buildings, will reduce the amount of energy consumed – and wasted. Better insulation, draught exclusion and double-glazed windows are just a few improvements that can make a difference.

Ultimately, it is about the different elements of a building working together. Equipment such as boilers and water heaters should not be viewed in isolation, but in the context of the entire project to ensure a system that is matched to the type of building and the current heating and hot water demand. Regular monitoring and control of buildings, as well as an effective service and maintenance regime, will help preserve the life of the equipment/systems and ensure they continue operating as efficiently as possible.

● **Stuart Turner is southern regional sales manager at Hamworthy Heating**



ILLUSTRATION / ZSUSZA GOODYER

The ability of buildings to perform efficiently is largely based on fulfilling the potential of technologies already available. Leading manufacturers will have many years' experience in developing low carbon heating solutions to meet current – and even future – legislation, such as the stringent requirements of the energy-related products (ErP) directive due in 2015.

The 'carrot' of government incentives, such as the Enhanced Capital Allowance (ECA) scheme, and the 'stick' of increasingly stringent legislation like the ErP are initiating the move to more energy-efficient technologies, but it has become evident that a whole new approach is required to enable vital expertise from the different members of the supply team to be available throughout the construction process.

Enter BIM. Building Information Modelling provides the collaborative framework that will enable all sectors of the building services industry to contribute their expertise at the earliest stages of a design project and throughout – minimising the potential for any unwelcome surprises. Some boiler manufacturers, for instance, are making BIM objects available for their most efficient ranges. The compact dimensions of these appliances

are evident when each object is inserted in the three-dimensional building model, but the information the objects offer goes much further. Each will also give valuable technical information, including outputs, efficiencies, clearance zones and NOx emissions, which can be imported directly into the project plan.

This wealth of information will be vital for all, from the designer through to the building facilities manager. One of the keys to ensuring a condensing boiler is operating at peak efficiency, for instance, is to ensure the flow and return temperatures are low enough for the appliance to operate in condensing mode. The information provided by BIM models will allow the designer to calculate how this will be achieved, and this knowledge will then be included in the dedicated operation and maintenance documentation given to the facilities manager during building handover. This completes the circle of information from manufacturers through to the end-user. It ensures the building achieves the intended efficiency from construction through to occupancy and beyond, effectively reducing – or even closing – the gap.

● **Darren Finley is national sales director at Ideal Commercial**



“Winning strategy: Use Building Information Modelling to minimise the potential for any unwelcome surprises

Darren Finley,
Ideal Commercial



Ideal Commercial Heating is a manufacturer of high-efficiency commercial heating solutions, including wall-hung, floor-standing, and modular boiler systems. Ideal prides itself on designing UK products for a UK market. Visit www.idealcommercialheating.com, email commercial@idealheating.com, or call 01482 492251.

With energy bills continuing to rise and the advancements of high-efficiency heating and hot water technologies gathering pace, the upgrading of dated equipment has never been more prevalent, particularly in existing buildings.

While rising fuel prices may have raised the profile of the issues surrounding the need for efficient heating technologies, energy efficiency should always be considered a priority for businesses keen to minimise costs and carbon emissions.

The ever-increasing pressure of reducing CO₂ emissions and fuel costs has meant retrofit installations are now involving increasingly complex systems, and a mixture of fuel technologies, feeding into a heating and hot water system.

What has to be taken into account from the outset of any large-scale heating installation is the manner in which the heating sources can be managed and monitored by a Building Management System (BMS).

As well as the technical specification of the technologies themselves, one also has to consider the make-up of the BMS, as the overhaul of an existing system can prove costly.

By incorporating a specific, sophisticated heating controls system, the specifier is essentially able to hand over certain parts of the control from the BMS to the dedicated heating system controller.

This is particularly valuable when it comes to bivalent or multivalent heating systems, where two or more heating sources are combined to enhance efficiency. The more complex the heating system, the more intricate the BMS control program required, which therefore opens up an opportunity for a bespoke heating control to share the load and ensure the heating side of the building's requirements is operating to its full potential.

The latest generation of heating and hot water appliances offers greater flexibility than ever before, and technologies, such as gas absorption heat pumps and combined heat and power (CHP), can be used with a boiler to enhance overall efficiency. Using an intelligent control system to spread the load across these technologies strategically will be the key to curbing emissions and – ultimately – enhancing energy performance.

● **Geoff Hobbs is business development director at Bosch Commercial and Industrial Heating**



Winning strategy: Use intelligent control systems to spread the load across low-carbon heating technologies

Geoff Hobbs, Bosch Commercial and Industrial Heating



Bosch is a manufacturer of heating and hot water appliances. In the UK, Bosch Commercial and Industrial Heating is part of Bosch Thermotechnology, a company that specialises in providing energy-efficient technologies and complete system solutions for the commercial and industrial heating sectors.

For more information, visit www.bbt-uk.co.uk

Climate change, fuel security, and affordability are major challenges confronting the UK and, as the biggest consumers of energy, buildings must be part of the solution.

Our buildings account for 44% of all UK greenhouse emissions, which is more than either industry or transport.

Yet these buildings still need energy-consuming heating, ventilation, and sometimes even cooling. Without these, we cannot create the habitable, operational, and profitable spaces we all require to live, work, and play in.

Whilst new buildings have their part to play in addressing poor performance, there are 26m homes and 1.8m commercial buildings already in existence.

These existing buildings are an area where we are able to make a real difference quickly, and they should be viewed as a priority especially when you consider that about 75% of our existing buildings will still be in use for at least another 40 years.

It can no longer be right simply to supply more and more equipment to a leaky building, so the fabric of these existing developments is an excellent place to start.

Improvements in insulation can often be achieved simply and cost-effectively and can make a real difference to energy bills and use.

Once this has been addressed and we have reduced the heating or cooling need, we must then find ways of using energy as efficiently as possible by reducing equipment sizes and building loads.

Finally, we need to consider ways of supplying energy from zero or low carbon technologies – what we would term being lean, mean and green.

As the industry responsible for producing, specifying and maintaining the technology that is used within our developments, everyone in the building services sector needs to find ways of delivering what a building wants, while addressing the challenges of what it needs to achieve.

Dialogue is the key to this, which is why we are striving to ensure that everyone involved in the built environment works together to do the right thing. CJ

● **Martin Fahey is sustainable solutions manager for Mitsubishi Electric Living Environmental Systems**



Winning strategy: Retrofitting existing buildings with low carbon technologies

Martin Fahey, Mitsubishi Electric Living Environmental Systems

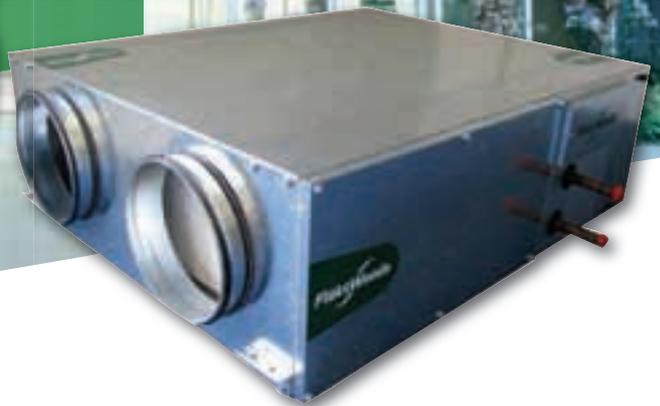


Mitsubishi Electric Living Environmental Systems has developed its Green Gateway philosophy to highlight how everyone can make a difference in reducing energy consumed in buildings.

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Fläkt Woods offers a unique range of Energy Recovery Units, available in High and Medium efficiency depending on your requirements. The Crown can operate with efficiency up to 95% and the Star can operate up to 70%, allowing you a greater choice depending on the application. With eurovent certified counter and cross flow heat exchangers available, Fläkt Woods has the expertise and the knowledge to assist you in your ventilation requirements.

- **Payback within* 2.5 years**
- **Up to *20K renewable savings**
- **Save *19% on your building emissions**
- **SFP's meeting Part L**
- **Sound levels compliant with BB93**
- **Eurovent certified**

Our energy recovery units have CFD optimised design, low noise levels, new user friendly CURO® Touch controls and EC motor technology which is 2015 ErP directive compliant.

We've adapted so you don't have too.

Our energy recovery units are part of our Green Agenda, with the goal for a greener future.

For information on CPD or your BIM requirements please go to www.flaktwoods.co.uk/cpd

www.flaktwoods.co.uk

FläktWoods

Kingspan Environmental appoints new training manager for renewable energy installer courses

Kingspan Environmental has appointed a new training manager to oversee its renowned renewable energy installer training courses, run at dedicated centres across Great Britain and Ireland.

Simon Pattison is a qualified electrician and plumber who has worked in the building industry for 20 years, amassing more than 20 qualifications before becoming a highly respected trainer.

The Kingspan Environmental centres offer a range of courses in both manufacturer training and accredited certification training on unvented systems, solar thermal and heat pumps.

The company is approved by Logic Certification for the delivery of renewable energy training. Graduates have the option of then continuing on to seek MCS accreditation, which is a requirement for installers of any system that aims to attract financial support (eg FIT or RHI), or for Green Deal installations.

● Email simon.pattison@kingspan.com or call 01924 234586 or 07733 307803



Next-generation ModuSat heat interface units

A large standby 1250 generator and 400 kVA uninterruptible power supply (UPS) system has been retrofitted in an old retail headquarters in Southampton.

The generator was required for the building's datacentre and overall infrastructure. The shentongroup was commissioned by the electrical contractor for the design, approval, transport and delivery and installation of the generator. Although working within an existing building, the scope of works made the project similar to a new build. Despite this, the job still had a number of complex design considerations.

The standby generator had to be designed to perform to specification, without the requirement for bulk fuel tanks. The site and availability of space meant that the fuel capacity had to be contained within the main container. Shentongroup designed a bespoke fuel container to meet the requirements. Although smaller, this option is often more costly than standard bulk fuel tanks as the standby generator and the supporting infrastructure has to fit within a restricted space.

● Visit www.shentongroup.co.uk/technical or call 08448 884445.

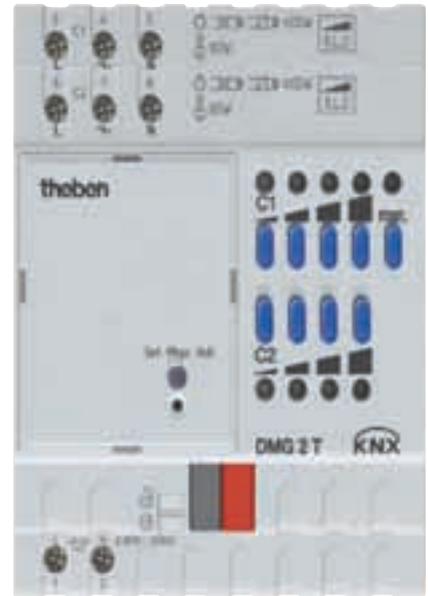
KNX universal dimming actuator accommodates all brands

Theben's KNX universal dimming actuator leaves designers free to choose lighting from any manufacturer, mixing and matching to build the best solution for each application, which is, after all, the core principle and purpose of the KNX open protocol in the first place.

The universal dimming actuator DMG 2 T KNX is part of Theben's successful MIX range of actuators and controllers for switching, dimming and heating control. The MIX range consists of a base unit and extension modules making it easier and more cost-effective to control multiple channels. Two, four or six channels of dimming can be configured per device group and there is also the option to add booster units (DMB 1 T) for higher loads.

Theben is happy to check proposed lights before systems designers commit to a project, and lighting engineers are welcome to contact the English-speaking helpdesk at Theben AG.

● Visit www.theben.de/en



Atag's XL boilers combine highest efficiencies with lowest lifetime costs

Combining high efficiencies with low lifetime costs and low emissions, ATAG's new XL commercial boilers take environmentally friendly technology to new levels of excellence.

Featuring ATAG's tried-and-tested 316 stainless steel heat exchanger technology, the XL boiler gives an efficiency of 109.3% (EN677) achieved through seamless upwards modulation. NOx emissions have been reduced to below 30 ppm, the lowest in its class.

There are three models in the range with outputs of 65.4 kW, 105 kW, and 130.9 kW and these can be configured in multiples of up to eight units to give a maximum output of 960 kW. The boilers can be either wall or frame mounted in line (2 - 8 boilers) or frame mounted back to back (3 - 8 boilers) for simplicity of installation. Maximum output can be achieved in the smallest possible footprint of only 2.7 m².

For total siting flexibility, XL models come with a variety of flue options, including concentric, twin pipe, conventional and over pressure. All XL boilers carry a five-year parts and labour warranty.

● Visit www.atagheating.co.uk, email sales@atagheating.co.uk, or call 01243 815770

Titan Products expands TPZ-Net Zigbee wireless range

Titan Products continues to develop the TPZ-Net range of wireless sensors. This month sees the release of the TPZ-PIR occupancy sensor. Designed to detect movement in a space the completely wireless, battery powered sensor transmits a signal to the TPZ-Net co-ordinator when movement is detected.

The co-ordinator then communicates this state over a BACnet network, which allows applications such as lighting control and HVAC to be controlled when occupants enter the room. This control on demand is essential when aiming to reduce energy consumption.

The TPZ-Net range also includes sensors designed to wirelessly monitor: temperature, CO₂, humidity, and light levels.

Incorporating Zigbee wireless technology the range creates extremely stable, self-healing mesh networking capabilities.

The TPZ-Net range is supplied with Titan Products' bespoke PC interface to allow for quick and simple setup and commissioning.

● Visit www.titanproducts.com, email admin@titanproducts.com or call 01614 066480



Pre-fabricated valve assemblies

Pre-fabricated valve assemblies from Marflow Hydraulics have proven to be a real time-saver on site.

With numerous options to suit individual application needs, Marflow Hydraulics' valve assembly units, known as Xterminators®, are not only supplied pre-assembled but also pre-tested and individually tagged and labeled indicating valve reference to help save customers a great deal of time.

Xterminator valve assemblies offer huge advantages. Alongside the fact that everything required for a successful connection assembly to a terminal unit is supplied in one package, fewer components need to be ordered for each project, and they can also help optimise flow and temperature control in a building, potentially reducing wasted energy in unoccupied or rarely used spaces.

Xterminators are made up of axial or rotary pressure independent control valves from Marflow Hydraulics.

● Visit www.marflowhydraulics.co.uk, email hydraulics@marflow.co.uk, or call 08455 641555



Evomax from Ideal Commercial – high output, high efficiency

Ideal Commercial's Evomax wall hung high efficiency condensing boiler range expands the options for commercial buildings, with outputs ranging from 30 kW up to 150 kW – one of the highest available for this type of boiler.

As well as its lightweight design, quality build and comprehensive control options, siting is made easy with a selection of room-sealed and open flue system choices. Insulated frame and header kits offer further flexibility, allowing the Evomax to be installed in cascade formation either back-to-back or in-line, up to outputs of 600 kW.

Evomax offers seasonal efficiencies of up to 97.2%, exceeding those stipulated in the building regulations, and each boiler is capable of wider output modulation of 5:1, ensuring the load is matched closely to the building's requirements. This market-leading performance combines with low NO_x emissions of less than 40 mg/kWh to offer a boiler solution that qualifies for maximum BREEM points. The Evomax range is eligible for the Enhanced Capital Allowance (ECA) scheme, comes with a two-year warranty, and is one of the BIM objects available in the new Ideal Commercial BIM library.

● Visit www.idealcommercialheating.com, email commercial@idealheating.com or call 01482 492251



Mikrofill at Ryedale swimming pool

To encourage more people to get involved with sport and exercise, Ryedale District Council decided that updating the heating and hot water systems at the Ryedale swimming pool in Pickering would play a key part in improving the services to the public and reducing energy costs.

Cheshire-based consulting engineers Preston Lee Chambers were tasked with designing a new heating and hot water system to replace the inefficient plant and chose Mikrofill to supply new energy efficient hot water cylinders as well as boilers as back up to the CHP plant and solar thermal installation.

Engineers H Pickup Mechanical & Electrical Services of Scarborough, installed two No Ethos FS 350, floor standing boilers, providing a maximum output of 700kw and a minimum of 35kw (20>1 turndown ratio) ensuring excellent load matching and efficiency throughout operation.

The boilers also provided LPHW to two No Extreme 300 hot water loading systems, producing 2,370 litres an hour at 60°C while also keeping the boilers in condensing mode.

● Visit www.mikrofill.com, or call 08452 606020



KalGUARD: A cost-effective treatment alternative for hard water areas

Water softeners are commonly used in hard water areas to protect building services systems from limescale, however they can waste a considerable amount of water and also require a regular and costly supply of salt. Sentinel Commercial has developed KalGUARD, a device that is scientifically proven to prevent limescale formation without wasting water.

KalGUARD works by delivering very low levels of stable zinc into the water to change hard, deposit-forming calcium carbonate crystals into soft, non-deposit-forming aragonite. The device can be installed on a rising main, before the water storage tanks and booster sets, to provide whole system protection. The technology is also approved in Part L of the building regulations.

Unlike traditional water softeners, KalGUARD has negligible running costs, and doesn't require regeneration or salt – offering significant savings in time, water, and money. Used instead of a water softener, the ROI on a KalGUARD can be less than 12 months, and savings are immediate.

● Visit www.sentinel-commercial.co.uk, email customer.services@sentinel-solutions.net, or call 01928 588330

MHG launches ProCon MC wall-mounted boiler range that offers direct connectivity to a BMS

MHG Heating has launched the ProCon MC range of wall-mounted gas-fired condensing boilers, available in 90 kW and 115 kW outputs, with 4:1 turndown capability due to a fully modulating pre-mix burner.

ProCon MC boilers are low NOx (Class 5) with net efficiencies up to 108.3% at part-load (30%) and 106.7% at full load.

When used in a cascade configuration ProCon MC can deliver capacities from 22 kW to 460 kW. They are suitable for use with natural gas and LPG (liquefied petroleum gas) and are supplied with matched mounting frames, integral anti-seize pump and cascade hydraulics – including low loss headers or matched system separation plate heat exchangers.

ProCon MC boilers incorporate cascade and zone controller options, as well as a frost protection program, and offer direct connectivity

to a building management system.

Remote monitoring is available using the GSM phone network or the internet.

Integral safety controls ensure compliance with BS6644:2011.

MHG Heating can also provide a full range of concentric and single-walled flue components including cascade.

● Visit www.mhgheating.co.uk, email info@mhgheating.co.uk, or call 08456 448802



Potterton launches new, lighter boiler

Potterton Commercial has recently launched the Sirius two WH Boiler, which represents the very latest in condensing wall-hung boiler technology. Developed from the successful Sirius WH, the focus has been on providing improved boiler controls and a market-leading modulation range, now operating at an impressive 9:1 ratio. This allows for much-improved boiler efficiencies and a reduction in carbon emissions beneficial for specifiers, architects, and contractors alike.

The size and weight of the new boiler are significantly less than its predecessor, the weight being reduced by circa 25%. It is a more compact unit with a reduction in height and depth as well as in case width (from 600 mm to 450 mm). It also benefits from a new look, making it suitable for larger domestic premises and all commercial applications. Thermal outputs available are: 50 kW, 60 kW, 70 kW, 90 kW, and 110 kW, and the heat exchanger is robustly made from stainless steel providing excellent heat transfer properties.

● Visit www.pottertoncommercial.co.uk, email geraldine.clegg@baxicommercialdivision.com or call 08450 701055



New non-penetrative bridge for single ply membranes

Global fixings manufacturer EJOT is launching a new low cost multi-bridging system, developed specifically for flat roofs that are waterproofed with a single ply membrane.

The 'membrane friendly' EJObar has been designed to create a non-penetrative fixing base for an infinite range of applied systems – typically mechanical and electrical essentials such as pipework and cable trays – through to lightweight solar PV and thermal installations. In general terms - almost anything that has to be secured to, or rest upon, the roofing membrane, lends itself to this cost effective solution.

EJObar comprises of a high quality membrane encapsulating a strong aluminium box insert. The profile is sealed tight by bonded endcaps and the product's strength has been fully Aplitec tested.

EJObar is available to buy off the shelf in five practical lengths: 0.15 m, 0.3 m, 0.5 m, 1.0 m, and 3.0 m.

● Visit www.ejot.co.uk, or call 01977 687040



Minus 7 – the true hybrid energy harvester

The Minus 7 hybrid energy harvesting system is a solar-assisted heat pump technology. The NCM (SAP) identifier for this product is Minus 7 SEP₃G₁₀ 1/2/3. It is a renewable energy system made up of an endothermic roofing system, a solar energy processor and a large thermal store. The system uses an endothermic tile plank to form a weather-tight interlocking roofing system, made from uniform profile, aluminium extrusion, dressed in a powder-coated, hard-wearing finish. The endothermic tile planks are flooded with a heat transfer fluid that absorbs heat energy and solar thermal energy.

The system provides hot water and heating for buildings. It is suitable for new-build or deep refurbishments, where a new roof is required. The system is capable of servicing up to three dwellings at once, at a comfortable temperature of at least 21°C even in the worst case scenario of mid-winter, making it highly suitable for housing associations as well as commercial buildings.

● Email info@minus7.co.uk or call 01922 419405



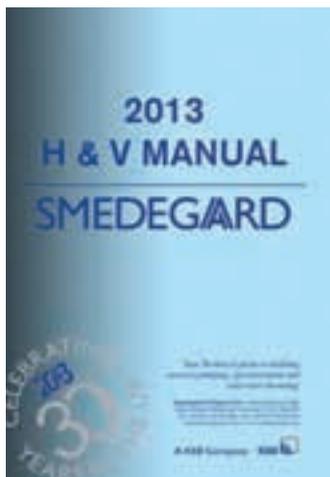
Smedegaard UK H&V manual launch

Smedegaard is celebrating 30 years in the UK by launching a new H&V manual.

Smedegaard was one of the first pump companies to release a pump manual for the building services market and this would be the fourth manual made. The manual contains everything you need to know to maintain and operate all the Smedegaard product range, including: circulators, cold water booster sets, break tank booster sets, and pressurisation equipment.

This 2013 version of the manual has been released as an electronic version in a PDF file, which can be viewed through the PDF reader of any smart phone and can also be printed if needed. Later this year the company will also be releasing an iBook version of the H&V manual for iPad users, which will include video and interactive diagrams.

● Visit www.smedegaard.co.uk or email sean.austen@smedegaard.co.uk



Siemens Building Technologies celebrates 10m OpenAir damper actuators

Siemens Building Technologies has reached the ten million mark with its damper actuators in its OpenAir series. The product has been produced since 1990 and has proved successful with specifiers and installers from all over the world.

OpenAir is an extensive range of actuators, with four platforms for all areas from HVAC application and use as air volume controllers to fire and smoke protection dampers. The actuators are available in linear and rotary versions, and have low-consumption motors and high precision operation, which means long-term energy and cost savings over the product lifetime.

One of the most important benefits of OpenAir is its robust design with a uniform installation and wiring concept, making installation, commissioning, and maintenance much more cost effective. OpenAir is compatible with KNX and the Siemens Desigo building energy management (BEMS) platform, which results in easy engineering and plug-and-play commissioning. Siemens Building Technologies also emphasises the importance of backward compatibility between new OpenAir models and their predecessors.

● Email sales.uk.sbt@siemens.com or call 01276 690207



Purewell VariHeat boilers

The Purewell VariHeat cast iron boiler is a simple direct replacement for atmospheric boilers, with efficiencies up to 108.8%, ultra-low emissions and durability built in as standard.

Exceeding the requirements of the building regulations Part L and the Energy Related Products Directive, the Purewell VariHeat boilers, available in condensing and non-condensing high efficiency models, are the perfect choice for refurbishment projects.

The fully modulating boiler, with a pre-mix burner, enables output to be closely matched to the load profile of the building. The condensing models are even more efficient due to the secondary heat exchanger that ensures the maximum amount of residual heat is extracted from the combustion process. The sectional heat exchanger design also allows for the option of site assembly.

The cast iron heat exchangers are tolerant to the demanding system conditions often found in existing heating circuits and backed up by Hamworthy's ten-year cast iron warranty.

● Visit www.hamworthy-heating.com, email sales@hamworthy-heating.com, or call 08454 502865



Megafluo Eco Plus

Heatrae Sadia has launched Megafluo Eco Plus, a large capacity cylinder designed with large bore tapings to guarantee exceptional flow rates and high performance, even at lower pressures.

Megafluo Eco Plus is manufactured from Marine Grade Duplex 2205 stainless steel, making the unit light weight and highly corrosion resistant.



It can be installed in parallel applications to deliver just about any hot water requirement, making it ideal for larger buildings with greater hot water demands.

Direct units are equipped with four immersion heaters as standard, offering a 12 kW heat input. The indirect versions utilise a state-of-the-art corrugated steel coil, which ensures that the units can recover hot water in less than an hour.

Megafluo Eco Plus is available in 400, 500 and 570 litre, indirect and direct models. It is suitable for virtually any large domestic and light commercial application. There is just a ten-day lead time for all orders.

● Visit www.heatraesadia.com/home

HygroMatik humidifier for maximum hygiene

International humidifier and steam bath generator provider HygroMatik can accommodate project needs with its High pressure nozzle system (HDS), which is CE marked and fully certified with the hygiene conformity test certificate for air conditioning and for hospital sectors.

HDS humidifies the air in air-conditioning and ventilation systems and provides very high humidification performance for an extremely low energy requirement with maximum control accuracy. Precise stainless steel high-pressure nozzles produce a very fine mist, which is very quickly absorbed by the air in the unit chamber. The vortex wall mixes the duct air with the atomised mist in the shortest possible absorption distance.

As a result of the fast and very efficient absorption there is almost no water loss, saving demineralised water. The optimum efficiency means the system can achieve short absorption distances as low as 0.9 m. Its modular construction also means that it is compatible with any air conditioning duct, saving costs on projects at planning and installation stage.

The HDS is equipped with two easily removable, cleanable drop separators, made from a high-quality inert metal braiding, which ensure particularly reliable aerosol separation and maximum hygiene. The systems also help eliminate standing water and the use of chemicals.

● Visit www.hygromatik.com or call 02380 443127



Future features in CIBSE Journal



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Send to: editor@cibsejournal.com.

The final editorial copy deadline is one month before publication date.

For advertising opportunities contact:

Jim Folley – 020 7324 2786

or email jim.folley@redactive.co.uk

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or email patrick.lynn@redactive.co.uk

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Why Vaillant?

Because we know 'going green' isn't always black and white.



With changing legislation and energy saving incentives, it's not always straightforward deciding on the best suited and most cost-effective solution. Every commercial heating requirement is different and often, there's no single technology fix.

Fortunately, Vaillant, the UK's number one heating and renewables manufacturer, is perfectly placed to help you determine the right solution for your specific needs. We have a wealth of experience and expertise with the product range to match, and are well versed in providing hybrid technology solutions to help you make the most of energy efficiency initiatives.

For further advice or to find out how Vaillant can help, please call one of our team on **0845 602 2922** or visit www.vaillantcommercial.co.uk.



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