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The official magazine of the Chartered Institution of Building Services Engineers



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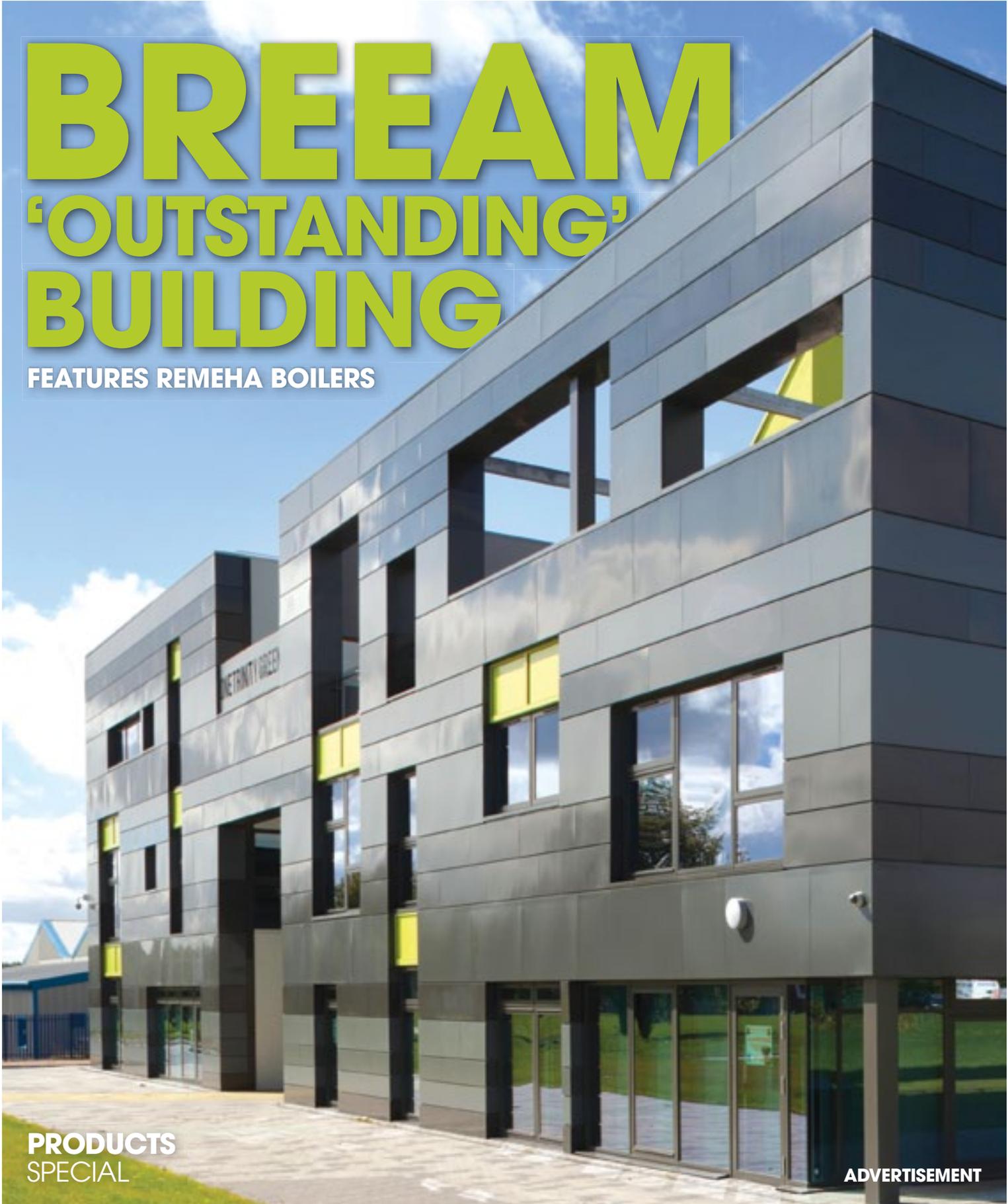
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May 2014

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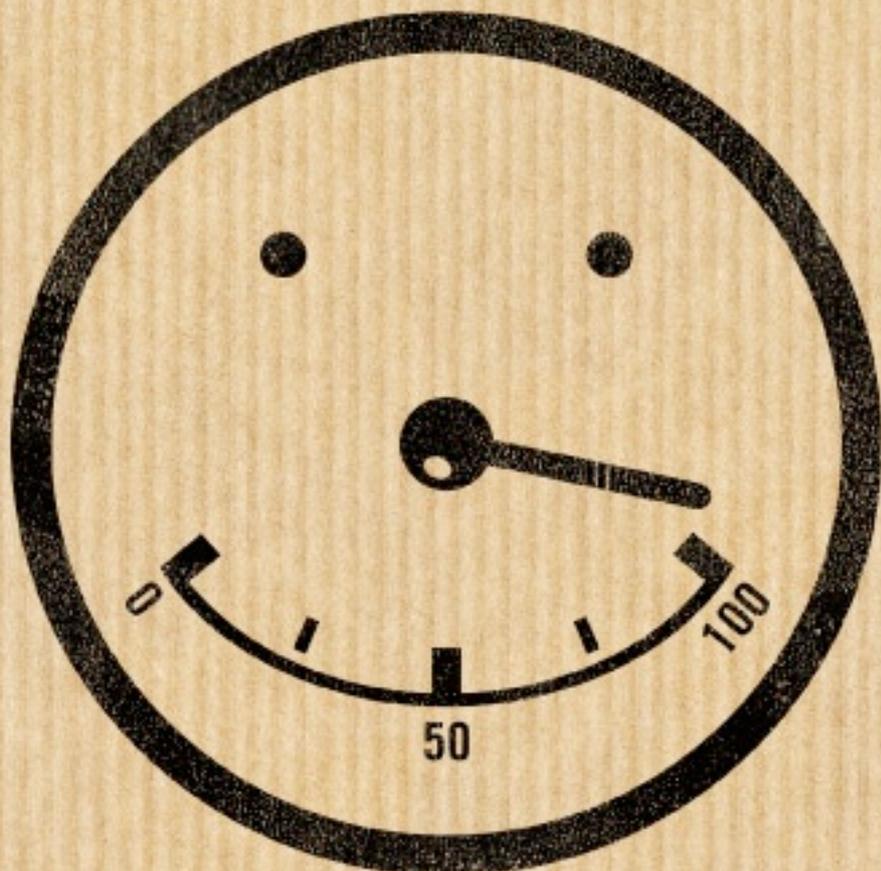
# BREEAM 'OUTSTANDING' BUILDING

FEATURES REMEHA BOILERS



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Most leading brand boilers can only achieve their maximum efficiency in perfect test conditions. Just like the average car will deliver maximum efficiency at 55mph. However there are not many journeys where you can drive continuously at that speed for any length of time. And, the number of days we enjoy perfect test conditions here in the UK are even more few and far between. The Remeha Quinta Eco Plus, on the other hand, delivers its maximum 107% NCV efficiency, 100% of the time in real conditions. It's all thanks to groundbreaking flue gas heat recovery technology, which pre-heats the water before it enters the boiler. This allows it to deliver 107% NCV at 82/71°C flow and return temperatures, day in, day out. To find out more call **0118 978 3434** or visit **remeha.co.uk**

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# Cutting the odds

**O**ur industry undoubtedly boasts brilliant designers, and we are blessed with a manufacturing sector that delivers innovation time and time again. So why does respected consultant Mike Malina claim that he has only seen low-carbon technologies properly integrated twice in the hundreds of buildings he has audited (page 12)?

Part of the problem is the accuracy of the data given by some manufacturers to consultants. Examples of missing or misleading data include seasonal efficiencies for VAV air conditioning, the performance of chillers in different climates and temperature differences produced by boiler manufacturers for generating domestic hot water.

Thankfully lots of responsible manufacturers do quote accurate figures, and sensible firms know that building trust with consultants by providing honest data will result in repeat business.

One manufacturer suggests using a range of efficiencies for their projects, rather like you would for a car's variable fuel economy figures, which depend on whether you're driving on motorways or around town.

Integrated BIM models will help, and CIBSE's Product Data Templates will ensure manufacturers' information is standardised.

Shortlists of awards often do not get the coverage they deserve, but the finalists in the Energy Saving Product of the Year category at the CIBSE Building Performance Awards merit wide coverage. Turn to page 4 to see the products you'll be specifying in the future.

**Alex Smith, editor**  
asmith@cibsejournal.com

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Innovators on the shortlist for the Energy Saving Product of the Year

**12 FEELING NUMB**

Why manufacturers' data doesn't always add up for consultants



## Policies must support innovation

If we are to meet our steep UK and EU carbon reduction targets, the challenge is on for the building services sector to support the smart design and operation of buildings like the multi award-winning business centre on the cover, the BREEAM 'Outstanding', EPC 'A' rated One Trinity Green.

As heating manufacturers, we are proud to sponsor this supplement, which reflects the constant innovation emerging from manufacturers in our industry. Responding to the government focus on zero-carbon new-build design, manufacturers already offer high-efficiency products that meet the new ErP requirements ahead of its introduction next year. Many also

offer supporting BIM data that will help towards reducing the energy performance gap between predicted and actual energy use.

Of equal importance is the challenge to improve our existing building stock, if we are to meet our carbon reduction target of 80% by 2050. So it is encouraging to see the advances being made to support specifiers and consultants in the development of smarter system design, on refurbishment projects with affordable, high-efficiency products that are easier to install; passive energy-saving technologies that enable more effective use of the energy input; and fully-integrated LZC hybrid systems, which deliver greater carbon reductions.

So let's hope for more government support in the form of changes in policy, or updated modelling software, to demonstrate the benefits of higher efficiency technologies, and ensure these innovative products are supported in legislation and get to see the light of day. It's by working together that we will reach our carbon reduction targets and reserve more carbon-neutral energy for the future.

**Chris Meir is national sales manager** at Remeha Commercial

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# A CUT ABOVE THE REST...

The high calibre of finalists in the Energy Saving Product of the Year category, at the 2014 CIBSE Building Performance Awards, demonstrates technical excellence within the building services industry



**CIBSE BUILDING  
PERFORMANCE  
AWARDS 2014**  
— Winner —

## **Nuairé XBOXER XBC heat recovery range**

Nuairé's XBOXER range of heat recovery products was designed to be quieter, more efficient, smaller, have more control options and be easier to use.

The first XBOXER in the range to be developed was the XB55, specifically designed for school classroom applications. This product was independently tested by BSRIA on site and, to date, the XB55 is the only commercial heat recovery product that has been independently tested and certified by BSRIA to meet the noise requirements of *Building Bulletin 93* for schools. The unit was tested to meet the ventilation rates of *Building Bulletin 101*, and the range has now



been extended to suit a variety of applications.

The design allows for flexibility in ductwork connections, and a patent application has been filed for its segmented, 100% bypass facility and actuator, which operate under automatic control. The range incorporates an aluminium counterflow plate heat exchanger matrix, with a thermal efficiency of up to 96%. The high mass, double-skinned wall construction, with acoustic barrier mat, ensures low breakout noise and is also the subject of a patent application.

Read how Max Fordham used Nuairé's XBOXER XBC heat recovery system at its Cambridge office in the May 2014 issue of the *CIBSE Journal*.

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

## **Finalists**

### **Armstrong Pumps**

Utilising the Hartman LOOP control system, Armstrong's Opti-visor helps maximise the performance potential of chiller equipment.

Whereas many chiller plants use analogue technologies, the Hartman LOOP is digital, operating the plant as one integrated solution.

This enables faster response, improved stability, variable speed control of condenser water pumps, optimisation of thermodynamic effects at the equipment level, and reduced risk of equipment failure through cycling stress.

The technology is now available as a bolt-on solution for retrofit, improving the system's overall energy efficiency and driving down operating costs.

The control panel links directly to building automation systems (BAS) and receives plant operating data from the BAS network. It also determines the optimal plant equipment settings and communicates these to the BAS.

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





And the winner is... before the award ceremony at the 2014 Building Performance Awards



## Alonso Marshall Associates

Enviroblinds external thermal roller blinds are fully retractable shading devices formed of horizontal slats that roll up into a casing above a window opening.

They block out excessive solar gain, reducing overheating and the requirement for cooling energy.

In a 'down' position, they improve the performance of a window system by adding thermal resistance during cold nights. This reduces heat loss and heating energy demand.

Although fixed external shading devices



(such as louvres, overhangs and fins) are widely used in the UK, the thermal benefit of the external thermal roller blind device has not been fully realised and such devices are currently used for security purposes.

Enviroblinds can significantly reduce a building's carbon footprint by reducing the need for heating and air-conditioning systems, and can be bespoke-designed for any structure.

[www.amaconsult.co.uk](http://www.amaconsult.co.uk);  
[www.enviroblinds.co.uk](http://www.enviroblinds.co.uk)

## Knauf Insulation

Supafil CarbonPlus is the latest addition to Knauf Insulation's Supafil range of blown-glass mineral-wool products. There are about 535,000 properties in the UK containing narrow cavities, making up more than a quarter of the country's 2 million hard-to-treat homes.

Supafil CarbonPlus has been designed as an effective insulation solution to tackle the problem of narrow cavities.

Offering the same combination of advanced thermal performance and on-site practicalities as the rest of the Supafil range, it is specifically designed for installation into cavities below 50 mm in width, including partially filled cavities.

The product has been extensively tested and some of its key benefits include:

- Suitable for cavities as narrow as 40 mm
- Tried and tested Supafil technology
- Lambda 90/90 compliant
- EN14064 compliant
- Rigorously tested by the British Board of Agreement (BBA)
- Nationwide network of approved installers

Knauf Insulation's Supafil CarbonPlus has been awarded full BBA certification.

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

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





**Cleantech Innovate**

It is estimated that households alone waste £800 m and 400 m tonnes of CO<sub>2</sub> each year by failing to turn off lights they are not using. The Adaptarose ceiling rose motion sensor is an innovative and simple energy-saving product, which aims to combat this waste.

Simply by replacing the existing ceiling rose, the Adaptarose allows room lights to be switched off automatically when any room is unoccupied, and to switch the lights on when it is occupied – all at a cost-effective price. The sensor can be wired simply into any room where a light pendant is installed.

The Adaptarose is equipped with three passive infrared (PIR) motion detectors, which – when detecting no occupancy within the space being controlled – switch off the luminaire. The device overrides the light switch to reduce energy consumption and carbon emissions.

Benefits include: the typically central location of a ceiling rose – an ideal position from which to monitor movement; no need for additional building work where the unit replaces an existing ceiling rose; and no ongoing maintenance.

[www.cleantechinnovate.com/dt\\_portfolio/adaptarose](http://www.cleantechinnovate.com/dt_portfolio/adaptarose)



**EIWC Corp**

ECO, EIWC Corp's flagship product, is a software add-on that performs around the clock to fine-tune heating, ventilation and air-conditioning (HVAC) control systems, reducing maintenance and energy costs.

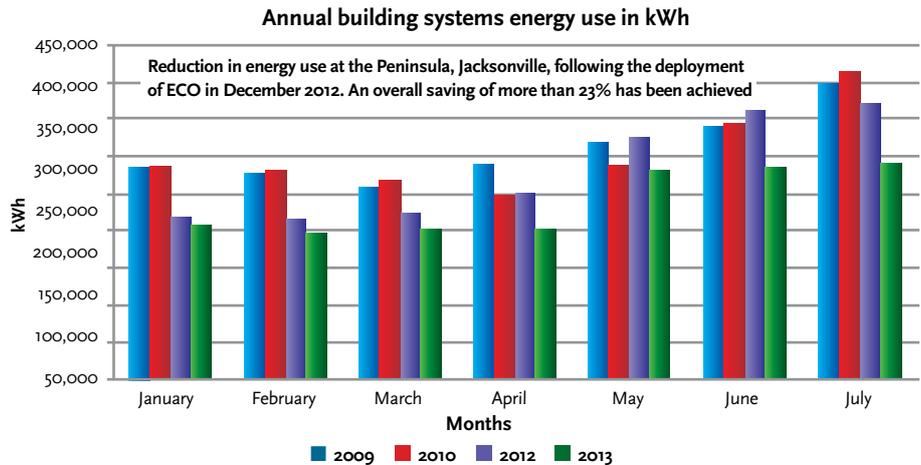
ECO's software-as-a-service (SaaS) platform automatically senses changes in energy-load demand, thermal dynamics and environmental conditions, then aligns the mechanical equipment connected to the Building Control System (BCS) in real time to optimise energy use for the whole HVAC system.

The product aims to work alongside the

existing BCS as a simple, cloud-based software plug-in, automating laborious optimisation tasks, reducing wear on components, reducing energy costs, freeing up the engineer's time and adding green credentials to the facility.

It has been tested at The Peninsula, in Jacksonville, Florida, where a 23% reduction in overall power consumption was recorded, despite a 38% rise in energy consumption by residents. Between December 2012 and July 2013, ECO saved The Peninsula almost \$53,000 (£31,500) in energy costs.

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



**Dow Corning**

High-performance façade module, the Dow Corning Architectural Insulation Module, can significantly contribute to the thermal performance of a façade in a slim and aesthetically pleasing design. The module has been engineered and designed to allow use in current construction methods, minimising trades, and is available in a composite, compact form to maximise floor space.

Consisting of high-grade silica insulation, the module provides excellent thermal performance in a slender component no thicker than a

standard double- or triple-glazed unit. This enables designers to comply with increasing energy regulations without sacrificing building design through increasing thickness of the insulation.

The Architectural Insulation Module can be customised in terms of size, surface, material and thermal performance, and Dow Corning's dedicated and experienced façade team ensure reliable technical support and a fast specification process.

[www.dowcorning.com/europe](http://www.dowcorning.com/europe)



## EcoMESH

A unique mesh and water-spray system, EcoMESH, improves the performance of air-cooled chillers, dry coolers and refrigeration plant, while reducing energy consumption by up to 44%. EcoMESH has been fitted to troublesome units worldwide, where its patented water spray technology eliminates over heating and high-head pressure problems. Once fitted, is virtually maintenance free.

EcoMESH can be retrofitted to any make, model or size of air-conditioning or refrigeration

unit and, because the spray is intermittent, it uses 79% less water than other wet systems.

As a result, power consumption for a chiller running at an ambient temperature of 35°C, with an average humidity level of 50-60% RH, could be reduced by 20% with water consumption of as little as 88 lt/h (0.38 UGPM).

EcoMESH also provides protection against snow or sand storms.

[www.ecomesh.eu](http://www.ecomesh.eu)



## Nudura

The focus of today's property owners, designers, building developers and contractors is on environmentally sustainable buildings that meet their needs, and the needs of their clients.

Buildings constructed with insulated concrete forms (ICFs) from Nudura offer long-term value as they deliver a structure that is airtight. Buildings constructed using ICF modern technologies deliver maximum energy efficiency and significant, measurable savings in energy costs, year on year.

Nudura Plus+ Forms and Inserts have been engineered to address the growing demand for increased exterior insulation. Nudura's standard line of forms can accept a variety of finishes such as stone, render or traditional brick, while its U-Value Inserts (available in 50 mm, 100 mm or 150 mm sizes) can be customised to the desired amount of insulation to meet the requirements of any project.

The Nudura range offers customisable design that gives the ability to build commercial and residential structures with greater efficiency.

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



## Siniat

If you were at Ecobuild in March 2013, you may have seen the launch of Siniat's GTEC Weather Defence – a gypsum-based sheathing board for frame-based construction projects. Once installed, it remains part of the building envelope, and provides exceptional air-tightness – improving overall thermal efficiency.

Historically, Gypsum boards have not been suitable for exposure to the weather, as moist or wet conditions can cause them to lose their structural integrity. However, GTEC Weather Defence's patented hydrophobic core and glass

mat surface have made it possible to use a gypsum-based product for this application. It is 30% lighter than cement particle boards and much easier to cut, handle and fix.

Crucially, it is dimensionally stable, meaning that installers do not have to allow for board expansion or contraction, and can create a simple, continuous airtight envelope for the building, which increases its thermal performance and reduces energy requirements and CO<sub>2</sub> emissions.

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



# HOW CAN BUILDING SERVICES BE MORE RESOURCE EFFICIENT?

CIBSE's new guide to resource efficiency highlights the importance of product life-cycles in the specification process. We ask two manufacturers how the industry could maximise the use of the Earth's raw materials



**Stuart Turner,**  
southern regional  
sales manager,  
Hamworthy Heating

**T**o be more efficient with our resources it is vital to consider products over their life-cycle. Take a project with a 3 x 95 kW gas boiler requirement: by comparing the costs of an atmospheric boiler system and a condensing boiler system, over a 25-year life-span, we can see that a 35% reduction in energy use – with a corresponding 35% reduction in carbon emissions – can be achieved by opting for condensing boilers. The initial outlay for condensing boilers is often higher, but the operational savings can pay back any increased capital costs in a few years.

It is important to consider how a product will be used beyond the design phase of a building. Heating and hot water systems are designed and installed to provide best efficiency from the products. But, after handover to the client, they may be operated in a different way, and thus not produce the intended efficiencies. The government recognises this issue and – as part of its Soft Landings framework – is advocating the early involvement of facility managers on a project, and encouraging full

training on handover of a building, to ensure such disparities between design and operation do not arise.

Product choice and configuration can impact on other elements of the building. Again, taking the example of condensing boilers, if they are set up to operate at 80/50°C flow/return – rather than the traditional 80/60°C – this will result in lower flow rates, which means smaller pipes can be used. As well as being easier to install, smaller pipes cost less, use fewer raw materials in manufacture, require less insulation, and reduce heat loss because of their smaller surface area.

For hot-water systems, condensing, room-sealed water heaters are often quieter, and can be installed closer to the point of use, reducing both the amount of pipework required and the heat loss through the distribution network.

Regular maintenance of mechanical, electrical, and plumbing services will ensure they perform as they should, and provide the most efficient output. A clean system will reduce the potential for scale or debris to impact on the efficiency of products, and help to increase their life-span.



**Richard Meek,**  
strategic director,  
shentongroup

**P**ower, heat and light are huge considerations in the operation of building services. The power supply for most buildings originates at a power station, many miles away, and these are, typically, only 40% efficient – so, before the power even reaches your building, it's not resource efficient. An additional 5% of the power is lost during transmission to its point of use.

This leads me to think about how buildings can use Combined Heat and Power (CHP) to become more energy efficient. CHP is the simultaneous production of heat and electricity from a single fuel source, usually at the point of use. With a CHP system, fuel – usually natural gas – is used to drive a reciprocating engine, delivering electricity from the alternator. The heat produced by the engine is captured from various sources – such as the exhaust system and engine cooling jacket – to produce hot water.

Typically, the energy output in the form of hot water from a CHP system is double the output in electricity. The mistake people make is thinking the primary function of a CHP is to deliver

electricity. A CHP system is, basically, a hot-water machine, with electricity as a perk.

CHP systems are cost-effective for any facility in which continuous – often large – amounts of hot water are required. Facilities such as:

- Hospitals
- Sheltered housing
- Student accommodation
- Multi-use developments
- Gyms and leisure centres
- Swimming pools
- Residential and care homes
- Food-processing plants

A good-quality, well-designed CHP system can produce efficiencies in excess of 95%. Electrical losses are minimal because power is on site, rather than transmitted via the National Grid, which means huge carbon savings.

The other advantage of CHP systems is distributed power generation. This means you are not reliant on electricity from the grid. CHP systems can also act as a standby power system – if you lose power from the grid, your facility will still be operational.

# THE HEAT IS ON FOR ENERGY SAVINGS

With heating accounting for up to 60% of a building's total energy use, the heat is on to deliver energy-efficient solutions to help the UK meet its environmental targets. While our long term goal is to generate our energy from renewable sources, gas is still the favoured fuel for heating. For Remeha Commercial, the challenge is how to use this clean burning fuel as effectively as possible for maximum energy and carbon savings.

## From condensing to 'super condensing' - Remeha Quinta Eco Plus

Modern condensing boilers now quote efficiencies of up to 98% NCV, yet around 90% of condensing boilers in the UK fail to achieve these figures as the typical existing LTHW system will generally have been sized on high flow and return temperatures, which prevents the boiler from fully condensing and operating at its maximum efficiency.

The Remeha Quinta Eco Plus is the only commercial heating and hot water system of its kind to address the need for innovation in full-time condensing technology to improve the energy efficiency of buildings, particularly in refurbishments.

The Quinta Eco Plus combines the market-leading Quinta Pro condensing boiler with the most advanced passive flue

gas heat recovery technology, the Remeha Eco Plus. Each time the Quinta Eco Plus operates, energy is recovered automatically from the flue gases and passed back into the system for cold water preheat, heat return water or simply circulated to a thermal. By using the energy input more effectively, the Quinta Eco Plus achieves the highest possible efficiency of 107% NCV at all times regardless of primary flow and return temperatures, resulting in major savings.

## Remeha Fusion Hybrid – revolutionary bespoke hybrid heating solutions

Smart system design is key to achieving maximum efficiencies and reducing the energy performance gap. L2C technologies can offer a low-carbon alternative for heating and hot water generation. However, some renewable products are not as 'green' as represented, or fail to achieve their highest seasonal efficiencies when combined with condensing technologies. Equally, retrofitting these technologies onto existing systems may not always be an option.

Remeha Commercial has developed the first flexible, bespoke hybrid system that offers low carbon, energy-efficient heating and hot water for both new build and existing buildings. Fusion Hybrid combines two Remeha high performance technologies, our gas absorption heat pumps Fusion and the market-leading Quinta Pro cascade, in a fully-integrated, scalable building control system to

Knauf Insulation slashed annual gas consumption at their offices in Cwmbran, Wales by more than two-thirds from 574,560kWh to 186,960kWh with a corresponding reduction in carbon of 74 tonnes when they replaced the old atmospheric boilers with Remeha's Quinta Eco Plus 'super condensing' PFGHR heating systems.

maximise heating efficiencies and reduce carbon emissions.

The specially-configured control system can be easily integrated into existing building management systems if required, making the Fusion Hybrid a versatile solution for both new build and existing buildings.

Fusion Hybrid offers flexible, reliable heat delivery with exceptional seasonal efficiencies of between 120 and 130% NCV and accurate matching of system heat output demand. Fusion Hybrid meets all environmental legislation and fulfils the carbon requirement of Part L, thereby significantly improving the energy performance of a building.

### Remeha Fusion Hybrid

- Combines gas absorption heat pumps and condensing technology in a fully-integrated system to maximise energy and carbon savings
- Versatile, bespoke solution
- Suitable for new build and retrofit applications
- Integrated 7" touchscreen control panel - Remeha Touch
- Remote monitoring as standard
- Outputs: 100 to 1000kW

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For further information please visit our website at [www.remeha.co.uk](http://www.remeha.co.uk)



## Intelligent solutions for educational establishments

Medem is top-of-the class when it comes to gas safety and air quality monitoring and control. Our range of educational solutions for school laboratories, kitchens, boiler rooms and general teaching areas ensure safety in all locations, at all times.

Our SEC gas safety range offers gas pressure proving in a **flexible single or multi-function solution**. Systems can be tailored to a school's requirements and are suitable for new build or refurbishment projects.

Medem inair classroom CO<sub>2</sub> monitor is the only dedicated air monitoring system capable of giving a daily average CO<sub>2</sub> level at the touch of a button (patent applied for), ensuring that CO<sub>2</sub> doesn't exceed an average 1500ppm - as demanded by BB101.

All Medem products are designed and built in the UK to the very highest standards and independently tested. We call it 'Excellence by design'.

- Easy to use - panels give real time reports
- Compact and easy to install
- Straightforward maintenance
- Full service and technical support

For extra piece of mind we also give a five year warranty on all our control panels, extended to ten years when we commission them.

We are rightly proud of our reputation for excellent products and great, friendly service. Call us today - we'd love to tell you more.

0161 233 0600

[enquiries@medem.co.uk](mailto:enquiries@medem.co.uk)

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



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## SEC-L for laboratories and food technology areas

- Occupancy based ventilation control
- Gas pressure proving
- Engineer functions
- Fan interlocking
- Fire test isolation mode
- Over pressure alert
- Multi service isolation



## SEC-K for the production kitchen

- Fan interlocking
- CO<sub>2</sub> based ventilation control
- Gas pressure proving
- Secondary interlocking
- Fire test isolation mode
- Engineer functions
- Over pressure alert
- Electrical isolation

## SEC-B for boiler rooms

- Gas pressure proving
- Gas detection
- Auto restart on power failure
- Engineer functions
- Fire test isolation mode
- Over pressure alert
- Fan interlocking

## Medem inair for classroom CO<sub>2</sub> monitoring

- Simple one-button activation
- Minimum, maximum and daily average CO<sub>2</sub> levels
- Integrated ventilation control
- Monitors air quality in line with DfE BB101
- Real-time CO<sub>2</sub> and temperature level



With so much legislation in this area, visit the Medem website to find interpretations of the relevant sections and latest standards [www.medem.co.uk](http://www.medem.co.uk).

We also offer a CIBSE certified CPD session  
'Safe use of gas in education buildings'.  
Call 0161 233 0600 for details.





# The Numbers GAME

Consulting engineers and clients are increasingly frustrated by the amount of inaccurate, incomplete and misleading product-performance data with which they are forced to work. **Ewen Rose** reports



**A**ccurate performance figures are crucial to the assumptions designers make about the likely performance of a building services system, but – in many cases – that information is incomplete. Some products are even being deliberately mis-sold, according to a number of engineers.

‘This is a massive problem,’ said Angela Malynn, senior mechanical engineer at Arup. ‘Manufacturers need to make their information more freely available, and to be much more honest about how they arrive at figures.’

‘We spend a disproportionate amount of time going back to companies to get more comprehensive data and information we can trust. The big concern is that many design engineers are not given that time, so they make assumptions that can compromise the design.’

Examples of missing or misleading data



include: the temperature differences produced by boiler manufacturers for generating domestic hot water; seasonal efficiencies for variable air volume (VAV) air conditioning; and the performance of chillers in different climates.

## Assumptions

Malynn complained that there seemed to be a lot of assumptions made when it comes to establishing the performance of fire-rated ductwork, which suggested the test data was not comprehensive. ‘We shouldn’t have to ask what test conditions they used to arrive at certain figures – that should be available as standard,’ she said.

The fact that many manufacturers continue to provide out-of-date data – including discontinued products – creates confusion, according to Buro Happold senior engineer Tom Hopton.



JGPHOTOGRAPHY / SHUTTERSTOCK

It's frustrating when all manufacturers are tarred with the same brush, but I can understand why consultants might feel like this. A number of sales people are making life difficult for all of us – David Pepper, Lochinvar

'Manufacturers still offer products that provide very little information on life-cycle, carbon and cost,' he said. But many manufacturers claim they are trying to do the right thing, and are being let down by 'bad eggs'.

David Pepper, managing director of boiler and water heater manufacturer Lochinvar, is concerned that poorly informed sales agents are undermining the reputation of the sector, and said it is crucial for manufacturers to back up their claims. 'I have had conversations with consulting engineers who will no longer speak to manufacturers because they feel they can't trust us to give them a straight story.'

'Too many salespeople are only interested in making a sale, whether their product is right for the project or not. It's frustrating when all manufacturers are tarred with the same brush, but I can understand why consultants might feel

like this. A number of salespeople are making life difficult for all of us.

'Manufacturers have a lot to offer and, ideally, we would like to be more involved early in the design process – but how can we expect that to happen when people are out there undermining our reputation?'

Pepper blamed the problem on sales representatives often not having the required depth of knowledge, but also on 'people making deliberately misleading claims in order to secure business'.

Chris Meir, national sales manager at Remeha Commerical, says one way to remove the gap between anticipated and actual energy use is for manufacturers to provide a range of efficiencies for their products.

'Take heating, for example,' he said. 'While the latest high-efficiency condensing boilers may

boast an impressive headline efficiency of 98%, when retrofitted into a typical, existing low temperature hot water system – sized on high flow and return temperatures, and operated at full load – the efficiency figure will drop to the standard 80%.

'Manufacturers need to share their in-depth knowledge of their products. Supplying the range of efficiencies that a product typically achieves would enable specifiers and designers to provide a more accurate calculation of the predicted energy use.'

### Critical

It is also claimed that some manufacturers provide accurate test data, but that the product they supply is very different from the tested design. For example, a European standard for ceiling-mounted radiant heating panels was introduced in 2003 to smooth out variations in the data quoted by rival manufacturers, and to ensure the information provided to consulting engineers was reliable and consistent.

However, according to Mike Holding – managing director of Dunham-Bush – some manufacturers who test to the EN14037 standard, to calculate radiant thermal outputs, supply a completely different product. The main complaint is that they use the same panel, but don't include insulation, which is a critical factor in radiant heating performance, and a clear requirement of the testing regime.

'Having no insulation on the upper surface or inferior insulation allows them to increase claims for total heat output, but at the expense of the radiant performance of the installed panel,' said Holding. 'As well as misleading and confusing the

► design engineer, this has significant commercial implications, and creates an unfair competitive advantage for certain suppliers over those adhering to the requirements of the standard.'

The long-term consequence of this kind of inconsistent and misleading data production is poor building performance, according to energy auditor and commissioning specialist Mike Malina. He believes many consultants are also falling victim to 'technology hype'.

'The industry doesn't need bells and whistles, and shiny green bling on roofs – there has been some serious mis-selling going on, and many technologies simply don't live up to the promises of salespeople,' said Malina.

'The key to delivering energy efficient buildings is ensuring that different systems integrate with each other, but, to do that successfully, the manufacturers need to be open about how their products perform.'

Malina said that – out of several hundred buildings he had audited – he had only seen low-carbon technologies properly integrated twice. In many cases, technologies are competing against each other because the system has not been properly designed.

He urged suppliers to ensure they are able to support claims, and design engineers to get back to basics by using appropriate technologies, 'rather than green bling with 25-year paybacks'. 'We are allowing some people to fall into fuel poverty, yet are subsidising better-off families to put PV panels on their roofs – that's just crazy.'

The CarbonBuzz benchmarking exercise, backed by CIBSE and the Royal Institute of British Architects (RIBA), has exposed the fact that many commercial buildings are using between 1.5 and 2.5 times the amount of energy predicted by their designers. Inadequate and misleading product information is undoubtedly contributing to this



DOUG NELSON / GETTY IMAGES

◌ The industry doesn't need bells and whistles, and shiny green bling; many technologies simply don't live up to the promises of sales people – Mike Malina

problem, and the legacy for end users is higher energy bills and buildings that disappoint.

### Deadline

There are high hopes that wider adoption of building information modelling (BIM) ahead of the government's 2016 deadline will improve the situation, but engineers stress that it is the quality – not the quantity – of information that is important. 'BIM information is limited [currently] and not facilitating performance specifications,' said Buro Happold's Hopton.

However, consultants and contractors have to help manufacturers to get this right, according to

## ◻ Honest data Jaga managing director Phil Marris on telling it like it is

In the building services sector, manufacturers' technical literature exists to give a fair and honest appraisal of a solution, against a set of standards relevant to the project on which a consultant is working. Literature also serves to give additional usability, installation and operational information, as well as the essential performance data.

I cannot see the commercial benefit in misleading a consultant by including spurious claims or inaccurate data in technical literature. This is a relatively small and connected industry, in which disappointment, doubt and mistrust spread quickly, and float around even longer.

Responsible manufacturers have to take all

measures – and every conceivable safeguard – to ensure consultants can trust what we include in our literature. At Jaga, this means we always quote outputs against the relevant standard – and at the specific temperatures laid down by that standard – and show accurate correction factors based on the certified 'n' value for the product range.

We also always quote outputs for finished, assembled trench heating products, rather than on a potentially massively misleading 'per metre of finned tube', which we know has caused problems for others. Similarly, to arm consultants with truly workable figures for our cooling products, we also always quote cooling outputs as total cooling, and sensible

cooling at a defined relative humidity level.

In the area of trench heating – and for our other dynamic solutions, such as fan convectors and ventilation fans – we are completely honest about the noise levels, and provide comprehensive sound data that has been derived from testing across various frequency bands. We also always provide the free air flow and the effect of the grille design on the output.

We are in the business of partnering with consultants – not just on a single project, but over the long term – and having honest and clear data in our literature is just one aspect of the total service approach that we believe sets Jaga apart.



Andy Sneyd, president elect of the Building & Engineering Services Association (B&ES). 'Manufacturers are not necessarily providing the right type of information to support BIM models, but that is not really their fault, because the standard templates are still not available.'

'The crucial thing is the right data at the right time – not all the data at the outset,' added Sneyd, who is head of design for Crown House Technologies. 'BIM is a great opportunity for contractors to get involved early in the design process – and to stay in the game for longer – but we need to have the quality of information to back up our efforts. I still haven't seen an architectural BIM model with energy performance information, for example.'

The problem is not fundamentally about skills or ability, said Sneyd. Like many engineers, he believes the industry does have the right people, firms and technologies to deliver impressive and sophisticated buildings.

'It is almost always the process – or lack of it – that torpedoes the delivery mechanism,' he added. 'Project teams also struggle through lack of information at the right time: data delivered to the right person at the right moment during a contract will make a huge difference to how the building ultimately performs.'

Making available valuable information about building operation, in a format that is useful to clients, is an aspiration, but – equally – something that many in the industry feel we should already be capable of providing.

However, we may have to wait until BIM

evolves beyond the Level 2 required to meet the government's 2016 deadline, and the models become capable of delivering data to support the operation of buildings.

The new CIBSE BIM Group's Product Data Templates (PDTs) will help standardise information from manufacturers. PDTs require suppliers to enter details on specification, sustainability and facilities/asset management. Written in an Excel format, PDTs are usable with all BIM platforms. Visit [bimtalk.co.uk/pdts](http://bimtalk.co.uk/pdts)

Simon Rawlinson, partner at consultancy EC Harris, believes clients will become more enthusiastic about the availability of performance data when industry moves towards BIM Level 3 and the gathering of 'big data'.

'The future for BIM is enabling that big-data exchange that already exists for Amazon and eBay, but is not there yet for the built environment,' he told the recent Crystal BIM conference, sponsored by Amtech.

While consulting engineers have learned to work around the poor data problem, why should they have to?

Improving the flow and accuracy of product information would make the supply chain function more effectively, and improve project delivery to everyone's benefit – particularly those clients who are left holding the baby. 

6 Data delivered to the right person at the right moment during a contract will make a huge difference to how the building ultimately performs – Andy Sneyd



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## B&Q goes natural

A new B&Q retail warehouse in Bedford boasts a number of innovative natural-ventilation and smoke-control features. The 56,800 ft<sup>2</sup> store is the first phase of an £18.5 m development programme. Having a robust smoke/ventilation strategy in the event of fire is vital in a building regularly visited by the public, but Adexsi UK was also asked by the main contractor, R G Carter, to provide a solution that would deliver a high level of thermal control, and improved indoor air quality.

Adexsi's CE-certified Certilight dual-casement smoke ventilators were chosen to provide a combined smoke-control and natural-ventilation solution. The Certilight ventilators – as is common in most buildings of this type – are located along either side of the ridgeline of the roof. They are well insulated to help regulate the internal temperature by reducing heat losses during winter months. During the summer, the Adexsi ventilators will automatically power open, to introduce cooler air when the internal space reaches a certain temperature.

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

## Actionair updates fire damper range

Actionair has updated its range of FireShield bladed curtain fire dampers, which are now CE-marked 'E' rated. The FireShield range incorporates a unique, self-latching, removable, cassette-mechanism release, and stainless steel, folding curtain, with unbroken joints and external visual indicator.

The company – which is a brand of Ruskin Air Management, and celebrates its 40th anniversary this year – has produced new product literature and installation guidance to reflect important changes to European legislation.

FireShield fire dampers are fully compliant with the product standards EN 15650, which came into force in July 2013 and requires a CE mark on all construction products covered by harmonised European standards.

The dampers are used to maintain fire-safety compartmentation, and are suitable for use in air distribution systems tested to Eurovent Class A, B & C, and the B&ES ductwork specification DW144.

Standard FireShield dampers are housed in a continuously welded, galvanised steel outer casing, with square, rectangular, circular or flat-oval connections.

● Visit [www.ruskinuk.co.uk](http://www.ruskinuk.co.uk)



## Evinox launches ModuSat combined heating and cooling units

Evinox has launched the ModuSat CHHC Combined Heating & Cooling Interface Unit range, which is perfect for homes connected to a communal scheme that require both heating and cooling. The ModuSat combined heating, hot-water and cooling unit provides simultaneous heating and cooling, as well as instantaneous hot water. Designed to simplify apartment installations where cooling and heating is required, the CHHC unit has a small footprint that minimises required cupboard space, and provides easy access for service and maintenance.

The ModuSat CHHC is available in various plate sizes for a range of cooling, heating and domestic hot-water requirements, and can be supplied with a ViewSmart room controller, featuring humidity control.

Evinox provides a complete communal heating solution, including: central plantroom equipment; ModuSat Heat Interface Units; service and maintenance packages; energy metering; billing; and remote surveillance.

● Call 01372 722277, email [info@evinox.co.uk](mailto:info@evinox.co.uk) or visit [www.evinox.co.uk](http://www.evinox.co.uk)



## Diffusion's fan-assisted heat source

Diffusion has launched a solution to provide a fan-assisted heat source for direct installation into an indoor swimming pool area.

Swimming pools present major hurdles when designing directly sourced heating and cooling systems. First, the aggressive nature of chlorine attacks mechanical equipment and, second, there is the obvious danger of water being in proximity to electrical connections. The Diffusion trench-heating system negates all obstacles, enabling installation of an efficient heating solution. The Diffusion trench unit is constructed of high-quality stainless steel, which is resistant to corrosive chlorine. The spring-loaded rollup grilles are supplied in either natural anodised aluminium or white plastic.

Units have an innovative copper-to-copper, spiral-wound heat exchanger, which is equally resilient to chlorine, as well as being robust and easy to clean. To obtain the high heating duties required, the units come complete with an IP 55-rated axial fan, which can withstand short periods of full immersion in water.

● Visit [www.diffusion-group.co.uk](http://www.diffusion-group.co.uk)



## Wessex ModuMax mk2 condensing boilers

In response to market demand, the latest-generation Wessex ModuMax condensing boilers from Hamworthy Heating are now able to operate at 30°C differential temperatures. This makes them particularly suited to district heating schemes, and for projects with dual-heating sources, where condensing boilers are used to support the renewable energy source.

More heating systems are being designed with a wider differential temperature to enable condensing boilers to operate with a lower return temperature – providing greater opportunities for them to actually condense, resulting in lower fuel consumption.

The Wessex ModuMax mk2 boilers provide seasonal efficiencies up to 95.32%, and are fully compliant with the Energy Related Products Directive (ErP) and Building Regulations Part L 2013.

Their vertically stacking, space-saving design enables them to be used in plant rooms, where there is limited space.

These fully modulating condensing boilers can respond rapidly to changes in demand, and are available in 15 models, with outputs from 100 kW to 750 kW.

● Call 0845 450 2865 or email [sales@hamworthy-heating.com](mailto:sales@hamworthy-heating.com) or visit [www.hamworthy-heating.com](http://www.hamworthy-heating.com)



## Evomod high-spec boilers offer more options

The highly specified Evomod range of condensing, floor-standing boilers – from Ideal Commercial Boilers – has been designed to suit a variety of commercial buildings.

Available in outputs of 250, 500, 750 and 1000 kW, Evomod offers one of the smallest footprints for the available output, and can be stacked up to three modules high. Modules fit through a standard doorway, so installation is quick and easy. A backup boiler can also be added, without the need for more floor space.

In addition to Evomod's exceptional net efficiencies of up to 108.5% – qualifying it for the government's Energy Technology List (ETL) – energy use is further minimised by the control system, which can achieve a turndown ratio of up to 20:1. Evomod BIM components are available for the entire range.

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



## Lochinvar solar solution helps preserve Barnardo's vision

A new headquarters building for the children's charity Barnardo's has been built next door to its Village Homes site in Barkingside, Essex, which was developed by Dr Thomas Barnardo in 1876.

A key part of the environmental strategy was the specification of a solar thermal system. However, the charity requested that a rooftop solar array be invisible from the street. Boiler and water heater manufacturer Lochinvar came up with a solution involving the supply and installation of four direct-flow, evacuated tube solar collectors, which – under normal circumstances – would be angled to ensure maximum exposure to direct sunlight. However, the Lochinvar system was adapted so the collectors could lie flat.

The design enables tubes inside the collectors to be angled, so there is only a very small performance penalty if the collectors are laid flat. The solar gain is used to supply a Lochinvar HSV Thermal Store, which – in turn – provides pre-heated feed water to two EcoShield gas-fired condensing water heaters.

The solar thermal system is expected to contribute about 20% of the building's annual hot water demand.

● Visit [www.lochinvar.ltd.uk](http://www.lochinvar.ltd.uk)



## Hitachi Air Conditioning Europe announces new generation of Utopia IVX splits

Hitachi Air Conditioning Europe SAS has launched its latest generation of Utopia IVX Premium and Standard models for 2014. The lineup has been improved across both the Premium and Standard ranges, which are available from 2HP (single-phase) up to 12HP (three-phase). IVX Standard has a redesigned, compact cabinet (4,5 & 6HP models) to accommodate a heat exchanger with a greater surface area.

An updated fan motor and DC Inverter compressor – with a new shaft mechanism – achieves better seasonal efficiency across the range, and improved heating capacities even at low ambient temperatures (5HP and 6HP models).

The entire IVX product series has been optimised to maximise seasonal efficiencies even at partial load – improving SEER and SCOP figures – and all Utopia Premium and Standard models are ErP Directive Tier 2 compliant. The working range has also been improved, with the outdoor ambient temperature extended down as low as -15°C in cooling mode; heating capacity is up by between 29% (6HP) and 36% (5HP), even at outdoor temperatures as low as -20°C.

● Call 01628 585 394, email [aircon.enquiries@hitachi-eu.com](mailto:aircon.enquiries@hitachi-eu.com), visit [www.hitachiaircon.com](http://www.hitachiaircon.com)

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