

WINTER 2011

Buderus BULLETIN

Specially produced for industrial and commercial M&E contractors, consultants & specifiers



**A VERY WARM WELCOME
TO OUR BRAND NEW
TRAINING ACADEMY**

Intelligent Heating Solutions

Buderus
Bosch Group

BUDERUS OPENS THE DOORS TO ITS DEDICATED TRAINING CENTRE



As part of a multimillion pound redevelopment of our headquarters in Worcester, we have recently opened the doors to a brand new £1.5 million flagship training academy, which has been designed to showcase the wide variety of heating technologies available from Buderus and meet customer's growing requirements for specialist technical training for handling commercial and industrial installation projects

Located inside an impressive 400m² building, which took around 2 years to complete, the training academy was officially opened by The Leader of the Opposition, the Rt Hon Ed Miliband on 10th October. Within the academy there are a number of practical training rooms with working products that have been installed to provide authentic training and trouble-shooting experiences for contractors and consultants alike – the aim being to offer a 'one stop shop' for commercial and industrial training.

In a room dedicated entirely to products from the Buderus portfolio, installers and contractors can gain first-hand experience of working with a wide range of energy efficient cast iron, stainless steel and condensing boilers. And as we have increased our portfolio of renewable technologies this year, the training academy also features working models of the new GWPL 38 Gas Absorption Heat Pump and CHP unit, with new training courses now available to provide a detailed overview of how they work. At the very heart of the new facility, a 100m² open plan training area has also been built-in to the academy, featuring a life-sized single storey brick building, equipped with a commercial solar heating system. The mock installation also has a high level scaffolded walkway, which provides installers and contractors with a true experience of working with solar panels at height.

As the demand for low carbon technologies increases, we want to make sure that installers are fully equipped to take advantage of the opportunities in the commercial and industrial sectors and our range of training courses will assist with this. Most notably, the training centre is heated and cooled by a number of Buderus products, which is a true testament to the faith we have in these products to deliver whilst further demonstrating the benefits of an energy-efficient system in action.

Installers wishing to make the transition from domestic to commercial work can do so by enrolling on a Commercial ACS course, whilst additional courses, many of which can be completed in just one day, cover system design, installation processes and commissioning across our range of low carbon heating products and associated controls.

On the opening of the new training academy, Geoff Hobbs, Business Development Director for Industrial and Commercial Heating, Hot Water and Renewable Products said:

"Having spent over 20 years working in the HVAC industry I have to say that Buderus' new facilities are some of the most impressive I have ever seen. The training academy has been built with customers, installers and contractors in mind with training courses now available across our entire product range – boilers and renewable technologies – to help make life as easy as possible when working with Buderus products on site.

"Above all, the investment underlines our commitment to helping customers through the detailed process of specifying heating technologies – from initial consultations through to complete system design and integration, installation, commissioning and after sales service. As we head into 2012 with a complete portfolio of traditional and renewable heating technologies, together with one of the best technical teams in the industry, we would like to invite as many of our customers and their contacts as possible to join us for training. You can be assured of a warm welcome and we look forward to meeting you soon."

Please call 01905 753183 to discuss your training requirements and to book a place on a course.



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GEOFF HOBBS JOINS BUDERUS

— THE INTERVIEW

With over 20 years' experience of working within the HVAC industry at Director level, Geoff Hobbs has joined the Buderus team as Business Development Director for Industrial and Commercial Heating, Hot Water and Renewable Products with the specific aim of taking the business forward to new horizons in 2012 and a market leading position in the near future. Here Geoff explains how his career path has led him to Bosch Thermotechnology Ltd...

"I began my career working as an engineer in the technical department of a large home appliance manufacturer, designing special machine tools and fixtures. During my time in this business I gained valuable engineering experience and achieved technical chartered engineer status, which led me to my next position working for an engineering fabrication company based in Nairobi, Kenya. As General Manager I was responsible for overseeing the total production output of the business and around 200 employees, with a specific focus on introducing modern production techniques and strategic planning.

"Little did I know that my time in Kenya was to become the first of many international roles for me. On my return to the UK from Africa, I was appointed by a multinational company in the USA - a market leading specialist in the production of paint and coatings for the industrial and commercial sectors. This move took me into the realm of sales and marketing and I consider myself fortunate to have learnt how to sell and market effectively from the States, as they really excel at these disciplines and were great teachers.

"Following these roles I then moved into the HVAC industry and spent the next 20 years of my career working as Managing Director for two large Corporations, firstly an International Netherlands Group - Shutterveld Group bv - and then the Rinnai Corporation of Japan, whose factories produce around 12 million gas appliances per year distributed across the world. During my time at Rinnai, where I held the position of Managing Director from 2003 to 2011, my main focus was on establishing the UK and mainland

European commercial and industrial heating and hot water markets with a portfolio of energy efficient condensing water heaters, boilers, solar thermal and hybrid technologies.

On joining Buderus...

"I was delighted to accept the position of Business Development Director for Industrial and Commercial Heating, Hot Water and Renewable Products with Bosch Thermotechnology Ltd in the UK, because I saw it as a fantastic opportunity to put my years of experience to good use, whilst staying at the forefront of industry. And so I joined the business with the specific aim of building the Buderus brand in the commercial and industrial heating sector in the UK, whilst also embarking on a European water heating project that will also take up some of my time. For the first year in my new position I therefore have two roles to fulfil.

"My first task at Buderus is to focus on a 3 year strategic plan, which the Buderus team and I are currently producing and formulating. Having established Buderus in the commercial sector it is only natural that we now want to grow the business to become one of the market leaders in the commercial and industrial heating / water heating and renewable sectors too. A lot of hard work has already been carried out to develop the excellent systems, processes and product portfolio that have brought Buderus to where it is today. These strong foundations are crucial for taking the business forward and as we head into the New Year, I can see there are exciting times ahead.

"For starters, I will be learning about the Buderus product range, getting to know the sales team and the processes already in place. Above all, my philosophy is to put the customer first and I will be doing all I can to understand your requirements fully whilst helping you to understand the benefits of installing a Buderus system. To achieve this I am encouraging as much feedback from customers as I possibly can and I would be pleased to hear from anyone at any time via email: geoff.hobbs@uk.bosch.com

"The great news is that, not only do we have a fabulous new training academy based at our Worcester



Headquarters but we also have a fantastic portfolio of products too. With an extensive range of energy efficient cast iron, stainless steel and condensing boilers together with controls packages and a broad spectrum of renewable technologies - including the GWPL Gas Absorption Heat Pump, CHP unit and solar thermal - we have everything in place to develop bespoke solutions for customers designed to help them save on running costs and CO₂ emissions. As well as having a comprehensive range of products we are also lucky to have a really experienced team of technical people behind the brand who are available to help consultants, contractors and end users alike through any aspect of the specification process from start to finish.

"Alongside my role with Buderus in the UK I will also be working closely with Bosch Group in Portugal to grow sales of commercial and industrial water heating products within Europe. For the purposes of this project we have identified around 14 product champions from around Europe, who will become water heating specialists.

"As we head into 2012 we want to ensure customers fully understand the benefits of using our products and, whilst making it as easy as possible for customers to deal with Buderus every step of the way. Ultimately we would like to take the business forward with the aim of achieving a market leading position. However, we are aware that in order to get this absolutely right, the customer has to be our number one priority."

"My philosophy is to put the customer first and I will be doing all I can to understand your requirements fully whilst helping you to understand the benefits of installing a Buderus system."

Geoff Hobbs



GAS ABSORPTION HEAT PUMPS EXPLAINED

Pete Mills, our commercial technology operations manager offers a brief introduction to Gas Absorption Heat Pump technology and explains how these appliances work to provide heating and hot water in a highly efficient way, with a low carbon footprint.

In brief, gas absorption heat pumps work by drawing energy from the air using heat pump technology, driven by a highly efficient gas condensing burner. As the name suggests, this type of heat pump uses gas as the primary energy source directly at the point of use rather than electricity, which is generated largely in coal or gas-fired power stations. By doing so, gas absorption heat pumps have a significantly smaller carbon footprint than other heating appliances, such as gas-fired condensing boilers.

As well as being a sound low-carbon solution for heating installations, gas absorption heat pumps can also help cut running costs. By taking advantage of free energy available in the surrounding air, a gas absorption heat pump can also provide up to 65% additional heat for warming buildings or providing hot water.

Whilst gas absorption heat pumps are designed to take heat from the air in the same way as their electric counterparts, unlike electric heat pumps, there is no requirement for an electrical compressor. In its place, the system uses a generator-absorber refrigerant cycle, which is powered by natural gas or LPG burner. Unlike conventional heat pumps the gas absorption heat pump uses an Ammonia/water solution as an agent for absorbing heat from the environment. The ammonia refrigerant used in our GWPL 38 has zero

global warming potential (GWP) and zero ozone depletion potential (ODP).

Operating Principles

The basic operating principles of a gas absorption heat pump can be explained in 7 easy steps, as shown here in the diagram.

1. Generator. Within the generator the low NOx gas-fired burner heats the ammonia/water solution via a heat exchanger, increasing the temperature and pressure. This causes it to separate into a strong ammonia vapour and a weak ammonia solution. The strong ammonia vapour travels to the Condenser (2) whilst the weak ammonia solution is circulated to the Absorber (5).

2. Condenser. The now high temperature, and high pressure ammonia vapour releases its heat into the heating system in the condenser. In doing so, the vapour changes state becoming a liquid. This liquid travels to the Expansion Valve (3) on its way to the Evaporator (4).

3. Expansion Valve. The ammonia liquid, still at high pressure, passes through the Expansion Valve where the pressure falls. At this low pressure, ammonia has

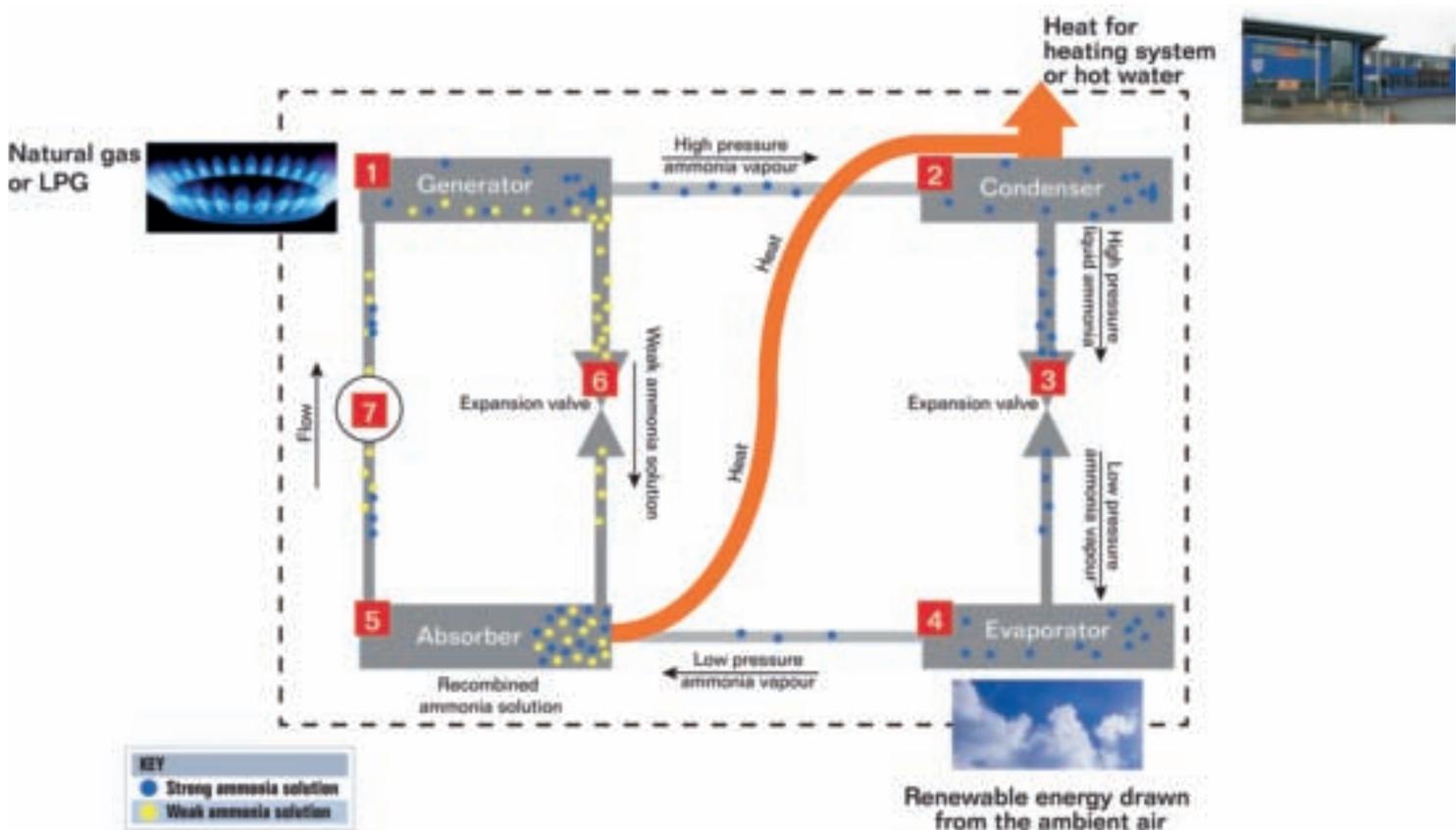
a reduced boiling point and the liquid changes back to a vapour. This vapour passes on to the Evaporator (4)

4. Evaporator. A fan draws ambient air through the fins of the Evaporator. The ambient air contains a high amount of free, renewable energy from the air. This energy is captured by the ammonia vapour. The now heated, low pressure vapour passes on to the Absorber (5).

5. Absorber. In the Absorber, the weak ammonia solution from the Generator (1) recombines with the heated vapour from the Evaporator (4), having first passed through a second expansion valve (6). As the vapour and weak ammonia solution recombine, the vapour changes state into a liquid, releasing further heat into the heating system. The now recombined ammonia solution is pumped (7) back to the Generator (1).

6. Second Expansion Valve. As described above, this second valve controls the flow of weak ammonia between the Generator (1) and Absorber (5).

7. Pump. The pump moves the ammonia solution from the Absorber (5) back to the Generator (1) where the whole process starts again.



UNVEILING OUR **NEW** COMBINED HEAT AND POWER MODULES

With the commercial Combined Heat and Power (CHP) system now added to Buderus' portfolio of low carbon heating appliances, Andy Whitehouse offers an overview of the technology and its suitability for various applications within the commercial and industrial sectors.

CHP is an appliance that operates as a gas-fired engine, whilst also generating electricity. This reduces the building's demand for electrical output from the mains, and because this engine generates heat as a by-product, hot water can simultaneously be fed into the heating system, catering for the hot water requirements of its occupants.

Whilst generating electricity using a gas-fired engine would usually be inefficient, the fact that the heat created by the engine is fed through a heat exchanger and into the heating system of the building significantly improves the unit's overall efficiency. Typically, the end user should expect to see efficiency levels of over 85%.

It is thanks to the efficiency levels of CHP that it is considered a worthwhile investment for those looking to significantly improve the energy management of a facility with a constant demand for heating throughout the year. Hospitals, hotels and leisure centres are facilities we would expect to be particularly suitable for the adoption of CHP, with many facilities within the industrial sector also likely to fit into this category.

Another benefit of CHP is that once installed, it can be relied upon as the lead electrical supply for the building, with mains electricity only being used to top-up the supply when required. Similarly CHP can also act as the lead heat source for the building, with boilers acting

in reserve to top-up the heat output when required. By pairing the CHP unit with a high-efficiency condensing boiler system, efficiency can be maximised, whilst also increasing the security of the heating supply on site.

In terms of the financial benefits of CHP, the technology is considered an investment with the potential to create a revenue stream for the owner due to the way in which the technology caters for most of the electricity and heating demand without calling upon a mains supply. This means that stakeholders can benefit from significant savings and a subsequent average payback period of just three years, even with the costs of installation and maintenance taken into account.

The system is also extremely kind to the environment in comparison to more conventional methods of power generation. CHP can offer CO₂ reductions of up to 1.2kg per kWh. Given the requirements of the CRC (Carbon Reduction Commitment) Energy Efficiency Scheme for larger public and private sector organisations to record and monitor their CO₂ emissions prior to purchasing allowances from the Department of Energy and Climate Change (DECC), CHP will ensure that organisations are able to limit the size of the allowance they are required to purchase, prompting additional cost savings.

The Buderus CHP product range covers outputs ranging from 19 – 240kW of electricity and from 34 to 374kW of thermal output, making the technology suitable for buildings of different sizes. An added benefit of the system is that up to five units can be cascaded to provide up to 1200kW of electrical output for applications where demand is particularly high.

We offer a free feasibility study on any potential site of installation to ensure that the system can be sized correctly prior to installation in order to maximise efficiency.

We also offer post-installation maintenance advice and support to help ensure CHP units are correctly serviced and maintained for optimum performance and longevity of the complete system. The service contract packages associated with the CHP units, offer up to 10 years' warranty cover as well as scheduled servicing and remote fault diagnostics to ensure the system is properly maintained throughout its lifespan.

For more information on the Buderus CHP range, visit www.buderus.co.uk



A CAST IRON CASE

Rob Brown Commercial technology consultant argues the case for the latest generation of high efficiency cast iron boilers.

Refurbishments, represent the great majority of installations, and choosing from the variety of systems which exist within the commercial boiler market make it inherently more complex than the domestic sector. In some cases, especially for large systems, the condensing option may be cost prohibitive or, depending on the annual heat requirements, impractical.

This doesn't mean that great improvements in energy efficiency cannot be made. Today's commercial boilers are much, more efficient than those available 20 years or so ago. Although many of these are, in fact, still in active service, their efficiency, judged by today's standards, is likely to be pretty poor.

So, when advising on a heating system upgrade, what does the building services manager or heating engineer do when a full condensing replacement is not practical? For instance for large high temperature

systems, typically needed in industrial processes, for those systems presently running on oil, or for many older installations where replacement of large parts of the existing radiators and pipework will make it cost prohibitive.

Where the existing system operates on higher flow and return temperatures, a condensing boiler replacement would not be the best choice as it would only occasionally operate in its most efficient condensing mode. In cases where high flow rates demand low resistance across the heat exchanger, the G and GE boilers with their corrosion resistant GL 180M cast iron are a durable long life option. Where replacement of large parts of the heating system will make it cost prohibitive, the cast iron boiler is a very practical choice.

In fact Buderus cast iron boilers meet the required 84% seasonal efficiency level under the Building Regulations in their own right, even before taking into account minimum controls requirements.



With variable outputs from 78kW to 1200kW Buderus cast iron boilers make an ideal replacement where a fully condensing system cannot be accommodated in practical terms. Boilers are supplied in unassembled sections to assist transportation and installation in otherwise difficult whilst confined spaces and front access via a hinged burner door makes servicing and maintenance straightforward.

An energy efficiency heating system can therefore be achieved by using Buderus cast iron boilers which incorporate the latest developments in high efficiency cast iron boiler technology.



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SPOTLIGHT ON: BELFRY GROUP

In the last issue of the Buderus Bulletin, we featured an installation project at Bishop's Blue Coat School in Chester, which was completed very successfully by Belfry Group Limited – specialists in building and engineering.

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Formed in 1993, Belfry Group Limited manage a number of building projects including contracts with Debenhams and BUPA, and hold innovation and sustainability in extremely high regard.

The organisation recently pioneered the 'Ecopod' – an innovative product targeted at applications susceptible to fuel poverty. The modular plant room, which is ideal for retrofit and refurbishment applications, was designed with assistance from Buderus. The Ecopod features both high output boilers and solar thermal panels from the Buderus product range in a system which minimises maintenance requirements and disruption. The system was also highly commended in the 'Product of the Year' category at this year's H&V News awards.

Belfry Group Limited now has a partnership agreement with Buderus to maximise the full potential of the Ecopod product and was also the first organisation to place an order for the newly-launched GWPL 38 gas absorption heat pump.

Keith Rimmer, group managing director of Belfry Group Limited said: "We have forged an extremely strong working relationship with Buderus over a number of years and have been able to reap the benefits of its strong product portfolio. Our relationship has always been extremely productive thanks to a number of shared values, including a focus on sustainability and we hope to build on this for years to come."