

SPRING 2012

Buderus BULLETIN

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



**BUDERUS RECRUITED BY THE
ROYAL HOSPITAL CHELSEA**

Intelligent Heating Solutions

Buderus

**WELCOME
FROM GEOFF HOBBS**



Welcome to the spring edition of the Buderus Bulletin. In this issue we're focusing on some of the very latest technologies now available from Buderus, which have been designed to improve the energy efficiency of all manner of industrial and commercial heating systems whilst also helping businesses reduce running costs and CO₂ emissions in line with the Government's Carbon Reduction Commitment.

Buderus' new Combined Heat and Power modules offer a more efficient way to generate heat and electrical power, compared to conventional methods. When combined with other low-carbon heating technologies, such as conventional boilers, solar thermal systems and heat pumps - and the correct controls - CHP can help maximise the energy efficiency of a complete heating system. For more detail see page 5.

Our cover story for this quarter tells the tale of a prestigious project Buderus has just completed at one of Britain's most respected establishments - the Royal Hospital Chelsea. Working closely with the Royal Hospital team and Fin Engineering, Buderus faced the challenge of designing a new, highly-efficient system for this Grade 1 listed building. The result was the installation of two 1MW GB162 cascades, which have really made a difference.

With the peak solar heating season just around the corner, we also announce the launch of our solar evacuated tube collectors, which maximise efficiency for those looking for a greener heating solution for large scale commercial properties.

As ever, you'll find contact details for our Commercial Technical Managers on the very back page of the Bulletin, so please do not hesitate to get in touch. We're always happy to discuss projects or technical solutions and look forward to hearing from you.

Geoff Hobbs
Business Development Director

COVER STORY: THE ROYAL HOSPITAL CHELSEA



We recently completed the successful overhaul of an inefficient boiler system at one of Britain's most esteemed institutions - The Royal Hospital Chelsea.

“The versatility of the GB162 proved a perfect solution for the replacement of the Hospital’s existing heating system.”

Stephen Moore, FIN Engineering

Owners of listed buildings across the UK are often faced with a number of challenges associated with maintenance. The Grade I listed Royal Hospital needed to replace a series of old, inefficient, boilers with a new highly-efficient heating system. Buderus appointed FIN Engineering to install a new heating system for the East and West Long Wards of the Hospital, which was founded by Charles II in 1682 and provides residency for some 300 eligible retired Army veterans.

The Hospital’s wards were previously heated by six dual fuel boilers housed within a basement plant room, several of which were out of service. As a result, the entire heating system was at risk of imminent failure, which was something Lieutenant Colonel Andy Hickling, Quartermaster and Director of Facilities at the Hospital was keen to avoid.

Lieutenant Colonel Hickling commented: “Whilst the Hospital has been developed incrementally over the years, it was clear to see that the heating systems in each ward had been somewhat left behind. As well as operating at low efficiency, the unreliability of the systems risked putting the comfort of our residents at risk, which was simply not an option.”

Having been initially contacted to survey the Hospital’s heating service, Buderus and FIN Engineering, in conjunction with engineering consultants Halcrow Yolles, designed a system which would not only maximise heating efficiency, but would also safeguard the heating for the residents of the Hospital’s East and West wards. This design was subsequently finalised by Lieutenant Colonel Hickling and thanks to a sophisticated bi-directional interconnector between the two cascades of 10 100kW GB162 gas-fired condensing boilers, any future interruption, or failure to, one cascade will automatically result in heat being diverted from the opposite boiler system.

The advantage of using a cascaded boiler system to generate heat and hot water is the reliance upon multiple boilers essentially sharing the workload across each boiler within the system. Each 1MW GB162 cascade is capable of modulating to as little as 20kW in line with demand and allows each individual boiler within the cascade to contribute equally to the overall base load. By sharing the load across the cascade, the lifespan of each boiler is maximised to its full potential.

As the combined total output of the two new boiler cascades stands at 2MW, the new installation has successfully reduced the overall installed capacity of the heating system by a third, which is due to the 95% efficiency levels of the GB162, coupled with the high degree of flexibility and system resilience afforded by the plant rooms interconnector.

With compact dimensions and a lift weight of just 70kg, the GB162 boilers proved to be ideal for the limited access plant rooms, where the potential for disruption to the nearby residents was a concern from the outset.

Whilst the collaborative arrangement between the two boiler cascade systems provides a versatile solution to the building’s heating requirements, the Hospital’s Grade I listed status prohibited adjustments to the existing building fabric. As a result, the stainless steel flue arrangements had to be carefully channelled through the building’s existing structure. Phased completion of the installation work over the summer months also meant that the heating was not interrupted.



Lieutenant Colonel Andy Hickling, Quartermaster and Director of Facilities at the Hospital, Carl Arntzen, Managing Director of Bosch Thermotechnology UK and Stephen Moore, Managing Director of FIN Engineering are accompanied by Ted Scott and Sam Cameron, two of the Hospital’s in-pensioners’

Stephen Moore, managing director of FIN Engineering, which carried out the installation said:

“Despite its challenges, the installation at The Royal Hospital gave us the opportunity to improve the heating system to benefit the 300 In Pensioners living within the two residential wings on site.

“As The Royal Hospital’s purpose is to provide a fitting home for retired soldiers, it was essential that the boiler replacement works did not impact on their quality of life. We achieved this by utilising our 3D modelling capabilities to design the heating system to suit modularisation and offsite fabrication which

ensured that we accessed the plant rooms directly from outside, avoiding the main circulation areas, and had a minimal on-site presence.

“The versatility of the GB162 proved a perfect solution for the replacement of the Hospital’s existing heating system. The clever interconnector between both plant rooms allows heat to flow either direction ensuring that in the unlikely event that one plant room is unavailable, the other can carry the heating load for both the East and West wings. Further to this, we know that the support offered by Buderus post-installation is something the Hospital can rely on.”



ALL BASES COVERED – THE BUDERUS TRAINING SERVICE

Having unveiled our new training and assessment facility in the last issue of the Buderus Bulletin, this issue sees us introduce John Neal, our commercial training specialist, who outlines the full training service we offer to those with an eye on heating within the commercial and industrial sectors.

“Having seen our training and assessment facility at our Worcester headquarters open towards the end of last year, we are now in a position to offer an unrivalled training service for installers, contractors, consultants and specifiers working for a range of organisations across the commercial and industrial M&E sectors.

“Recent years have seen demand for low carbon technologies increase substantially, particularly following the development of the Carbon Reduction Commitment (CRC), which has raised awareness of how significant energy management is within the commercial sector. Our job here is to build on this increased awareness to give those tasked with improving the heating systems of larger applications

the technical expertise required to make the most of the technologies available.

“The training courses we offer cover all aspects of advanced heating technology and solutions for the commercial market. Our state of the art training rooms sit alongside well-equipped classroom spaces to balance theory and discussion with practical hands-on experience and real-life problems of large-scale fully-operational commercial heating systems. This makes sure you will gain invaluable skills that you can take straight from the classroom into your next job.

“One of the strengths of our training service is that we take the specific needs and requirements of those

delegates in attendance into account before each course commences. We know our delegates often have more specific requirements for training and this is something we look to build on over the course of each one of the sessions we offer. Ultimately, we want each and every one of our customers to benefit from the training we offer and for their business to benefit as a result, which is why we try to be specific with our course content where possible.”

We are also able to draw upon a substantial level of experience within the industry to offer you the course content you need from those who have hands-on experience in the industry. With the majority of our training courses led by John Neal, you have the opportunity to draw upon his 25 years' experience, where he has held positions within the domestic sector of the industry, before progressing on to large installation work and a service engineer role.

John continues: “Generally I find that many of those who attend our training courses have a clear idea of a particular outcome they are hoping to achieve before they even start the session. Perhaps they have an upcoming job where they will be required to install one of our products, or their manager may have sent them on a course to broaden their knowledge for the benefit of their company. Either way, I am confident that thanks to a number of years' experience working out in the field, I am able to relate to the needs of each individual and can run our training courses accordingly as a result.”



COMING SOON: CHP TRAINING

We will soon be offering two associated training courses to assist those looking to take advantage of the Combined Heat and Power (CHP) technology.

With interest in CHP having gathered momentum over recent years, we plan to offer a one day product overview course, as we do with many of our other products. This course will allow those of you with an interest in CHP to touch upon some of the key features of the technology and its application, which will then give you more confidence to specify the technology for your work.

We are also currently developing a three day CHP installation course, with the aim of giving you all the knowledge and skills that you need to install CHP technology. With installation work requiring the installer to hold a gas engines qualification, the training and assessment for this qualification is set to be included within our three days, which will then act as a 'one stop shop' for all CHP installation needs.

For more information, or to pre-book a place on a CHP course, please call 01905 726575 or visit www.buderus.co.uk

THE GOLDEN RULES OF CHP SPECIFICATION

With fuel and electricity prices on the increase now is a good time to investigate the potential of Combined Heat and Power (CHP) systems for reducing the cost of heating and hot water in commercial and industrial environments. Andy Whitehouse, Industrial and Commercial Technology Consultant for Buderus explains:

"Combined Heat and Power (CHP) is not a new concept in the UK but with fuel and electricity costs on the increase, this technology is currently experiencing somewhat of a revival thanks to its ability to generate electricity as well as heat. In short, a gas-fired combined heat and power (CHP) 'module' offers a more efficient way to generate heat and electrical power, compared to conventional methods.

The Basics

"A typical CHP module consists of a gas engine, a generator and a heat exchanger system. The gas engine drives the generator to produce three-phase electrical power, which feeds in to the main low voltage distribution system where it can be used locally or exported to the national grid (although there is no benefit for exporting electricity as CHP is not currently recognised by the Feed In Tariff).

"Heat is produced as a by-product of the power generated, which in a conventional power station would be wasted. However, the heat generated by a typical CHP module is used to generate hot water via the integral heat exchangers. This hot water may be used for space heating, process heating or heating of domestic hot water. When hot water is not required immediately, it can be kept in a suitable storage vessel for later use (see schematic diagram).

The Main Criteria

"When embarking on a consultation project, Buderus requests approximately 12 months' worth of energy data - gas and electricity usage - from the customer. In addition to this, we also ask for details of the price per kW hour that people have

been paying for those services so we can make a thorough assessment of a building's requirements and calculate payback timescales using a bespoke software package we've developed.

"Another important benchmark we look for when assessing a site for CHP is a minimum of around 5,000 running hours per year. This is for the simple reason that, like all engines, a CHP module needs to warm up properly to operate at maximum efficiency.

"Stopping and starting the engine within a CHP module is not advisable and can have a negative impact on the life of the technology over a period of time.

Next Steps

"If calculations look positive, the next stage is to assess the correct size of CHP module required. Fitting oversized units can lead to the production of too much heat for a building, meaning some of this has to be 'dumped' - thus reducing the total efficiency of the system. So getting this right is essential.

"Another golden rule of CHP specification is that CHP modules should always be installed in conjunction with boilers for back-up and peak demand requirements. CHP systems should be sized according to a building's thermal base load to ensure maximum efficiency. However, whilst CHP can meet this base load requirement most of the time, high efficiency boilers are needed to satisfy a building's peak heating load - such as during colder winter months - as CHP alone would not provide the most efficient solution.



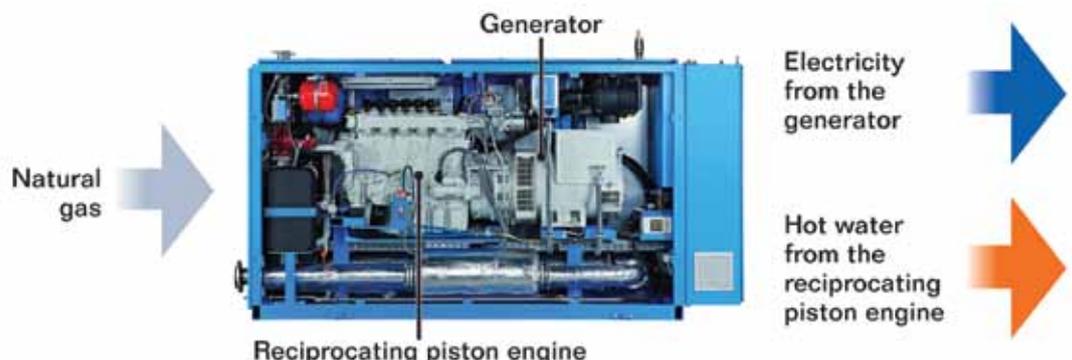
Investing in CHP for the long-term

"Once installed, it is vital to take care of the long term 'health' of any CHP the system. At Buderus we sell CHP with the intention of the customer first agreeing to have the protection of a service contract in place.

"If CHP units are not correctly maintained there is a risk of the engine within the module breaking down in years to come. When that happens, rebuilding the engine comes with a large cost attached so problems like this are easily avoided. Within Buderus' service contract the engine is replaced after 44,000 running hours or approximately 5 years, to help maintain the life of the product and achieve optimum performance. So with due care and attention, CHP can offer a short payback period when operating in partnership with a back-up boiler".

For more information on CHP, please call our customer service department on 0844 892 3004.

Total system solution CHP provides electricity, heat and hot water





NEW: BUDERUS SOLAR EVACUATED TUBE COLLECTORS

NOW AVAILABLE

Contact us...

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The latest additions to our solar portfolio, our SKR6 and SKR12 evacuated tube collectors, will not only preserve valuable fuel and help reduce heating costs for large scale commercial properties, but will also help protect our environment for future generations.



Thanks to over 30 years of experience developing and manufacturing solar collectors, accessories and controls for the European market, we are familiar with the importance of developing high quality technologies which suit the needs of commercial and industrial stakeholders in the UK. Our SKR6 and SKR12 solar evacuated tube collectors are the latest to join an established line-up of renewable heating and hot water technologies.

Insulation provided by the tubes also guarantees high performance even when the weather is cooler. Depending on the water heating requirement, the fully pre-assembled 6 and 12 tube panels can be flexibly combined to satisfy roof areas of all sizes. The attractive panel design is suitable for all architectural styles, whether the installation calls for a pitched roof, flat roof or façade application.

Easy to install

Evacuated tube solar water heating systems work on a similar principle to the vacuum flask by using the excellent thermal insulation properties of a vacuum to help generate heat. Our evacuated tube solar collectors combine an innovative design with high quality materials to provide environmentally-friendly and reliable low-cost hot water. They produce no CO₂ emissions once fitted, helping to reduce the carbon footprint of a property.

The special design features offered by our evacuated tube collectors make them quick and easy to install. Collectors are supplied complete with 6 or 12 vacuum tubes which have been pre-assembled. For added convenience the collector panel can be attached to the flow and return connection pipes on one side only, providing an installation which is quicker, neater and requiring less pipe work where installations of large arrays are necessary. We also provide a large range of accessories, allowing the installation of evacuated tube collectors on both pitched and flat roofs, as well as against façades.

In optimum conditions they can produce up to 60%* of a property's hot water, but they are also effective even on days with little sun. The outstanding thermal

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