

Summer 2014

Bosch Inside.

The leading voice of the **Commercial and Industrial Heating** sector.

Steam solution for
world renowned brewer



BOSCH

Invented for life



Welcome to the summer edition of the new Bosch Inside newsletter, which gives us the perfect opportunity to update you on exciting project developments as well as hot button topics within the industry.

Our cover story this month showcases a standout installation at one of the UK's largest breweries, highlighting the growing brand presence Bosch now has in the UK steam market.

We outline another successful installation that was completed at Delamere House in Cheshire, which has put the local authority on the right path to meeting stringent carbon reduction targets.

This issue also sees us focus on the designing and sizing of Combined Heat and Power (CHP) systems, which is a technology that continues to grow in popularity.

We highlight a typical working day with the Engineering Services department, and look at the very high standard they maintain to ensure you receive the best after sales care.

Finally, we also take a look at the role of modern day energy centres as housing associations look to maximise heating and hot water efficiency.

I would like to take this opportunity to thank you for your ongoing support and wish you a great summer.

We hope you enjoy the newsletter.

Geoff Hobbs
Business Development Director

Cover story

Welsh brewery highlights need for steam efficiency

To maintain its reputation as a producer of high quality beers and ciders, one of the world's largest brewers carries out an extensive asset management programme across all three of its UK breweries to ensure all production systems are performing at peak levels. This is highly important as each brewery operates 24 hours per day, seven days a week.

In order to produce the best quality beer, it is vital that high quality dry saturated steam is delivered at the correct points and at correct temperatures.

One of the three breweries is based in Wales and, following a detailed assessment, it was determined that a more effective and efficient steam boiler system be sourced. After considering the options available in the marketplace, we were contacted by the brewery to provide an energy efficient steam boiler system with a view to improving operational capabilities.

Specification

Having reviewed the required efficiency and operational requirements of the brewery, it was agreed that the brewery's full performance levels could be met through the use of a six tonne UNIVERSAL UL-S steam boiler, almost half the size of the 11 tonne boiler brewery had originally been utilising. In addition, the existing 20 tonne hotwell was replaced with two three tonne hotwells to feed the new reduced capacity boiler.

The system is a conventional three-pass wet back shell boiler, capable of transferring high pressure saturated steam up to 235°C at a pressure of up to 30 bar. Capable of producing 6,000 kg/h of steam, the UNIVERSAL UL-S model produces low-carbon clean saturated steam, making it an ideal solution to meet all the requirements set out by the brewery.

The UNIVERSAL UL-S is equipped with flame/smoke tubes, allowing a greater recovery of heat contained in the flue gases. This increases the energy efficiency of the boiler



“Bosch provided a high level of aftercare service by visiting the site on multiple occasions to deliver extensive training on the entire workings of the system to our operatives.”

by up to seven per cent in dry running operation, and up to fifteen per cent in condensing operations.

Installation

Once the existing system had been removed, it was important that we modified the surrounding steelwork, gantries and all the utility mains to ensure a smooth transition when installing the new boiler, which was half the size of the old system. We also had to think outside the box when it came to the installation of the hotwell which was to be installed on the fifth floor. With the walkways and gantries making it difficult to install a single 12 tonne hotwell, it was agreed that the best way to proceed would be to install two six tonne hotwells instead, which allowed installation to take place quicker and easier.

Rob Brown, our Technical Manager for Industrial Boiler Plants, said: “To produce high quality beer whilst maintaining low production costs, it is essential that the brewing process is operated as efficiently as possible. When dealing with one of the recognised leading brewers in the world, it was vitally important that we took the time to consider the design and operation of the complete saturated steam system, taking into account the types of processes, individual requirements and the types of beer being brewed.

“By taking these factors into account, we were able to design a system which not only increased operational capabilities, whilst utilising almost half the output of the original boiler, but recovered and reused heat available to ensure the highest efficiency levels possible.”

A Project Engineer at the brewery concludes: “With energy costs at an all-time high, and drinks manufacturers



Products supplied by Bosch:

- 1x UNIVERSAL UL-S steam boiler**
- 2x Hotwells**
- 1x BCO Control Unit**

having to face up to the challenge of fulfilling their need for steam without tarnishing their own environmental credentials, making the correct decision on the most suitable technology for process heating is essential. “In addition, Bosch provided a high level of aftercare service by visiting the site on multiple occasions to deliver extensive training on the entire workings of the system to our operatives. This ensured that the brewery maintained peak performance levels during the initial post-installation period and has added real value to how our brewery operates.”

For more information on our industrial steam boiler range, please visit www.bosch-industrial.co.uk or call Simon Tarr, Sales Manager for Industrial Boilers on 07790 489581

CHP: Can Less Really Be More?

When it comes to the specification and subsequent installation of Combined Heat & Power (CHP) modules, a great deal of discussion is often centred around system design and sizing. Here, Alex Parkinson, our Commercial Sales Manager for CHP, evaluates the pros and cons of multiple module CHP systems vs single module arrangements:



“The most effective way to design a CHP system is to align the electrical output as closely as possible with the load of the application.”



“With CHP still generally viewed as something of an emerging technology, discussions around the best design practices are still ongoing. As with any appliance within the heating and hot water industry, there is no ‘one solution fits all’ approach, which means consultants and contractors always need to make a multitude of performance-related considerations. As far as this is concerned, there appears to be differences of opinion across the industry with regard to when cascades of multiple CHP modules, and single module systems should be used. Generally speaking, the conclusions lie in the assessment of three key areas.

Installation cost

“When it comes to the time and cost involved in the installation of a CHP system, a suitably-sized single module inevitably boasts the fewest complications and subsequently, the most cost-effective installation. The delivery and installation of one module means that only one

set of gas, electrical, BMS, and flow/return connections needs to be made, and only one meter required. As a result, the installation and commissioning procedure ought to be relatively straightforward.

“By contrast, multiple units require an increased number of ancillaries. A system comprising three CHP modules for example, would require three of each connection to be made, three meters to be fitted, and three commissioning procedures to take place. This extended list of requirements results in longer installation time, and added labour costs.

Plant Space

“As with any commercial or industrial heating and hot water technology, an investment in CHP will have spatial implications and as a result, careful planning of the plant room layout will be required. Naturally, one of the major drawbacks of a system comprising of multiple CHP modules is that more plant space is generally required. The physical

dimensions of each CHP module isn't the only logistical consideration to be made here either, as each module will generally require a connecting buffer vessel and a certain amount of clearance to be able to operate to its design potential.

Load mapping

"The most effective way to design a CHP system is to align the electrical output as closely as possible with the load of the application. Whilst the advantage of a CHP cascade is the ability to track electrical load to a lower output in the event of a reduction in demand, this can also prove to jeopardise efficiency levels. Ultimately, the full benefit is only realised when the number of hours that the system runs at full load is maximised, so having modules within a cascade tracking electrical load to lower outputs shouldn't necessarily be seen as a desirable option.

"Furthermore, instances in which a load as little as 10kW_e is required tend to be few and far between. In the event there is no demand for heat and therefore very little financial saving potential, the maintenance costs of a multi-module cascade would make it not economic to operate.

"As an alternative, a single module system can, if the manufacturer's product specification allows, modulate both electrically and thermally to 50 per cent of the load. While this level may not be as large a reduction as with a three module cascade for example, having a system designed to modulate for long periods is not a strong design scenario as the cost generally far outweighs the benefit.

"Although it is usually possible to meet the requirements of an end-user with the design and installation of a single or multiple CHP system, it is important to consider the advantages and limitations of each approach beforehand. Recent industry trends suggest that there is a tendency for consultants and contractors to favour a cascade of multiple units; however a single CHP module can often be a more attractive proposition – especially when it comes to installation and maintenance costs. As the range of CHP outputs offered by manufacturers continues to grow, stakeholders will be able to benefit from greater versatility and assurance that a single module can be sized according to the thermal base load of a project.

For more information on our range of CHP modules and customer support packages, visit www.bosch-industrial.co.uk or call Alex on 07794 685562

CIBSE Young Engineers Network

Bosch Provides CHP Workshop For Young Engineers

Young members of the Chartered Institute of Building Services Engineers (CIBSE) were able to gain an insight into how to reap the benefits of Combined Heat & Power, thanks to a guest lecture by Alex Parkinson, our UK CHP Sales Manager.

The educational workshop on 24th April was attended by 25 members of the CIBSE Young Engineers Network's (YEN) North West region.

During the lecture, Alex focused on the fundamental design principles for successful CHP, aiming it at both engineers new to CHP or wishing to refresh their knowledge. Alex's presentation detailed examples of the best and worst hydraulic arrangements, electrical connections, competing and complementary technologies, and importance of service and remote monitoring.



To book a CPD training course, please call our training department on 0330 123 0166 or email training@uk.bosch.com.

A Day In The Life Of Our... **Commercial Engineering Services**

As we continue to profile the work that goes on behind the scenes to ensure you can count on a wealth of support from Bosch, this month sees us speak to Richard Keen, Commercial Service Manager, who explains how our dedicated engineers can help to ensure each project is able to perform to its potential:



“...every one of our commercial and industrial engineers is directly employed by Bosch rather than a third party service provider.”

Did you know?

Last year our service engineers had the required spare part 98% of the time

“In most instances, a day’s work in the engineering services department begins the evening before, when at the end of the day, each of our 15 commercial and industrial engineers will download the following day’s work to ensure the day’s route can be planned, and that vans can be stocked with the most appropriate parts. It is usually the case that the stock profile of a particular van will reflect the area that the engineer specialises in, which ultimately ensures we can minimise downtime once we are on site.

“Our aim is always to ensure we can offer a prompt and efficient service as we recognise just how costly a heating system performing below its potential can be.

“Generally, a day on site begins between 8am and 9am, based on customer requirements, with an induction to

ensure all health and safety procedures are adhered to. After these formalities have been completed, we have an in-depth discussion with the contractor regarding the technicalities of the installation in question. This is absolutely key to ensure we are able to meet the performance objectives set out by the customer.

The key is commissioning

“Arguably our most important role is the involvement we have in the commissioning process. Given our wealth of product-specific knowledge, we endeavour to ensure consultants and contractors are left with a system capable of meeting its specification criteria. Putting equipment into operation requires us to check that it has been specified correctly,



that it complies with gas safety requirements, and that the settings – in particular boiler combustion levels – are programmed correctly.

“Upon completion of an extensive and thorough commissioning process, one of our policies is to perform a full handover, where we demonstrate how every function of the boiler works. We need to be mindful of the fact that a system will only operate to its full potential if overseen by a knowledgeable and confident operative, which makes this handover one of the most important aspects of our role. With the handover complete, a detailed commissioning report is produced to ensure the stakeholder has access to a record of all works completed, whilst a job report also ensures the central office at Bosch has a track of all work completed, should the project need to be revisited in the future.

Committed to high performance

“One of the biggest advantages our department offers to contractors, consultants, engineers, and specifiers, is that every one of our 15 commercial and industrial engineers is directly employed by Bosch rather than a third party service provider. This means that each engineer can be trained thoroughly on each product they work on, as well as being backed by a dedicated commercial contact centre, which is the initial point of contact for any incoming enquiries.

“Aside from general maintenance queries and commissioning processes, our department should also be the first point of contact for any faults.

“At Bosch, we have a longstanding commitment to setting global standards – not only in the construction of high-quality heating and hot water systems, but also the level of engineering support that sits behind our product range. By investing in a dedicated Engineering Services department, our ultimate aim is to guarantee that M&E professionals benefit from the best possible return on their investment.”

For more information on our comprehensive after sales service, visit www.bosch-industrial.co.uk or call us 0330 123 3004.

Step-by-step: The commissioning process

- 1.** On the day of any scheduled work, the customer can expect a phone call advising them of our engineer's estimated time of arrival, to allow them to prepare the site accordingly.
- 2.** Upon arrival, a site induction will ensure the engineer is familiar with both the health and safety, and logistical considerations they will need to make over the course of their time with the customer.
- 3.** At this point, the engineer will carry out a visual assessment of the installation, ensuring that the boilers have been installed in accordance with the manufacturer's instructions and relevant standards. This generally covers the flues, ventilation, and safety equipment, to ensure the system appears to be in full working order.
- 4.** A full commissioning procedure is carried out in order to ensure the boiler is operating at its optimum efficiency.
- 5.** With the boiler in full working order, the control system is then commissioned in line with the customer's specific requirements.
- 6.** At the end of this process, a full commissioning report is produced, which details all combustion readings, safety checks and comments regarding installation of equipment.

Case Study:

Delamere House, Cheshire

It is essential for any council to carry out rigorous maintenance programmes on crucial elements to ensure its building stock remains in good condition. One such council in the North West of England has invested in a new heating system that not only offers cost savings but also meets the requirements set out in the local authority's carbon reduction policy.

Products supplied by Bosch:
6x GB162 100kW

"... Gas consumption has been reduced by 32 per cent with substantial savings. To receive savings like this in such a short period of time is testament to the work undertaken"

- Robert Edwards, Project Officer
for the Asset Management Team at
Cheshire East Borough Council



Cheshire East Borough Council implements an extensive cyclical maintenance programme for the replacement of heating boilers across all of its building stock. This plays an integral part of their Asset Management Plan which ensures all heating systems are performing at peak performance levels, which is vitally important as the Authority works towards a 25 per cent reduction in its carbon emissions by 2016.

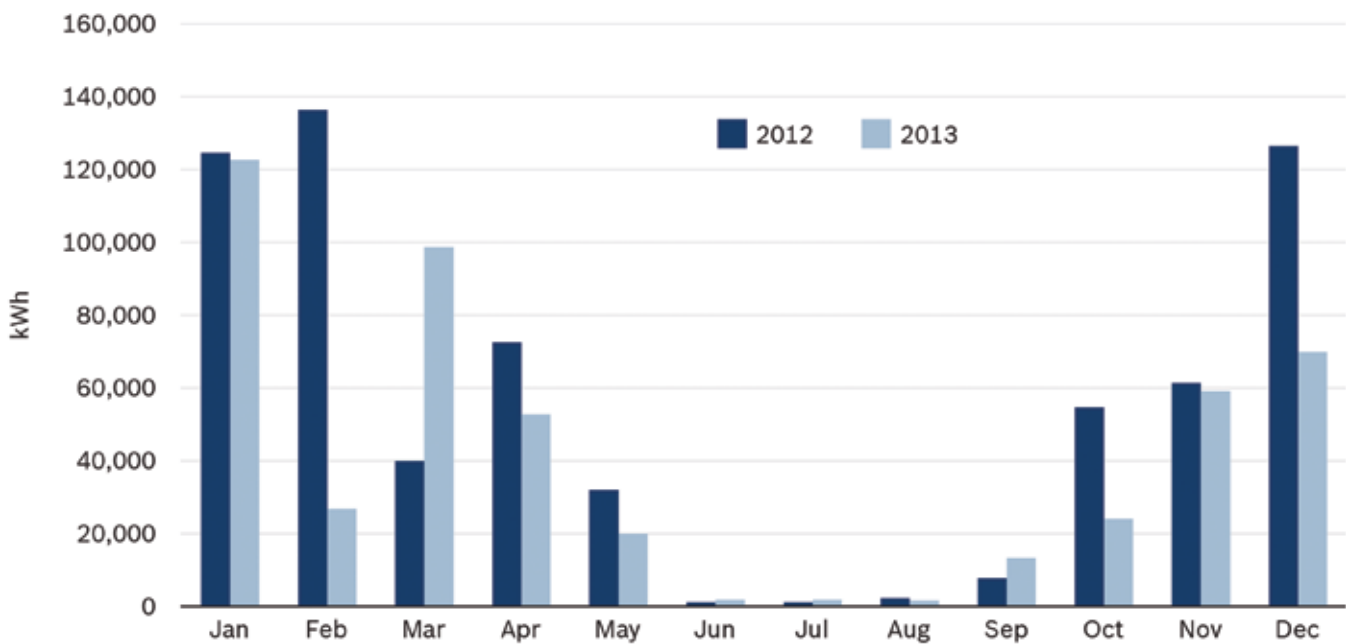
Following a detailed assessment of the council's seven storey regional office, it was determined that a more effective and efficient system should be sourced. After work undertaken on previous projects and an extensive evaluation of the various options available, Cheshire East Borough

Council and its building services contractor got in contact with us. The council was keen to promote sustainability and improve energy efficiency throughout its building stock, so it was imperative that the new heating system would not only be economically viable, but also reduce carbon emissions.

Improved efficiency

Having taken all the required elements into account, we proposed a system which utilised our GB162 light commercial boiler. With net efficiencies of up to 110% and NOx emissions of less than 40mg/kWh, the GB162 provides clean, low-carbon heating, making it the perfect solution to meet all of Cheshire East Borough Council's requirements.

Delamere House Gas Consumption



Please note March 2013 weather was second coldest on record (Met Office)



The GB162 is also Energy Management System (EMS) compatible and can be modulated to just 20 per cent of the total output, providing year round efficiency according to seasonal demand.

Quick pay back

Robert Edwards, Project Officer for the Asset Management Team at Cheshire East Borough Council, said: "CEBC Asset Management Service cyclical maintenance programme is used as a planned preventative measure to ensure installations are performing to their potential at all times. The Asset Management Plan condition assessment identified that the existing heating boiler at Delamere House was near its designed life expectancy. Therefore a more effective and efficient system was installed to prevent disruption of a busy regional office.

"We have recently conducted our first performance review of the heating installation and gas consumption has been reduced by 32 per cent with substantial savings. To receive savings like this in such a short period of time is testament to the work undertaken in conjunction with Bosch Commercial and Industrial Heating."

For more information on our GB162, or our entire product portfolio, visit www.bosch-industrial.co.uk or call us 0330 123 3004.

Centralising Energy Efficiency With **District Heating**

As Housing Associations look to maximise heating and hot water efficiency, 2014 could well be the year modern district heating schemes make their mark. Pete Mills, our Commercial Technical Operations Manager, explains how the system is a cost-effective solution to meeting the UK's heat demand.



“With the Department of Energy and Climate Change (DECC) now offering funding for authorities and associations to carry out district heating feasibility studies, we could be set for an influx of contemporary systems in the not too distant future.”



“It was during the 1980’s that district heating schemes were slowly disregarded in favour of installing individual boilers across large scale housing stock. This led to a number of problems, including leakages or unsustainable heat losses due to long pipe runs, which led some local authorities to rethink their heating strategies. Today however, advances in heating technologies and controls offering greater reliability and efficiency, not to mention the advent of renewable options, could mean we are looking at a surge in popularity of this kind of arrangement.

Longevity

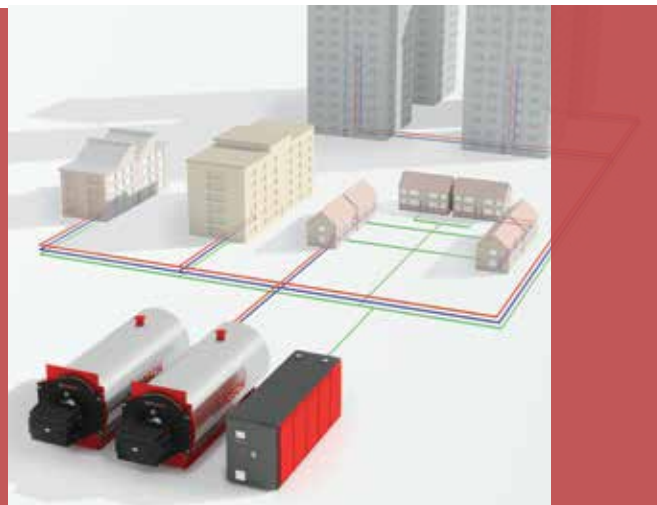
“For most stakeholders, system longevity is an absolute must. The benefit of modern district heating schemes is that the pipes used to deliver low temperature heat into homes are not specific to the type of technology generating the main source of heat. For example, a district heating system can be used in conjunction with other technologies, such as Combined Heat and Power (CHP) unit, a biomass boiler or geothermal heat to further enhance energy efficiencies.

“This flexibility is appealing to Housing Associations, as when district heating pipes are installed, the investor can be rest assured that they will easily be able to upgrade the system in time to incorporate the most efficient and appropriate heating solutions available – for example, renewable and hybrid technologies.

Modern district heating

“Today’s district heating schemes can work by distributing heat generated by a centralised plant room to individual properties via Heat Interface Units, which provide both space heating via radiators, and instant hot water for the residents. Despite not being an option for the original district heating installations decades ago, the units available on today’s market have been designed to keep efficiency to a maximum when fuelled by a centralised source. The beauty of the district heating concept is that schemes don’t have to be large, with even small-scale heat networks having the potential to offer significant advantages for social landlords.

Bosch provides a solution to both small and large scale district heating system



"Research has shown that district heating schemes currently provide approximately 1-2% of the UK's heat demand. However, it has been stated that if modern day energy centres are designed to perform at optimum levels, district heating schemes could easily supply up to 14% of the UK heat demand, having a significant impact on the reduction of energy bills for consumers.

In addition, with the Department of Energy and Climate

Change (DECC) now offering funding for authorities and associations to carry out district heating feasibility studies, we could be set for an influx of contemporary systems in the not too distant future."

For more information on our district heating solutions, visit www.bosch-industrial.co.uk or call us 0330 123 3004.

Bosch Urges RHI Recognition For **Gas Absorption Heat Pumps**

The Department of Energy & Climate Change (DECC) has been urged not to miss the opportunity to recognise gas absorption heat pumps (GAHPs) within the non-domestic Renewable Heat Incentive (RHI) when the scheme is formally reviewed later this year.

Geoff Hobbs, our Business Development Director, argues that GAHP technology offers non-domestic investors the 'best of both worlds' when it comes to efficient use of the UK's gas infrastructure – a strength that could prove invaluable for years to come.

Geoff commented: "With the forthcoming review of the RHI, our Government has the perfect opportunity to give gas absorption heat pumps the recognition they deserve as one of the most effective and efficient ways to utilise natural gas, not to mention LPG for those businesses located off the gas grid.

"Given the extensive nature of the UK's gas network, a measured approach to the integration of renewable technologies was always needed. GAHPs could prove

invaluable by providing an alternative means of delivering renewable heat without compromising our existing gas infrastructure.

"By using gas or LPG as the primary energy source directly at the point of use, rather than electricity which is generated largely in coal or gas power stations, GAHPs have a significantly smaller carbon footprint than comparative technologies, which is great news for both the new build and refurbishment sector.

"What we need to do now is ensure the industry's consultants, contractors, and specifiers have access to the technology, training, and support packages to reap the benefits of what is without doubt a technology yet to fulfil its full potential in the UK."

Bosch offers a dedicated gas absorption heat pump training course, specifically aimed at installers, engineers and specifiers.

For more information on Bosch Commercial and Industrial Heating and its complete product portfolio, please visit www.bosch-industrial.co.uk or call 0330 123 3004.

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