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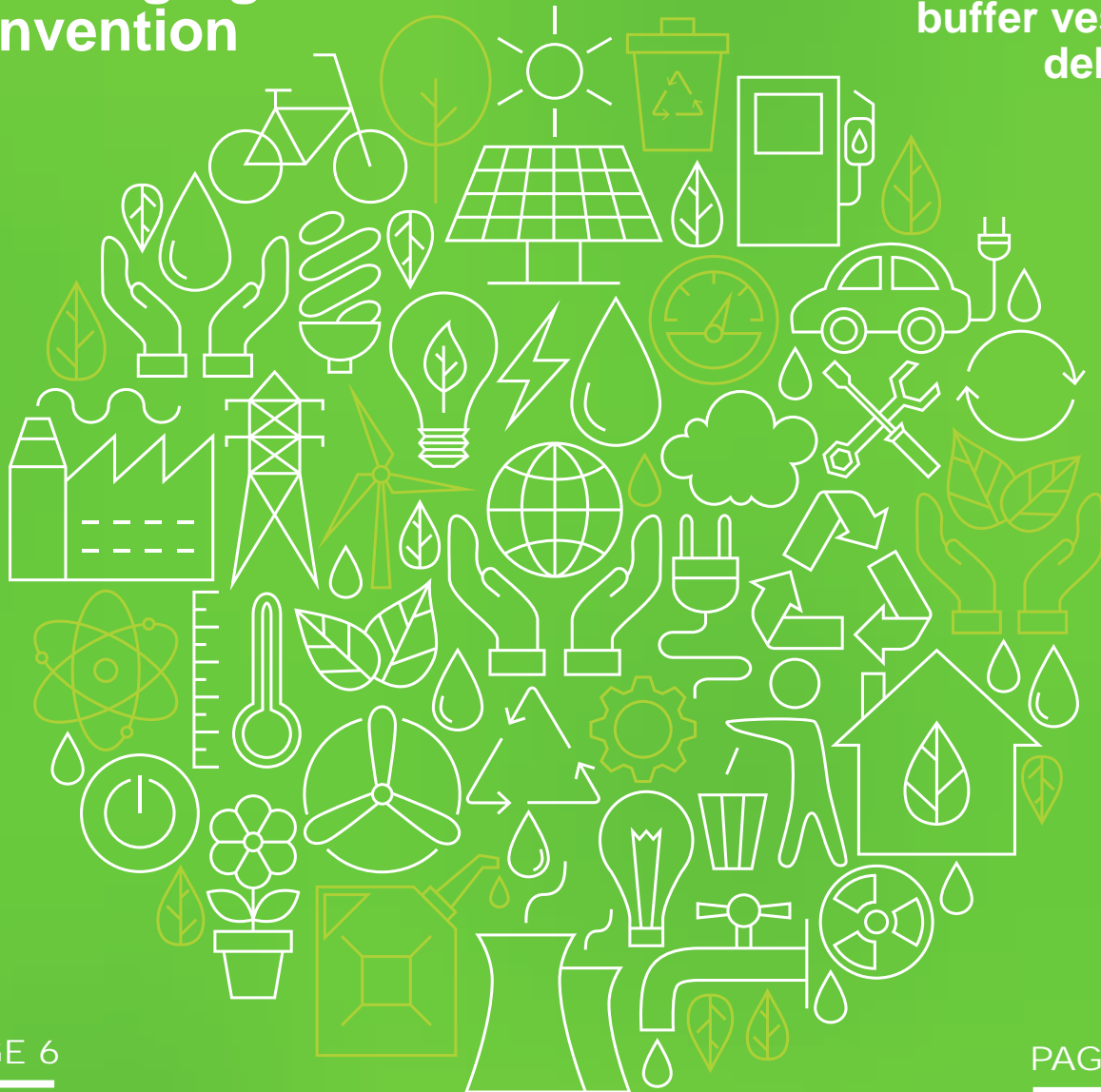
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As good as new

Efficiency is a key requirement for any boiler plant; whether it's cutting costs or saving energy, there's always room for improvement. Steam valves play a vital role in the plant's efficiency so certainly shouldn't be considered a 'fit and forget' item. They may be small in size but they are extremely valuable – both in terms of price and effectiveness.

Any product with a price tag deserves the best treatment and care, and the same is true for your valves. Regular servicing can help to ensure you get the most out of your investment while also maintaining optimum efficiency. There are obvious cost benefits associated with refurbishment, however the benefits don't stop there.

1. Certify your process

When valves are professionally refurbished, specialists are obliged to follow a certified process of the International Organization for Standardization (ISO) and American Petroleum Institution (API). Therefore, if your valves are refurbished your plant will be fully compliant.

Once refurbished, you'll be supplied with an up-to-date audit trail, complete with a record of the condition of each valve – this means you're able to monitor the health of the plant and its equipment with ease – which, in turn, can offer you complete peace of mind.

2. Optimise your system

Valves are a vital part of any steam system, although they are liable to deteriorate with standard wear and tear. When properly used and maintained, they can improve process efficiency and lower costs.

By refurbishing valves on a regular basis, you can be sure they'll be kept in good condition. Not only will you benefit from improved efficiency and operating costs, but the chances of system downtime are also reduced.



3. Comply with legislation

For pressure relief valves, regular testing and maintenance is not optional, it is mandatory. We're all familiar with the Pressure Systems Safety Regulations 2000, which ensures all systems are properly maintained and safely operated.

Appropriate safety checks are also included as part of a required maintenance programme – this is key to ensuring faults in the safety critical parts of your system are not left undetected.

4. Conduct best practice

Managers of a workplace have a duty to manage the risks associated with the site and this may well fall under your remit. We all know that an efficient, reliable boiler is essential and it must remain safe at all times. If a valve fails,

for example, the risks associated can be significant, causing a major effect on your production, plant and people. Poor maintenance can also run the risk of injury which makes following the correct safety guidelines and conducting best practice across the plant absolutely paramount. The maths is quite simple - if you follow the safety guidelines and conduct best practice, injuries will most likely be avoided.

5. One stop shop

Why use multiple suppliers when you only need one? A wide range of valves can be refurbished by one supplier, which not only helps take the pressure off your site managers but also makes the process much simpler.

We offer numerous valve refurbishment services, varying from a strip down to a paint and dispatch with test certification, and can be completed on or off-site at a specialist unit. We also refurbish a variety of valves, including control valves, globe valves, parallel slide valves, gate valves, and other manual and safety valves.

We provide the whole package including a complete service, managing annual boiler inspections and recertification – carrying out necessary repair and refurbishment along the way.

So if you're interested in optimising your equipment's performance and reducing the risk of failure, but don't think the time is right to buy brand-new, then perhaps you should think about refurbishing your valves.

FIND OUT MORE

To find out more about our valve service capability, visit sxscm.uk/valvereconditioning





Hot water buffer vessel: The hot debate

The debate over whether or not commercial buildings need buffer vessels continues to divide our heating industry, with some putting up a strong defence and the rest adamant they should be consigned to history. Nigel Poole and Paul Hardman, our experts in steam technology, explore both sides of the story and explain why buffer vessels are still a valuable source of heating.

For a piece of equipment that is essentially a large water storage tank, the arguments for and against the use of buffer vessels in commercial buildings continue to be hotly debated.

As you may well know, in recent years the decline in the use of buffer vessels as well as domestic hot water tanks has led many to believe that they should be buried in the past.

While there are fewer applications that require a buffer vessel, we shouldn't be so quick to give them the last rites!

Context is key

We firstly need to understand the sort of applications buffer vessels have traditionally been used in, as well as their limitations.

The water in a buffer vessel can be heated in around one hour, which has the advantage of not requiring much in the way of boiler or steam power. However, there are going to be applications that need hot water much quicker than that, so a greater heat input would be required.

// **WHILE THERE ARE FEWER APPLICATIONS THAT REQUIRE A BUFFER VESSEL, WE SHOULDN'T BE SO QUICK TO GIVE THEM THE LAST RITES! //**

The development of the load-levellor combination of storage vessel offers an improvement, with a higher heat input capable of recharging the vessel in 15 minutes. Able to provide instantaneous water within minutes, the higher heat input is delivered by increased boiler power that in turn produces more steam.

Size matters

I'm sure we can all agree, calculating the potential hot water demand to size a system can be difficult. A good example of this is hospital applications, where boiler size can range from 30-40kW up to 400-500 kW.

The issue we have is that the relevant guidance (BS EN806: Specifications for installations inside buildings conveying water for human consumption) fails to recognise the changes in modern designs.

For example, a 28 bed standard ward in a hospital would traditionally have two bathrooms, but the modern hospital is generally now equipped with en-suite facilities. The sizing guidance, however, fails to acknowledge this, and continues to be based around the number of outlets.

This can be a headache, and you have to admit the traditional buffer vessel is no answer to the problem either, as it's unable to deliver hot water instantaneously and on demand.

Other things to be aware of:

1. Take up too much space – which, in a commercial building, is expensive real estate that could be utilised in other ways.
2. Too heavy – which can create problems during a building's construction
3. Difficult to maintain – maintenance is important, because the relevant guidance says that buffer vessels have to be cleaned every two years.

Minimising risk of legionella

Nevertheless, the biggest risk factor is unquestionably the potential for legionella which, as you may be aware, is the main reason why buffer vessels have fallen out of favour.

Buffer vessels have a perceived legionella risk. For the buffer vessel to be safe, all the hydraulics of the system have to be correct, in order to ensure that the water is maintained at the correct temperature.

So, are buffer vessels a bad idea? Not necessarily. In our opinion, buffer vessels do still have a role to play in specific applications. For example, in a factory or food processing environment that requires a regular wash down of the facilities at the end of the day, the demand for hot water is easily calculated and the slow heating of water across a one to two hour period is efficient and easy to source.

Take a pragmatic approach – do without the buffer vessel if at all possible, but remain open to the idea that certain applications do require high volumes of hot water on a regular basis. In these situations, a buffer vessel can perform a very valuable role, offering an efficient way of storing the hot water that has been slowly and efficiently generated.



New pipework

Challenging convention

Chemicals specialist Johnson Matthey set its sights on reducing heat losses and simplifying the maintenance of its steam system at its Billingham plant. By downsizing a section of line and introducing a series of automation devices, the company has been able to significantly reduce heat losses and take control of its steam system.

All steam systems require regular maintenance, but all too often the in-house resource to properly assess, diagnose and maintain those systems is not readily available.

The result is that steam system maintenance, even in state-of-the-art industrial facilities, often falls down the priority list and therefore becomes prone to significant heat losses and downtime.

This is the exact situation that Johnson Matthey, which makes catalyst products that control harmful pollutant emissions

and optimise industrial processes, found itself in at its Billingham site. The issue was one that Chris McHale, Gas Services and Operations Team Leader at Johnson Matthey, was tasked with overcoming.

Out with the old

Steam, for the site's processes and office heating, was supplied by a neighbouring facility via a 36 inch pipe of more than 1,000 metres in length. What's more, the system was equipped with inadequate steam traps and no

isolation valves, which meant that maintenance teams were unable to shut down or isolate the flow of steam into the facility.

"We inherited a system that was nearly 70 years old and used an oversized pipe which effectively acted like a radiator, resulting in heat losses of around £130,000 per year," says Chris McHale.

He continues: "If I'm being honest, we took a very reactive stance with it, as it became more and more unreliable, because we aren't experts in steam."

But we knew the age of the system created inefficiencies.”

A further challenge at the Billingham site was the safe maintenance of the oversized steam line. “With the majority of the line located at height and lagged with asbestos due to it dating from the 1940’s, regular flange leaks had frequently led to expensive maintenance costs,” says Chris. “It was getting to the stage where we knew we had to do something.”

Taking back control

Chris says that Johnson Matthey’s decision to take action was driven by more than a desire to increase efficiency and reduce maintenance costs. “We are an ethical company that takes its obligations to the environment and its people very seriously so it was becoming increasingly untenable for us to continue with the situation as it was.”

Having identified that a steam line at its Billingham site was not only oversized but also in poor condition, Johnson Matthey’s Operations team commissioned a project which would see major changes made to the distribution of its low pressure steam.

With support from Spirax Sarco, Johnson Matthey embarked upon an overhaul of its steam distribution network over the Billingham site’s summer shutdown period in a pilot scheme that would ultimately explore the value potential of proactive steam system maintenance. “We knew we needed to call in experts,” says Chris. “Steam is outside our normal skillset, so we wanted to get some real technical expertise on board. We also wanted to engage people who would challenge us, encourage us to change our thinking and adopt new methods.”

A collaborative working partnership between Spirax Sarco and Johnson Matthey’s on-site operations and maintenance teams initially reduced the

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length of steam line to approximately 25% of its original length, in part by putting a new heating system into the offices. This meant that steam was no longer required for the heating system and that the old 36 inch steam pipe could be replaced with a new pipe made up of 8 inch and 4 inch sections.

This was followed by the introduction of new steam traps, dirt pockets, pressure indicators and isolation valves at key points across the site which allowed for greater safety and flexibility of usage. Most importantly, a new main isolation valve was also fitted, which allows Johnson Matthey’s staff to control the isolation of their own steam at any given time, without having to rely on its neighbouring facility.

“The isolation valves and installation of pressure indicators alone have given us much greater control over our steam system, which was impossible before,” says Chris. “Better still, we’ve managed to create value for the business by generating a saving of approximately £60,000 per annum on heat losses alone, not to mention a significant reduction in maintenance costs.”

Collaboration

This high hazard work lasted just over three weeks and involved contractors from four different companies, all of whom worked together to complete the project safely.

Chris says that collaboration between different teams on site was also key to this success. “The two-week steam isolation on the Billingham site prompted staff from the Operations, Project & Process teams to work together to alleviate the disruption of having limited hot water and no heating during this period,” he says.

Overall, Chris believes that the project is proof that challenging conventions can pay dividends in terms of quantifiable savings. “The lesson we’ve taken from this project is that there are huge rewards to be had by challenging the way things have always been done. Replacing a dated and problematic steam line with one much better suited to our current application may sound basic, but the cost, usability and safety benefits have proved second to none.

Going forward, Chris intends to take the lessons of this project and make further improvements. “The success of this pilot scheme has already prompted us to look at how we can go one better and make further savings by fully isolating the steam to site over the summer months.”



Out with the old



Steam diversion & eliminating oversize main

FIND OUT MORE

If you’d like to know more about the work at Johnson Matthey, or have an upcoming project you’d like our help with, please email connexions@spiraxsarco.com or phone 01242 521361.





An accreditation worth boasting about

Safety first, as the old saying goes. Steam boilers are high pressure systems, so there are significant safety implications if they are not properly operated, supervised and maintained. This responsibility rests in the hands of boiler house operatives and managers, and standards must never slip. Therefore training is an essential requirement to ensure equipment owners are doing everything by the book at all times – the Boiler Operation Accreditation Scheme (BOAS) course can help you with this.

You may be familiar with BOAS, the term by which the accreditation is more widely referred, but what exactly is BOAS and where did it come from?

The BOAS accreditation is the pièce de résistance of any boiler operator or plant manager's repertoire and helps to demonstrate their competence. Introduced as a national accreditation following the demise of the former City & Guilds boiler operative qualification, the course tells you everything you need to know about legislation, regulations and practices applicable within the UK, as per the defined syllabus.

While BOAS is not a legal requirement, it's important you bear in mind that BG01 guidelines suggest all competent persons should be trained to the BOAS standard. If you're operating a boiler plant in line with the latest standards, both regulators and insurers know you have a strong commitment to adopting best practice.

In order to apply for a BOAS course you must have at least six months



THE BOAS ACCREDITATION IS THE PIÈCE DE RÉSISTANCE OF ANY BOILER OPERATOR OR PLANT MANAGER'S REPERTOIRE //

experience, as BOAS intends to test a person's competence in relation to their current knowledge and experience. If you don't have the relevant experience, our two-day boiler course is a good first step.

To apply for a BOAS course you would first need to provide documentary evidence and an experience record covering a minimum period of six months. This forms part of the assessment process and will be discussed during the interview.

The assessment is comprised of two distinct stages - a series of written examinations and oral assessment interview - and runs over five days. To obtain a BOAS accreditation you would need to demonstrate technical competence and practical experience required for the safe operation of industrial and commercial boiler plant.

If you pass all parts of the assessment you may use the designatory letters Cert IBO (Certified Industrial Boiler Operator) or Dip BOM (Diploma in Boiler Plant Operation Management), depending on the award you undertake.

As an approved training provider, we offer BOAS courses for those operating cat 2 shell boilers and cat 3 water tube



THE SYLLABUS WILL CONTAIN INFORMATION ON THE FOLLOWING TOPICS:

- Steam fundamentals
- Fuel types
- Combustion
- Feed water
- Boiler controls and instrumentation
- Operation of boilers
- Safety & legal requirements
- Boiler efficiency

boilers. The BOAS accreditation is valid for five years, at which point you will need to renew your accreditation. To satisfy this need, we also offer a two day BOAS renewal course.

FIND OUT MORE

If you want to boast about your BOAS then why not book onto one of our courses? For more information or to register your place, simply click here: [sxsc.com.uk/boascourse](https://www.sxsc.com.uk/boascourse)





Taking a stand against the Legionella risk

As most estates or plant managers will know, legionella is a water borne bacteria that can grow in engineered water systems such as cooling towers, condensers, and hot and cold water systems.

Legionella is always present in a water supply, so eliminating it completely can never be the aim. However, protecting against a legionella outbreak is a legal requirement for any organisation.

The legionella risk

There has been a need to control the legionella risk since the introduction of the Health and Safety at Work Act (HSWA) in 1974. So why is this issue still being discussed some four decades later? The answer is, most hospitals in the UK still rely on calorifiers to provide heating, domestic hot water (DHW) or a combination of the two. Put bluntly, these calorifiers can be a breeding ground for Legionella.

A calorifier is a large storage tank capable of generating heat within a mass of water. While this approach is familiar to most, the problem with stored hot water is that, as well as posing a legionella risk, it takes up a considerable amount of space within a plant room and also radiates heat which limits efficiency levels. In an era where Britain has a shortage of hospital beds, space within healthcare facilities is a hugely valuable commodity.



LEGIONELLA IS ALWAYS PRESENT IN A WATER SUPPLY, SO ELIMINATING IT COMPLETELY CAN NEVER BE THE AIM. //

A new solution

Instead, healthcare providers should view the use of packaged plate heat exchangers as a potential way to lessen all of these concerns.

A packaged plate heat exchanger is essentially a plate heat exchanger within a very compact housing – generally around a third of the size of an average calorifier. This not only saves space but also boasts the ability to deliver hot water instantaneously, which eliminates the need for large quantities to be stored in calorifiers. The result is a significantly reduced legionella risk and potential energy savings of around 15-20% per annum.

When we consider just how many heat exchanger units tend to be dotted around a hospital site, there is huge potential for packaged plate heat exchangers to deliver large cumulative energy savings – a big plus for the NHS, which is under pressure to reduce its costs.

At your service

Any hospital relying on storage vessels such as calorifiers will be familiar with

the need for an annual insurance inspection. While the packaged plate heat exchanger doesn't eliminate the need for annual servicing altogether, its requirement is generally much simpler – involving a very straightforward check of the plates, which can be done by sliding them along the frame of the unit.

Knowledge is power

The benefits of a packaged plate heat exchanger will only be fully realised if staff on site have an in-depth knowledge of how they need to manage the legionella risk and the legislation that applies.

Our one-day training course is designed to raise awareness of legionella, provide an introduction to the legislation governing the management of the water-borne bacteria, and identify the measures that can be used to control the risk.



FIND OUT MORE

To book a place on the Legionella Awareness course, call 01242 535211 or visit [sxscom.uk/LegionellaAwarenessLA1](https://www.sxscom.uk/LegionellaAwarenessLA1). Alternatively, to find out more about our packaged plate heat exchangers, visit [sxscom.uk/easiheat](https://www.sxscom.uk/easiheat).





Community Engagement



INNOVATING THE WAY...

A consortium led by Spirax Sarco has been granted a £1.24 million research grant from Innovate UK. The project 'Low Temperature Waste Heat to Power Generation' will see the development of a pioneering technology to convert waste heat into useful electrical power.

The consortium of five industrial partners - Spirax-Sarco Limited, Arctic Circle, Howden Compressors and IPU, Brunel University London, and Cooper Tire of Melksham - will develop a commercial offering to target the estimated 300TWh of heat available in European Industry and beyond.

GOING THE EXTRA MILE FOR CHARITY

The team at Spirax are a charitable bunch so, when tasked with raising

£2100 for National Star College, a specialist further education school which supports young adults with disabilities, we jumped at the chance! Pulling together teams to run the Cheltenham Half Marathon, Stroud Half Marathon and to do a sponsored abseil, Team Spirax smashed its target, raising a total of £2,400. To find out more about the great work National Star College does, visit www.nationalstar.org/.



HAVE YOU SEEN OUR IET REPORT?

We were thrilled to be asked by the IET to be part of their 'Engineering Around Us' series recently.

IET chose eleven leading organisations to explore the role of engineering in our everyday lives

through short news-style reports. Ours focused on the importance of work experience through our Early Careers programme, even featuring a number of staff who came through this route and are still with us. To view our video, visit sxsc.com.uk/IETfilm or, to watch the series in full, go to the IET website: www.theiet.org/policy/media/campaigns/itn.cfm.

CHRISTMAS OPENING HOURS

We can't believe Christmas has come around once again! Just to let you know, our offices will be closed from Friday 23rd December until the New Year but it will be business as usual as of Tuesday 3rd January. If any of our customers are working over Christmas and have an emergency, don't forget you can contact us between 9am and 5pm on 07977 996050.

We hope you all have a very Happy Christmas and a prosperous 2017.



Training

THE 2017 TRAINING BROCHURE IS HERE

We're pleased to announce that the 2017 training brochure is available! Booking is now open and we're expecting some courses to fill up fast, so we'd recommend booking early to secure your place. The 2017 course dates can also be viewed on our website: sxsc.com.uk/spiraxsarco/train.

If you have any questions about our courses, or would like a copy of the brochure, please get in touch on training@uk.spiraxsarco.com or 01242 535211.



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