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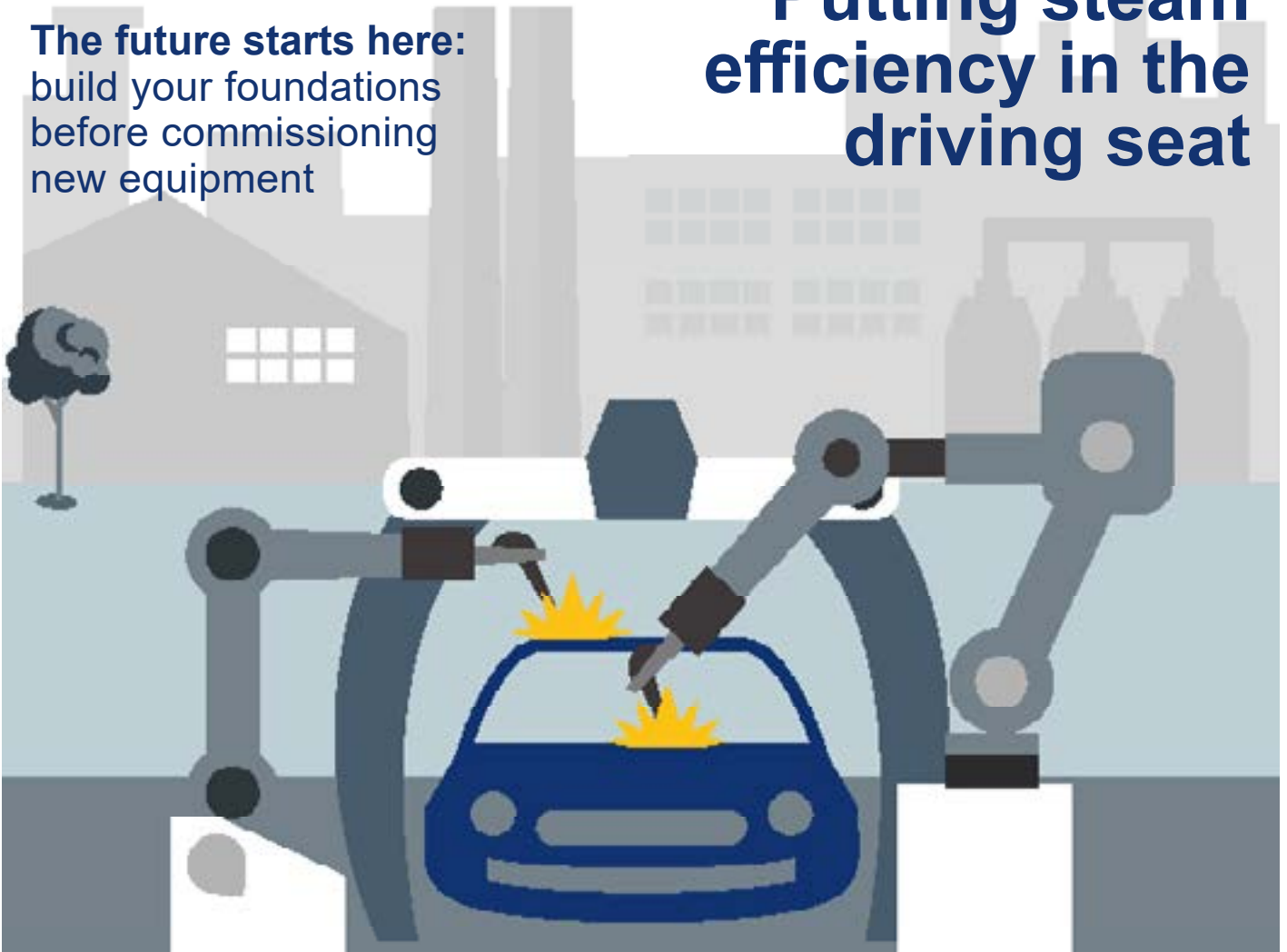
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PAGE 4 - 5

PAGE 2

The future starts here:
build your foundations
before commissioning
new equipment

**Putting steam
efficiency in the
driving seat**



+

PAGE 3

Tailored energy auditing:
the key to optimising
your steam system

+

PAGE 6

Going green:
How to put
environmental
sustainability first



The future starts here: build your foundations before commissioning new equipment

With so many variables to consider in the planning, management and upgrade of steam boilers, it's important for professionals to have a solid grounding in the "fundamentals of steam". In turn, this will help to achieve better efficiency and safety. So here, **Chris Coleman, Boilerhouse National Specialist**, provides some of the principles that should empower plant managers to ask the right questions and to get the right results.

The specifics of steam systems

Rest assured, it is commonplace for industry understanding of steam systems to be somewhat limited. This is true across the board, whether your role is to simply ensure your plant is operating safely and efficiently, completely overhaul and plan a new steam system or identify, plan and implement steam and thermal energy efficiency improvements. Nevertheless, it is definitely beneficial to develop a basic understanding of the properties of steam before consulting an expert.

Meeting specification, deadlines, budget, safety and regulatory requirements, are but a few considerations that can cause the most accomplished of plant managers a headache. Not to mention energy efficiency targets and minimising downtime. Until it becomes a priority, much of the valuable background information you once had becomes a distant memory.

Steam systems at the core

Granted, there is a wealth of information available on steam systems and

sometimes it can be a minefield to navigate. Therefore, we have identified the core elements that will give you a basic understanding: the different boiler types, how steam is produced into three variants and the condensate loop. Develop your knowledge in these areas and you are already on track to an optimised solution.

So what's to know?

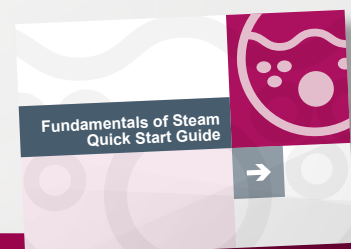
In summary, shell boilers are the most common but there are many variations out there. And there are also three types of steam to know about – saturated, superheated and flash steam. As a versatile purveyor of energy, the way in which steam is produced and distributed both have a significant impact on its potential performance and economy for the end user. There are also technical materials worth being familiar with, such as steam tables which help provide more detail around the properties of steam at varying pressures. And, while condensate in itself is a much wider topic to comprehend, make sure you have an understanding of the way it is created and should be recycled. Based on all of this, there are a number of key

tests that you should consider carrying out such as feedwater treatment, deaeration and storage.

Justifying an upgrade

Clearly it would not be possible to upgrade a boiler ahead of conducting a full and thorough audit of the existing system. And, as with any piece of equipment in our industry, it will most likely not be a like-for-like for the system that is currently in place. Ask yourself two key questions: Has your facility changed in any way in terms of its requirements? Have there been any technological developments since the first install?

By re-acquainting yourself with the fundamentals of steam, be it through written literature or industry training courses, you can build the requisite knowledge you need to identify areas of improvement so fewer problems or faults need to be dealt with in future.



FIND OUT MORE

We have created a downloadable guide to The Fundamentals of Steam to make your job easier when it comes to upgrading. Download it in your time of need by the following link, or simply print it out so you have it to hand on site: sxscom.uk/Fundamentals-of-steam





Tailored energy auditing: the key to optimising your steam systems

The health, operability and legislative compliance of your steam system is always going to be a challenge, but it needn't be the Achilles heel of your plant. As a Plant Manager you can take the first step in optimising your system with a tailored steam and thermal energy audit.

Your expertise is a valuable asset to your plant, but when it is in high demand you can find yourself overstretched. Thankfully, help is at hand. We can ease some of the pressure placed on you in your role by conducting a tailored steam and thermal energy audit.

Tailored to you

Every plant is different, so accepting an off-the-shelf audit just wouldn't do the job. We'll work with you to scale your audit according to your plants needs. From assessing just a single plant room, to the complete steam distribution loop. An audit can begin with the boiler house and encompass the entire steam distribution network, process applications and condensate return – giving you peace of mind in knowing that no stone has been left unturned.

The audit process begins with one of our expert Energy Engineers 'walking the plant' and assessing your individual needs to identify areas for improvement.

Audit deliverables

Depending on which audit you choose to have carried out, you'll receive a detailed, written report from your Energy Engineer. What is covered will vary, but can include: a description of problems identified, an inventory of equipment audited, identification of process inefficiencies and energy losses with defined return on investment analysis of proposed engineered solutions.

In your role, cutting costs, emissions and waste can seem like a never-ending pursuit of the holy grail of optimal plant performance. Our individually tailored report can provide a breakdown of potential savings based on projected energy savings, water costs and production losses. Your ROI calculations will be simple from there.

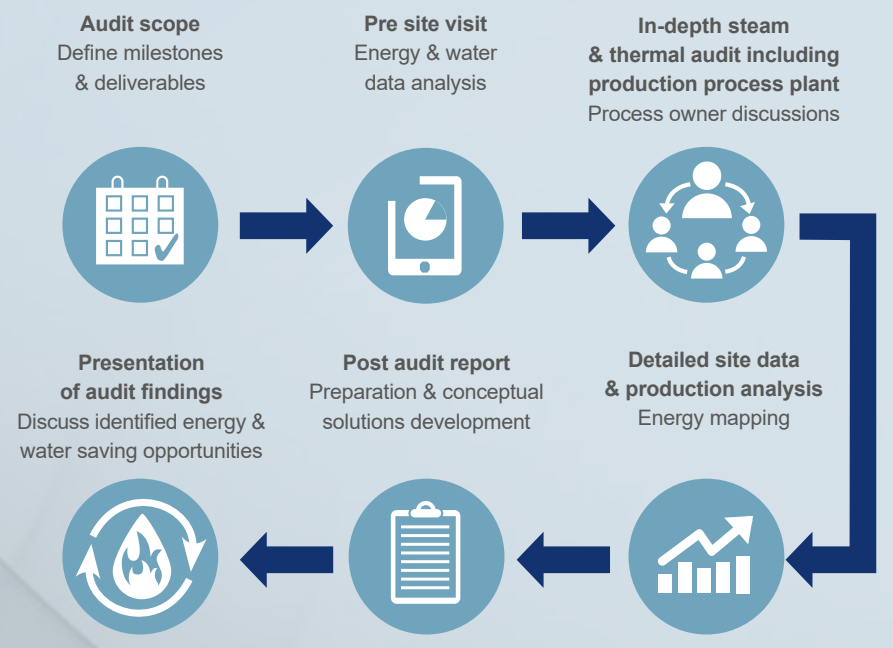
What are you waiting for?

With the audit report in-hand, the only thing left to do is to begin actioning the next steps in safeguarding your

plant. It's important that you don't let preventable damage or inefficiencies take your plant offline, and we will work in partnership with you to produce a plan of action to move forward.

As a Plant Manager, you're ideally placed to be proactive in optimising your facility by undertaking a full and thorough audit before scaling down to smaller, targeted yearly audits – ensuring your plant performs at its full potential for many years to come.

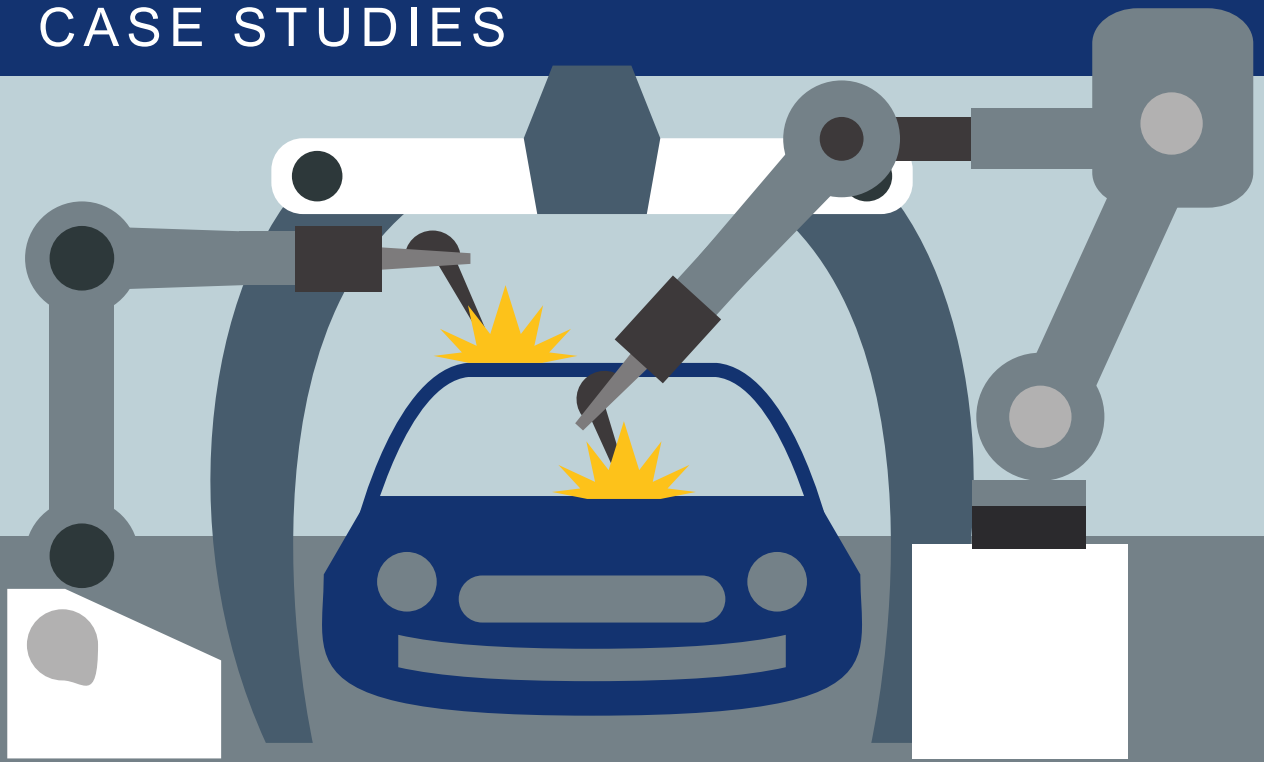
How does it work? Our approach



FIND OUT MORE

To find out more about how Spirax Sarco can help you to reduce energy costs and increase efficiency, please visit: sxsc.com.uk/spiraxservices





Putting steam efficiency in the driving seat

With the ever-increasing pressure to improve energy efficiency in the UK, car manufacturers are leading by example.

Plant Oxford – the production site for iconic car brand MINI – has undergone significant development over the years. In a bid to improve energy efficiency across the site, steam specialist Spirax Sarco was called upon to transform its current hot water generation system and deliver enhanced operational and energy savings.

The Oxford facility has been established since 1913, initially producing the two-seater Morris vehicle, but it was in 1959 when the first Mini rolled off the production line. Today, MINI is part of the BMW Group and many of the variants are built in its factory in Oxford.

One area that has benefited from modernisation is the site's steam-to-hot-water heating system. Spirax Sarco's team of steam experts were asked to

review the existing installation.

Tasked with optimising efficiency and reducing costs, Angelo Giambrone, Business Development Manager at Spirax Sarco, played a key role in the project.

Getting into gear

"The existing installation comprised of three large shell and tube calorifiers. Traditionally calorifiers were a popular way to deliver hot water but in recent years there has been a great deal of development with steam-to-hot-water systems which has helped to improve efficiency and safety," says Angelo.

"The old units were mounted at high level, which made maintenance a consistent challenge. This was particularly evident when the units underwent insurance inspections."

Navigating space

"The best course of action was to completely remove the three large calorifiers. As with many facilities, space is a premium and the new solution needed to fit into a much more convenient location. We replaced the old units with high efficiency EasiHeat™ systems which use the latest in plate heat exchange technology," comments Angelo.

"As each EasiHeat™ is a pre-fabricated package, it meant that installation was simple. The smaller footprint has allowed the new units to be sited in a practical location at ground level. They're also not subject to the same strip-down pressure testing as the shell and tube systems, which helps deliver operational and maintenance savings too," says Angelo.

EXECUTIVE SUMMARY

Company name: BMW Group

Location: Oxford, UK

Objective: Modernise plant, reduce maintenance and improve efficiency.

Solution: Installation of three Spirax Sarco Easiheat™ steam-to-hot water packages.

Results: Elimination of invasive insurance inspection and ease of access to the compact solution. Control flexibility allows efficient integration with new water system.

Driving down costs

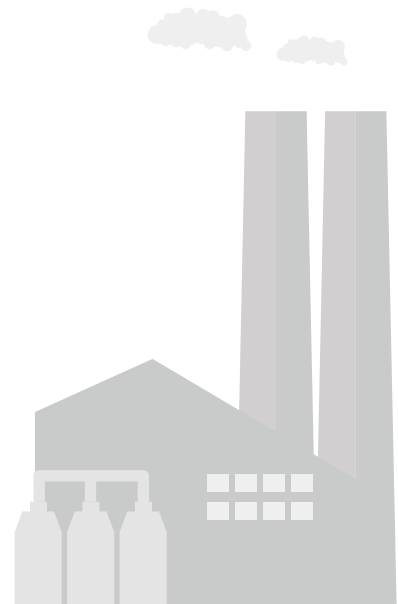
Each of the EasiHeat™ packages come equipped with a stand-alone PLC Energy Management System, which has provided Plant Oxford with much improved temperature control.

“The control system helps to utilise all of the useful energy available in the steam, which in turn reduces fuel demand and associated CO₂ emissions. This essentially means that the savings achieved are now contributing to the overall system efficiency.

“Removing the old calorifiers was a major decision for the business but by doing so the site has benefited

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THE CONTROL SYSTEM HELPS TO UTILISE ALL OF THE USEFUL ENERGY AVAILABLE IN THE STEAM, WHICH IN TURN REDUCES FUEL DEMAND AND ASSOCIATED CO₂ EMISSIONS
”

from improved safety and reduced maintenance. Plant Oxford is now able to provide consistent low temperature hot water to their heating system using modern heat exchange technology to deliver it efficiently and safely.”



FIND OUT MORE

To learn more about Spirax Sarco EasiHeat™, please visit: sxsc.com.uk/easiheat





Going green: how to put environmental sustainability first

As a plant manager in the food and beverage industry, environmental sustainability should be at the forefront of your mind and if it isn't – why not?

You're likely already aware of the unique role that steam plays in the food and beverage sector. From blanching to bottle washing, steam is a fundamental ingredient in the manufacturing process. But, you're probably less aware of the food and drink processing industry having been labelled as the fourth highest industrial energy user in the UK by the Carbon Trust. With the 2020 emissions target just two years away, now is the time to put environmental sustainability first in your plant.

The art of simplicity

They say the simplest ideas are usually the best – Spirax Sarco certainly agrees with that idea.

A simple and effective place to start in the pursuit of environmentalism is using equipment that can optimise the steam system, such as modern heat exchange technology. Systems like these can help to increase efficiency and reduce energy usage. Crucially, you can make simple changes to equipment you already have in your plant to achieve optimisation – saving you money and lowering your plants emissions.

Trap-in efficiency

Steam traps are the most important link in the condensate loop and can help to lower energy consumption. As such, a healthy steam trap population is key to maximising sustainability. Proper monitoring of your steam traps can help to ensure the maximum level of condensate is recovered. This is vital for protecting the health and longevity of your steam traps. Should the live steam and the energy it contains be lost, additional make-up water will be required to account for the system's loss. This is undesirable because this additional water needs to be heated and contains the Total Dissolved Solids (TDS) which ultimately will increase TDS blowdown along with a further increase in makeup water and energy input. It is essential that you take care of your steam traps as part of your plan to boost your plants environmental sustainability.

Wash-away waste

You don't need us to tell you that Clean-in-Place (CIP) and wash-down processes rely on a reliable supply of hot water leading to an increase in waste. Instantaneous systems that use compact heat exchangers like Spirax Sarco's EasiHeat™, offer a sustainable

alternative to the traditional shell-and-tube calorifiers that are inherently inefficient, providing energy savings of up to 20%. These systems reduce the amount of steam required for your plant – cutting fuel demand and associated CO₂ emissions.

An eye on efficiency

Investing in an energy monitoring system, such as Spirax Sarco's B850 Boiler House Energy Monitor, provides you with a simple way of maximising system efficiency. Should the monitor detect a drop in efficiency levels, the cause can be identified quickly and remedial action can be taken to limit inefficiency and maximise sustainability. The monitoring of systems also enables energy and facility managers to benchmark the efficiency of boiler settings and operating procedures, meaning energy and cost savings can be measured and implemented effectively.

Environmental sustainability needn't be a taxing affair within your food and beverage processing plant. By implementing simple measures and striving for optimal system efficiency for your steam system, you will benefit from a reduced carbon footprint – putting your plant on the road to going green.

FIND OUT MORE

Contact us on 01242 521361 or at connexions@uk.spiraxsarco.com to discuss your specific requirements. Alternatively please visit www.spiraxsarco.com/uk.





Achieving a clean bill of health with steam

The NHS and the UK's healthcare system is a subject that can always stimulate a lively discussion and is almost bound to set off a passionate debate around the dinner table. However, this isn't about politics, but what we're hoping to do with this article is to spark a new healthcare revolution – and that revolution starts with steam.

Cast your mind back to 2008, when the Climate Change Act came into play. It set a target to reduce CO₂ emissions in the healthcare sector by 80% by 2050. Since then, there have been great steps made towards a more sustainable health system with hospitals adapting and improving efficiency; a key example being the movement towards packaged plate heat exchangers for the production of low temperature hot water and domestic hot water, driving ever closer to the ideal low carbon plantroom.

Steam remains star of the show

In recent years, this emissions drive has led more organisations to experiment with Combined Heat and Power (CHP) systems. If you aren't familiar with this technology, put simply, CHP systems integrate the production of usable heat

and electrical power, in one single, highly efficient process.

At this point, I know what you're thinking – introducing CHP sounds like a major undertaking that would involve completely replacing your original steam system – but don't fret, this is far from the case. The ability to add CHP to an existing infrastructure can be much more practical and can offer many opportunities to maximise efficiency, when your steam is at the centre of it all.

With this in mind, before you make any decisions on introducing a CHP system to your operation, there must be a consideration made for evaluating the existing system first. This can open so many doors in the way of optimising for the future.

Learning from experience

One of the best ways to fuse together the strength of steam with the benefits of CHP is by finding a knowledge partner to help you on your way. With our experience and expertise in the healthcare industry and beyond, we could help you approach energy in a more holistic way. After all, many of the technologies used in other industry sectors can be used in a healthcare environment to deliver comparable benefits. The usage may be different but the principles are the same.

When you're next sat around the dinner table, you may well be debating the next best thing for our healthcare system. The future of steam in healthcare comes with a massive opportunity, and achieving cost and carbon savings can happen as quickly as you can say CHP.



FIND OUT MORE

Contact us on 01242 521361 or at connexions@uk.spiraxsarco.com to discuss your specific requirements
Alternatively please visit sxsc.com.uk/power.





News

VISIT OUR NEW GLOBAL CAREERS WEBSITE!

We've recently launched a new global careers website to allow job seekers to create a clearer pathway to employment with the company and a more positive candidate experience. The site gives candidates insight into what it is like to work for the business: including the company values, history, case studies, departments, employee stories, women in STEM, rewards and development. Importantly, it also provides the opportunity to search for roles.

Group Recruitment Manager, Caroline Ellis commented, 'I am delighted to have reached this important recruitment milestone; as a business we recognise the importance of having an engaging, easy to navigate "window" to the world and I hope we

have achieved this with our new site.' The global careers website can be accessed through www.spiraxsarco.com

REMEMBERING OUR ANCESTORS FROM WW1

To mark the centenary of the Armistice, Spirax Sarco was one of the principal sponsors of a tribute to both horse and soldier on Sunday 18th November at Cheltenham Racecourse.

The Gloucestershire Regiment marched in WW1 uniform accompanied by a military band, a mounted contingent of the Royal Gloucestershire Hussars led an Act of Remembrance, a simulated dog fight of WW1 era aircraft took place above the Racecourse and static displays of WW1 military hardware and vehicles could be seen.

Spirax Sarco invited the local community to learn about our history as a company over the last century and told the stories of some of our employees' ancestors who had a role in WW1.



Training

IHEEM CHAMPIONS STEAM SYSTEMS TRAINING

IHEEM is the UK's largest specialist Institute for the Healthcare Estates Sector and is adding its seal of approval to Spirax Sarco's City & Guilds accredited courses to help develop its members in this specialist area.

The courses that have been selected are 'Steam Plant Maintenance' and 'Steam Boiler Plant Fundamentals'. The first enables engineers to demonstrate fault finding through practical experience, while the latter provides an understanding of the wet side of the boiler. Find out more at sxsc.com.uk/IHEEMchampions

2019 COURSE DATES NOW AVAILABLE

Booking for 2019 is now open and we are expecting some courses to fill up fast, so we'd recommend booking early to secure your place. If you have any questions about our courses, please get in touch on training@uk.spiraxsarco.com or 01242 535211.

UPCOMING COURSE DATES

Introduction to Boiler House Risk Assessment: 15 February 2019

Steam Boiler Plant Fundamentals: 9-10 January 2019, 22-23 January 2019, 13-14 January 2019



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