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Is manual boiler blowdown leading to Boilerhouse overspending?

We all know that every steam boiler requires regular blowdown to bleed off undissolved solids, but can the way this process is carried out have a direct impact on your business' bottom line?

You might be surprised to hear that failure to automate the boiler blowdown process may cause a number of industrial steam users to be unwittingly overspending on labour and energy costs.

Mike Griffin, our Emerging & Innovative Technologies Manager Northern Europe, believes the critical boiler blowdown process, which needs to be activated

regularly for any active steam boiler, can often inflate the running cost of a typical Boilerhouse, and prevent it from becoming a bona fide unmanned plant.

"While every steam boiler will have a bottom blowdown valve, it's not unusual for engineers to persist in using the same manual valve that was originally supplied

with the boiler, purely because it has always been there," says Mike.

"The mistake many make is holding on to the belief that fitting an automated valve is unnecessary or little other than a 'nice to have'. The reality is that an automated valve actually has a number of tangible benefits and should be considered as a way of improving thermal efficiency in the Boilerhouse."

How does the bottom blowdown valve work?

Designed to bleed off undissolved solids present in chemically treated boiler water, a bottom blowdown valve is key to ensuring the boiler remains clean, and that the furnace tube at the bottom of the boiler does not foul. However, by remaining loyal to a manual blowdown process, engineers run the risk of either failing to remove sufficient contaminants, or purging useful thermal energy and treated water.



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Why automate the process?

Mike continues: “By automating the blowdown process, engineers are able to remove any element of guesswork from the equation, which avoids the risk of too much or too little purging – both of which can prove extremely costly over the long term.

“When excess energy costs and labour are taken into account, an automatic valve can pay for itself in as little as 18 months. It also has the added bonus of keeping the Boilerhouse operational, efficient, and compliant, even when an engineer isn't present. Given the growing number of unmanned boilers, these are all huge advantages to be considered.

How can the latest product innovations help?

“For a valve fitter, time is king, and the latest generation of products, such as Spirax Sarco's Bottom Blowdown Valve, takes this into account by being quick and simple to install, and easy to maintain – not to mention compliant with the BG01 guidance document. Designed to help reduce unnecessary energy and water losses once programmed, a Bottom Blowdown Valve can play a huge role in helping an organisation to hit its energy and sustainability targets.

“For these reasons, an automated blowdown process should be

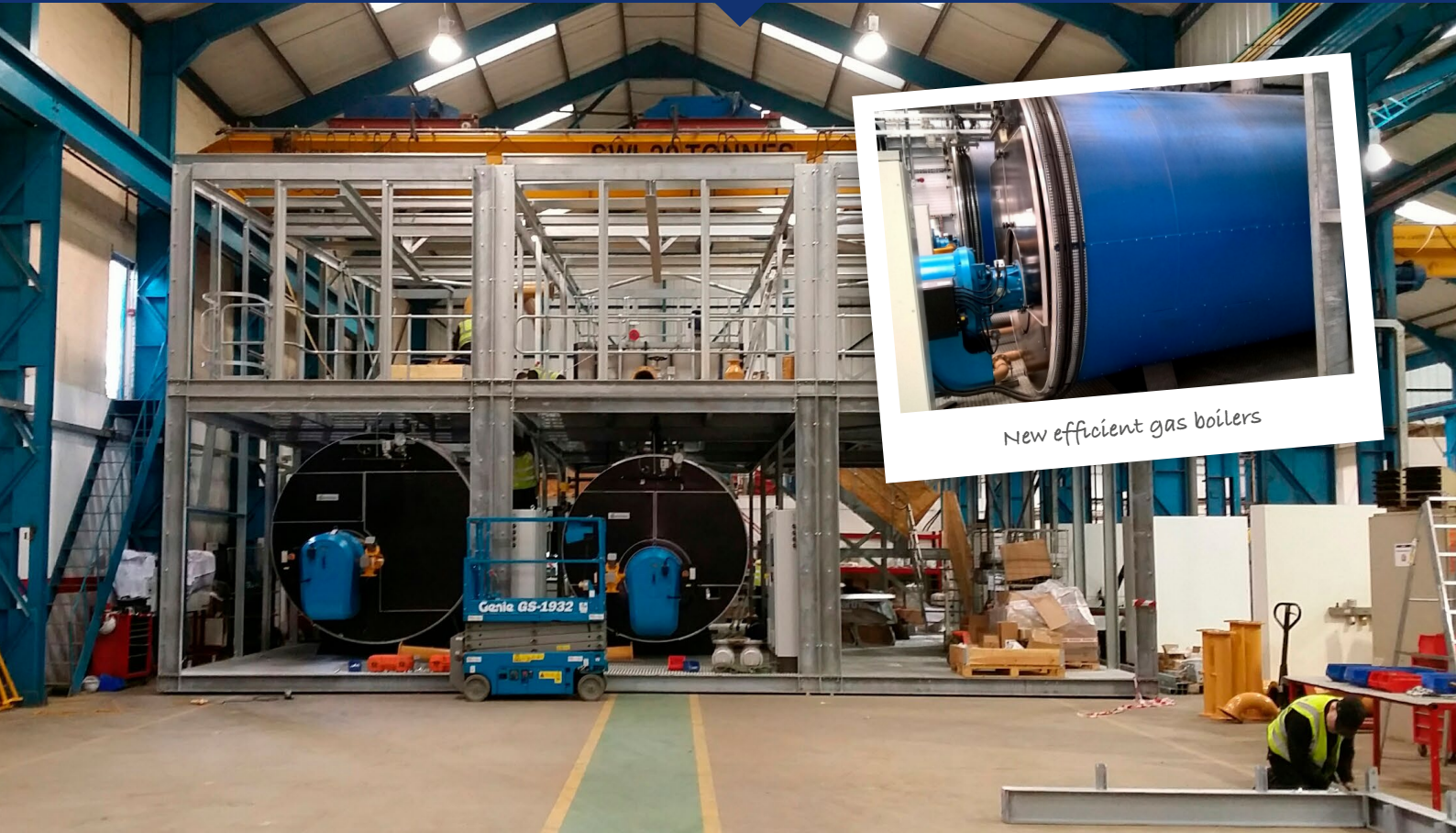
considered an essential, rather than a mere optional addition to the typical boiler plant.”

FIND OUT MORE

For more information, take a look at our Bottom Blowdown Systems webpage, or for further expert advice on improving the performance of a steam system, visit our blog.

[sxsc.com.uk/bottomblowdown](https://www.sxsc.com.uk/bottomblowdown)
[sxsc.com.uk/spiraxblog](https://www.sxsc.com.uk/spiraxblog)





Vale Europe: Achieving savings as precious as gold

Energy conscious Vale Europe, specialist in precious metal refining, wanted to speed up process efficiency while reducing energy consumption at its Acton site. Following a steam system audit, a complete re-design of its dated system was deemed the only answer. The company has since improved production levels and more importantly, operates in a much more sustainable manner.

What was the challenge?

The precious metal refining industry notoriously consumes significant amounts of heat and chemicals to extract impurities from noble metals. As a large user in chemicals and energy, Vale Acton is always looking for ways to reduce its carbon footprint.

Over the years Vale Acton has gradually updated specific sections of its steam system in order to suit the various changes in production requirements. The majority of its steam network was in the region of 40 years old. This was not only limiting process efficiency throughout

the site, but the aging pipework was also compromising safety and costing the business a significant amount in maintenance.

Recognising that improvements were needed to uphold the company's commitment to the environment, Darren Matthias, Project Manager at Vale Acton, engaged with Spirax Sarco to understand where improvements could be made to the site's complex steam distribution system.

Refining the issue

The Acton refinery primarily uses steam

for process heating but it is critical for production too.

Production processes include:

- Reactor vessels, both coil and jacketed, which are used to control the temperature of reactants,
- Heater battery and tank heating applications,
- Unit heaters,
- Direct injection systems and steam hose stations for cleaning tanks,
- Vessels,
- Process equipment.

Unfortunately, processes were impacted

by an out-dated condensate return system and Boilerhouse which were both causing knock-on effects to other plant equipment.

“The condensate return system was inefficient and costly to operate which was becoming a major issue, with corrosion to pipework, as well as inconsistent water and blowdown quality problems” says Darren Matthias.



SINCE SWITCHING TO GAS WE’VE ALREADY SEEN A 60 PERCENT COST REDUCTION AND A CONSIDERABLE IMPROVEMENT IN OUR OPERATIONAL EFFICIENCY. THIS HAS RESULTED IN A FASTER PROCESS CYCLE AND PRODUCTION LEVELS,” SAYS DARREN. “BY PRIORITISING OUR IMPACT ON THE ENVIRONMENT, WE HAVE ALSO BEEN ABLE TO ADVANCE PRODUCTION LEVELS AND PROTECT THE SAFETY OF OUR STAFF – SOMETHING WE SIMPLY CAN’T PUT A PRICE ON.

“Condensate was returned to a common tank located in a tank farm and extensively cooled by a plate heat exchanger before finally being sent to the effluent plant.”

He continued: “We were using two boilers – one oil and one gas – to generate steam for the entire plant. Steam was generated in the Boilerhouse at 3.8 bar g and the two boilers in question were operating at half the efficiency they should have been. This, coupled with an unreliable condensate

recovery system, spelled a toxic combination of unsustainable operation and high costs.”

The perfect catalyst

Vale Acton’s steam system underwent a detailed audit to identify the specific issues which needed addressing, with its ethos for protecting its environment and staff being a key driver for this change. “Admittedly steam isn’t our core area of expertise, so we enlisted the help of Spirax Sarco to conduct a steam system audit,” Darren said. “After analysing our entire system and completing a Hazard and Operability Study (HAZOP), the decision was made to design and supply new process steam, condensate and cooling systems, which would help streamline our steam network and improve process and production cycles.”

What’s more, all-new control valves, steam traps and condensate return units were fitted, with the addition of contamination detection systems – bringing the Acton facility up-to-speed with current technologies.

Modular Boilerhouse

Following the success of the initial project, Vale Acton invited Spirax Sarco to carry out the design and supply of its Boilerhouse, replacing the burners with two efficient gas boilers.

Darren continued: “We were given two options to consider. We could either hire two boilers for a period of time while the upgrade took place in the existing Boilerhouse, or, Spirax could complete the full design of the Boilerhouse off-site. This meant the new Boilerhouse could be assembled in a separate location so there was no disruption on-site.”

Two boilers fired only by gas were installed, as a more energy efficient and maintenance-friendly alternative to oil. The new Boilerhouse is designed to allow a third boiler to be installed

when Vale Acton are ready to increase capacity. An added benefit was that one of the new burners also allows the use of heat from a Combined Heat & Power (CHP) system, for even greater efficiency.

Savings more precious than gold

“All in all, the two new boilers are consuming much less energy than before and are operating at approximately 95 percent efficiency. They have been cleverly fitted with an oxygen trim, which measures the gas emission in the flue and automatically brings it back in to line with our defined emission level when needed,” says Darren.

New controls have also enabled staff at Vale Acton to take back control of their energy consumption. Data is now easily accessible, while improved visibility of energy consumption has allowed the company to track their environmental impact more effectively. Finally, the installation of double block and bleed isolation valves has allowed for safe maintenance to take place during production.

“By replacing the oil and gas burners with two gas boilers, we have saved a significant amount in energy. We are producing 55 percent less nitrogen oxides (NOx) emissions than we were from our old oil boiler and we’re also proud to be emitting zero sulphur oxides (SOx).

Since switching to gas we’ve already seen a 60 percent cost reduction and a considerable improvement in our operational efficiency. This has resulted in a faster process cycle and production levels,” says Darren. “By prioritising our impact on the environment, we have also been able to advance production levels and protect the safety of our staff – something we simply can’t put a price on.”

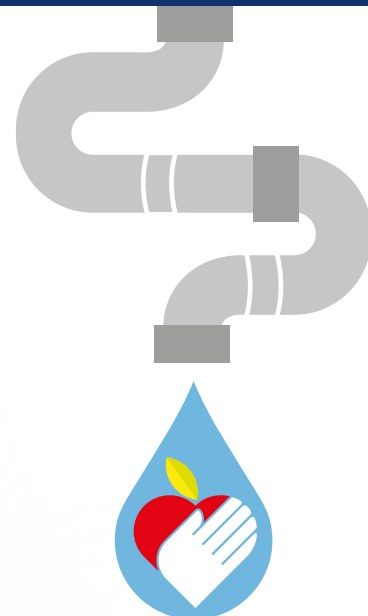
FIND OUT MORE

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





New white paper: Is Clean Steam the Food & Beverage industry's greatest oversight?



If you're a process engineer, production or quality manager in the world of food and drink, you'll no doubt generally view steam as the ideal method to sterilise and neutralise any possible contaminants that might enter your process. Yet, food and drink products are often manufactured with little analysis of the type of steam used. But why is the quality of steam so important?

In January 2006, new food hygiene regulations were passed, governing all food businesses in the UK and EU to implement and maintain a Food Safety Management System based on Hazard Analysis and Critical Control Point (HACCP) principles. These introductions would help to ensure the quality of their final product is achieved at all times, while measures would be applied to identify and control potential hazards.

If steam is filtered – as tends to be the case with the culinary steam we know within the food and beverage industry – does it automatically follow that it is clean? According to our new white paper, the answer is a resounding no.

Food and drink's most powerful ingredient details how food and drink are often manufactured, treated, or processed with little or no analysis of the type of steam used. This is despite the quality and purity of steam being fundamental to the healthcare and pharmaceutical industries for many years.

Why the oversight?

The steam often used for direct injection is passed through a fine stainless-steel filter - generally a 5-micron element which removes 95% of all particles larger than 2 microns in size. This potentially leaves 5% of particles larger than 2 microns, as well as those smaller than two microns, which can significantly affect the final product.

How does the white paper address the issue?

The white paper offers clarity on the confusion surrounding the difference between filtered or culinary steam and its clean alternative, while detailing the risks many businesses leave themselves open to through their failure to use clean steam.

Explaining the importance of including steam within a HACCP management process, the white paper also provides a recommended approach and clarifies the important role clean steam can play in eliminating inconsistencies in end product taste and taint.

Written by Francisco Pedrosa, our Regional Clean Steam Specialist, the white paper goes on to detail exactly how a business should go about introducing a clean steam process, offering eight operational advantages to food manufacturers using steam in direct contact with their process.

"Top of any ingredients list"

On the launch of the white paper, Pedrosa commented: "The confusion surrounding the difference between filtered and clean steam could be proving very costly to many food and beverage businesses – particularly as a number of other industries manufacturing goods for human consumption have paid close attention to the quality and purity of their steam for many years.

"By understanding the pitfalls of not having a clean steam process in place, what a clean steam process should look like, and the advantages it can deliver food and beverage companies should soon be making sure clean steam sits at the very top of any ingredients list."

FIND OUT MORE

Food and drink's most powerful ingredient: A definitive guide to using a clean steam process in your food & beverage plant is available to download now: sxscom.uk/steam_ingredient_whitepaper





Can servicing and support really pay for itself?

None of the uncertainty, none of the pressure and none of the risk. In a nutshell, that's exactly what external servicing and technical support can offer, but do these value-added extras have any tangible benefit to your business's bottom line? Mathew King, our Business Development Manager, explains why bringing in the experts from time to time will prove to be a sound investment.

As a steam system user, there's one thing you're likely to have in common with countless plant managers and operators around the world – like so many others, steam probably isn't your core area of expertise. With so many different process technologies to get your head around in a typical plant, that's perfectly understandable.

The frequently debated engineering skills gap is affecting many businesses. The fact the nation doesn't seem to be training enough engineers means estates and maintenance personnel like you are facing increasing pressure on your time.

Quite frankly, if you work in one of these positions, you don't have the time to be a steam specialist. Thankfully for you though, you don't need to be.

Why hire help?

Calling in external specialists to provide service and support for your steam

system can prove to be the most realistic and cost effective way to keep your system running like a dream.

By bringing in external expertise you have none of the uncertainty, none of the pressure and none of the risk you may have had if you'd attempted to carry out maintenance procedures yourself. Better still, most of these service or maintenance engineers will have "been there, done that, and got the T-shirt" as far as steam systems are concerned, so there's no reason to doubt that you're in completely safe hands.

Boost your bottom line

I've seen cases where the decision to invest in an external service or maintenance agreement has made an immediate impact. Take for example a well-known diversified food group whose steam trap management contract aimed to achieve savings of 236 tonnes

of carbon dioxide per annum for a period of three years. Our specialists carried out steam trap surveys and follow up maintenance on the Lancashire site's steam trap population every six months – an investment which they were projecting would pay for itself in energy savings in just eight months. That's pretty significant.

Where regular maintenance really comes into its own is when it allows you to pinpoint trends over time and even help you to highlight particular 'problem' areas that would otherwise cause persistent issues. These can then be addressed proactively, so unscheduled downtime is completely eliminated.

Believe me when I say there really is no need to add to your already hefty workload when outside expertise can act as a seamless – and results-driven – extension of your team. The results really do speak for themselves.



FIND OUT MORE

For more information, please visit [sxsc.com/ServiceContracts](https://www.sxsc.com/ServiceContracts)





News

INNOVATION NEEDS DIVERSITY

Whilst women are definitely getting better recognition in the workplace, it's not happening fast enough. As an organisation, we have a diverse workforce and aim to create an environment that enables all our colleagues to express their individuality.

So, we were really proud to embrace the International Women in Engineering Day, helping us celebrate diversity of all shapes and sizes - gender, age, culture, experience and expertise.

As part of the event, we hosted The Bloodhound Project, which is developing a car capable of breaking the world land speed record and encouraging young people of any gender or background to get inspired about engineering and technology.

We're proud of the fact that we've been building a strong, diverse community of employees, and this has helped us to move forward as a business, both globally and in the UK. We're looking forward to working with partners in industry as

we all embrace diversity and provide people with the space they need to innovate, create and manufacture the technology of the future.

International Women in Engineering Day took place on Friday 23rd June 2017. For more information about future INWED events please visit www.inwed.org.uk »



50 YEARS AT 10,000FT

It's not often that we swap our business dress for a parachute and jump from 10,000 feet in the air. But that's exactly what Matt Podsiadly did as he stepped into a plane at the Redlands Airfield – all in the name of charity.

The adventurous undertaking was a celebration organised by National Star in honour of its 50th anniversary. The "Skydive Challenge" involved

the aerial acrobatics of 50 brave men and women, including our Year in Industry student, Matt, while strapped to an instructor. He was more than happy to rise (then fall again) to the challenge, all in aid of National Star, which Spirax Sarco has supported for many years.

National Star, based at Ullenwood, Gloucestershire, works with disabled people through a variety of services, including support, accommodation, therapy and education. The charity offers personalised learning programmes, with a particular focus on creative and performing arts, sports, communication skills and life skills.

If you would like to donate to this great cause you still can: <https://nationalstar.everydayhero.com/uk/SkyDiveChallenge> »



Training

VERY REFRESHING!

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Get accredited with a BOAS refresher and book your renewal course at sxsc.com.uk/spiraxsarco/train »



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