

connexions

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Pipe down! We're talking major energy savings here

Energy managers and financial officers no longer need to watch hot exhaust gases going to waste. Heat pipe technology is perfect for capturing this energy in order to heat water or gases.

Why is that important? Because using the latest heat pipe technology is one of the most efficient and reliable ways to capture energy from plant exhaust gases that would otherwise be wasted.

Spirax Sarco Heat Pipe Heat Exchangers (HPHEs) can recover the heat in exhaust gases from furnaces, ovens, kilns, boilers and other industrial heating plant. This can then be used for a variety of applications including:

- heating air for combustion, process or space heating buildings

“ THE SYSTEM RECOVERS ENERGY VALUED AT ABOUT £63,000 PER ANNUM. ”

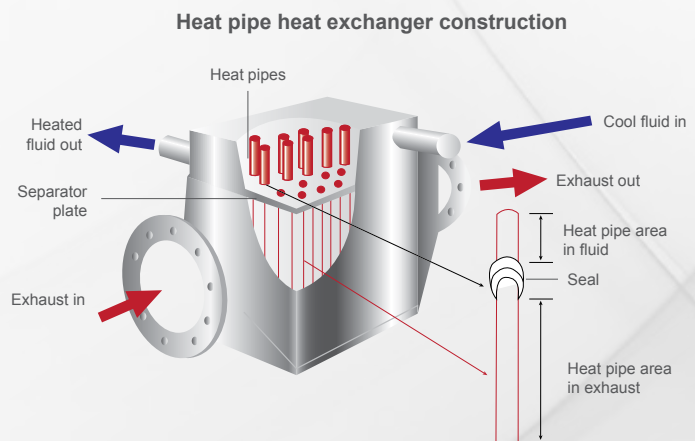
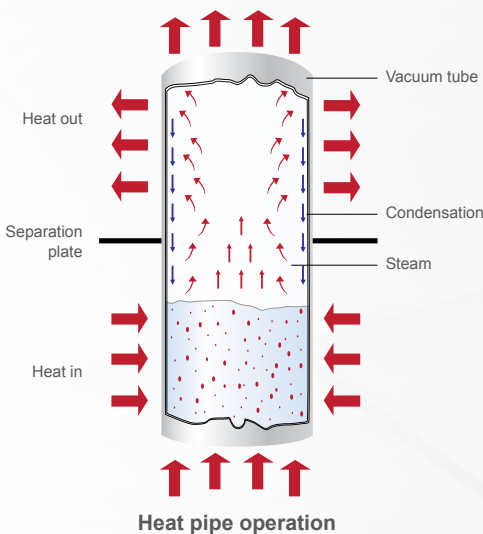
- heating water for boiler feeds, process applications or HVAC services
- generating steam for process
- pre-heating fuel oil

Spirax Sarco HPHEs comprise bundles of heat pipes sized for the application. This arrangement makes them flexible because elements can be removed or added to meet changing demand. They are also highly reliable because heat exchanger performance will not be affected should a pipe become damaged. Furthermore, the heat pipes' smooth outer surfaces resist the build-up of particles, enabling them to be used with dirty exhaust gases.

Proven payback

The energy savings can be substantial, typically delivering a two-year or shorter payback. In one case, a diesel-powered generating plant operator is using HPHEs to recover heat from exhaust gases to pre-heat fuel oil for a payback of less than six months. In another, a biomass incinerator operator is using HPHEs to heat water for district heating, with an estimated return on investment of less than two years.

Meanwhile, a ceramics company is using a HPHE on a low temperature exhaust stream to pre-heat combustion air. The company had looked for a long time to find a suitable heat recovery unit that could cope with its difficult, humid and dusty conditions, settling on heat pipes as the solution. The system recovers energy valued at about £63,000 per annum.



Heat pipes are sealed vacuum tubes containing a small amount of fluid that conducts heat from one end of the tube in a hot exhaust gas stream to the other end placed in the water or gas to be heated. Heat transfer is near instantaneous and highly efficient, with no cold spots and little thermal stress along the pipe's length for long, reliable life.

FIND OUT MORE

Visit sxsc.com.uk/Heatpipe to view our animation on how heat pipe technology works.



Throttle your control valve costs



From small to large, from low to high pressure, Spirax Sarco control valves can meet almost any process control application with minimal total cost of ownership (TCO).

Accurate temperature and pressure control are at the heart of most industrial processes and general heating applications. Indeed, major processing sites can have control valve populations running into the thousands, so keeping valve costs under control is vital. This is best done by sourcing valves for their lowest life cycle cost rather than choosing the cheapest to buy. Shutting down a process to replace a failed, poor quality valve can far outweigh any capital costs saved at the time of purchase.

Spirax Sarco offers an expanded range of Spira-trol™ Control Valves that deliver low total cost of ownership through their reliability, simple commissioning, ease of maintenance, wide choice of options and superior support. These valves are sized from DN15 to DN300, with pressures up to PN100 (ANSI 600) for almost any duty and application.

Easy to maintain

Spira-trol valves can be maintained without being removed from the pipeline and their components can be replaced without the need for special tools. Self-aligning, clamp-in-place internals avoid the difficulties caused by conventional screw-in seats that can seize in place,

“**SHUTTING DOWN A PROCESS TO REPLACE A FAILED, POOR QUALITY VALVE CAN FAR OUTWEIGH ANY CAPITAL COSTS SAVED AT THE TIME OF PURCHASE.**”

requiring the valve to be removed from the pipeline and causing a lengthy shutdown. Hard trim materials and slow internal flow velocities help to minimise internal erosion, extending valve life.

Their modular design means Spira-trol valves can also be reconfigured to suit new demands easily, while stockholding costs for spares are minimised because Spira-trol components can be used with several different valves.

Spira-trol valves can be used with electric or pneumatic actuation. Pneumatic actuators are fast-acting and provide a high opening or closing force for high pressure differentials. When fitted with Spirax Sarco positioners, valves can also be interfaced easily with an external control system. Valve maintenance also tends to be lower because accurate and smooth control reduces valve movement and wear.

Quiet operation

A multitude of trims is also available for the Spira-trol range. For example, low noise and anti-cavitation trims offer improved aerodynamic and hydrodynamic noise control. It's also a good idea to allow

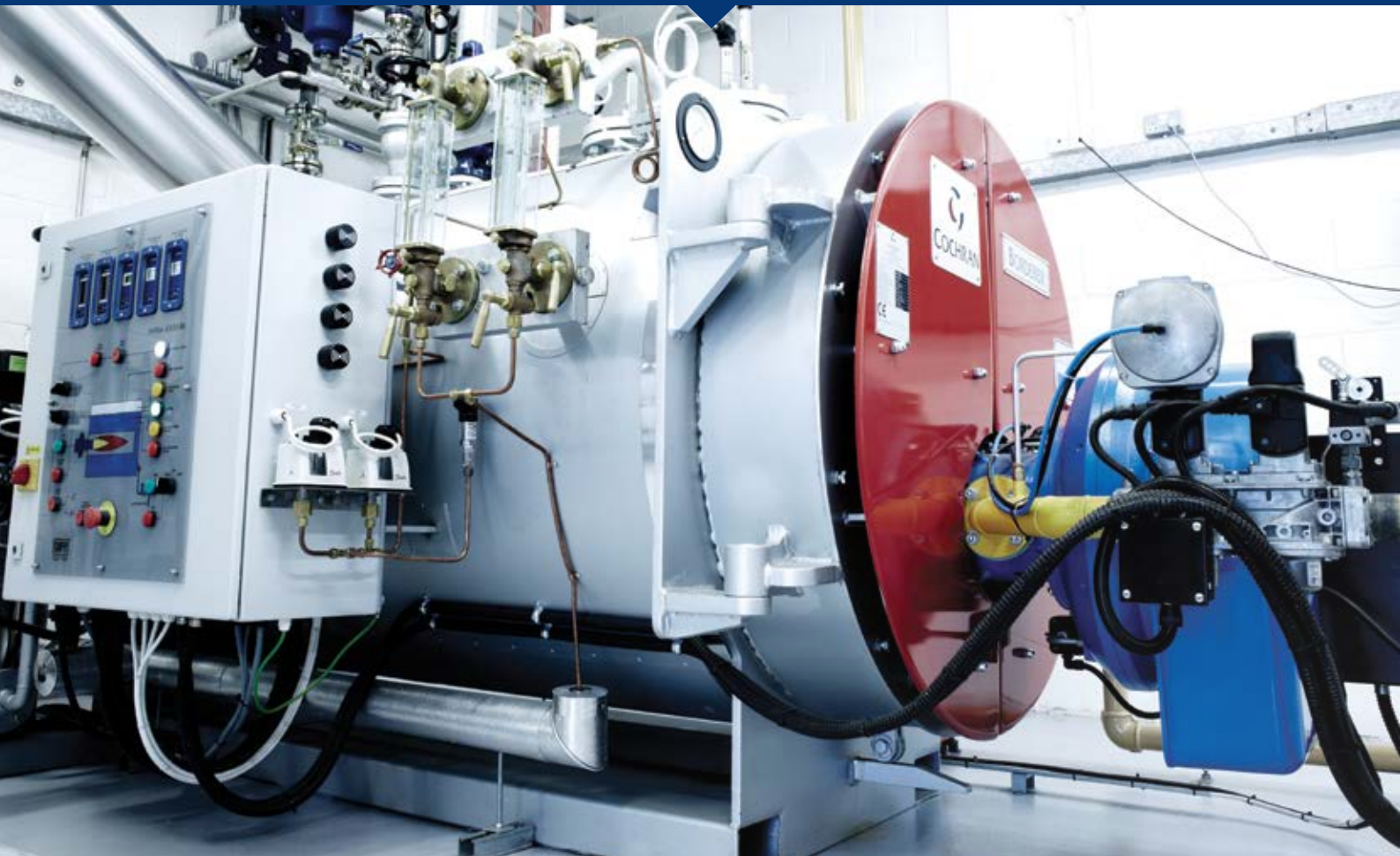
Spirax Sarco's technical experts to size and specify the right valve for your application. A correctly sized valve avoids many problems. If a valve is too large for a given duty, it will operate more closely to its seat and experience more wear. Equally, a valve that is too small may constrict the flow and lead to high velocities, reducing its life. An incorrectly sized and selected valve may also be subject to cavitation and noise in the flow, which can rapidly wear the valve internals.

Another aspect of the support service is rapid delivery. Fast delivery can be essential when a plant failure or change in production occurs, but it also eliminates the need for an organisation to hold several spare valves in stock. Spirax Sarco guarantees dispatch of most Spira-trol valves within 48 hours, but 90% of orders are dispatched same day.



FIND OUT MORE

Read more about Spira-trol control valves at [sxsc.com/uk/controlvalves](https://www.sxsc.com/uk/controlvalves)



Five ways to boost boiler house efficiency

The boiler house is the driving force at the heart of your steam system. It delivers the right amount of energy to your process, exactly when needed. Connexions looks at key technologies to improve steam generation efficiency.

Walk into your boiler house and you are entering the engine room that powers your whole steam system. That makes the boiler house one of the best places to start looking for ways to improve overall system efficiency and reduce steam-raising costs.

Implementing technologies that cut energy consumption and lower emissions is becoming more attractive because rising utility costs mean they

offer a higher return on investment. Many of these systems can also help to boost productivity, cut maintenance workloads and improve system safety.

Spirax Sarco can identify the best investments and potential benefits by using your real-time operational data to benchmark boiler house efficiency and analyse its running costs. We use advanced modelling tools to pinpoint areas with the greatest savings potential

“
IMPLEMENT TECHNOLOGIES
THAT CUT ENERGY
CONSUMPTION AND LOWER
EMISSIONS”

and recommend ways to reduce fuel consumption, carbon emissions, water use, effluent charges and the cost of water treatment chemicals.

5 KEY TECHNOLOGIES TO IMPROVE BOILER HOUSE EFFICIENCY

1 REVERSE OSMOSIS

Reverse Osmosis (RO) is an effective alternative to traditional chemical-based water treatments. RO uses semi-permeable membranes with pores so fine that only water molecules can pass through. This removes minerals and virtually eliminates boiler scaling.

- Reduces boiler blowdown to cut the loss of energy and water
- Cuts the use of costly water treatment chemicals
- Can reduce boiler fuel consumption by up to 3%

What Spirax Sarco offers

The Spirax Sarco Compact Reverse Osmosis system is factory assembled for 'plug & play' installation and trouble-free commissioning. Each unit is tuned to match the operational water quality of the destination plant in order to maximise operational savings.

2 AUTOMATIC TDS CONTROL

Blowdown controls boiler water contamination by drawing water from the boiler and replacing it with clean water. Manual routines often lead to an excessive blowdown rate however, which wastes energy and water. Automatic control measures and maintains a constant Total Dissolved Solids (TDS) level to optimise the amount of water taken from the boiler.

- Ensures a clean, dry steam supply to eliminate excessive steam trap discharge and energy loss
- Minimises the loss of energy and treated water from the blowdown process
- Reduces water and treatment chemical costs

What Spirax Sarco offers

Spirax Sarco blowdown control systems match almost any boiler's needs with a choice of controllers, conductivity probes and valves. These systems can be linked to energy and building management systems for more advanced monitoring.

3 FLASH STEAM RECOVERY

Flash steam can be created during the boiler blowdown process, or from vent heads and high pressure condensate returns. Venting this flash steam wastes energy and can be a brand-damaging eye-sore. Use a flash vessel to collect flash steam from hot condensate to feed low pressure steam heated process plant or for space heating.

- Recover up to 80% of the heat from blowdown
- Up to 26% energy savings by recovering flash steam from returned condensate
- Reduces chemical and make-up water costs
 - Eliminates unsightly plumes of steam from plant roof tops

What Spirax Sarco offers

Our flash steam recovery systems include the flash vessel and all necessary controls and ancillary products to build a system tailored to your boiler house. Our FREME (Flash Recovery Energy Management Equipment) system goes further by recovering energy from the flash steam in the condensate and transferring it into the high pressure side of boiler feed pumps. This way, more of the energy is returned to the boiler from the steam system.

What Spirax Sarco offers

Spirax Sarco boiler economisers resist fouling and are easy to clean and maintain. Smaller and lighter than traditional systems, their independent heat pipes improve reliability – damage to one or even a few heat pipes barely affect an economiser. The economisers are also easy to scale up or down to suit changing needs.

4 EXHAUST GAS HEAT RECOVERY

Recovering heat from the exhaust gases of heavy fuel oil and biomass boilers can be difficult because the dirty gases quickly clog and damage conventional heat exchangers. New heat pipe technology resists the build-up of particles from industrial exhaust gases and makes exhaust gas heat recovery viable.

- Recycle lost energy, increasing boiler efficiency and reducing fuel costs
- Reduce fuel use and lower carbon emissions
- Easy maintenance and reliable operation cut operational costs

What Spirax Sarco offers

Our comprehensive Steam System Conditioning service takes an end-to-end approach based on the principle that water and condensate treatment must optimise the efficiency of the entire steam system. We also provide a comprehensive product portfolio of feedtanks, vent heads, pressurised deaerators and ancillary items to ensure your feed water system performs at its best.

5 STEAM SYSTEM CONDITIONING

The feed water storage system is vital for the efficient operation of the whole steam system. It not only stores the energy in returned condensate for re-use in the boiler, but balances and deaerates returned condensate, flash steam and raw water supplies for maximum energy efficiency.

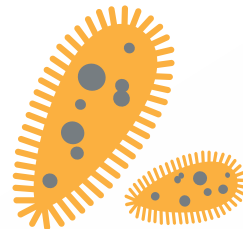
- Saves energy through less frequent boiler blowdown and less flash steam loss
- Reduces chemicals use, especially O₂ scavenging treatments, cutting costs and environmental impact
- Reduces the risk of corrosion in the boiler and steam system to avoid high maintenance costs
- Increases the reliability of the steam system for higher productivity

FIND OUT MORE

See how Spirax Sarco can help to reduce your energy bills and emissions
sx.com.uk/steamefficiency



Tackling the clear and present danger of legionella



It's a legal requirement to manage legionella risks and apply the right water treatment strategies to water systems.

Legionella outbreaks are thankfully rare but when they strike, the consequences can be tragic. Instances almost invariably hit the headlines. One of the more recent and most serious was the August 2015 outbreak at an Illinois veterans home that has so far claimed 12 lives. Closer to home, in April 2015, two cooling towers in Boldon in the UK were blamed for causing five cases of Legionnaires' disease.

Legionella is a water borne bacteria that can grow in engineered water systems such as cooling towers, condensers, hot and cold water systems and spa pools which can cause the potentially fatal Legionnaires' disease.

Protecting against a legionella outbreak is a legal requirement for organisations, which must put in place measures to identify and manage this risk as part of their water treatment strategy. Sites must pay particular attention to the Approved Code of Practice L8 (ACoP L8) from the Health and Safety Executive.

Is your site at risk?

Awareness is the first step in prevention so it's vital to recognise the potential

risks. Systems that process water at 20-45°C are particularly susceptible to infection.

In addition, any site with a cooling water installation must notify the local authority and be placed on a register.

“ AWARENESS IS THE FIRST STEP IN PREVENTION SO IT'S VITAL TO RECOGNISE THE POTENTIAL RISKS. ”

Hot and cold water systems - including cold water tanks, hot water storage tanks, taps, showers and other hot or cold water outlets - also present a risk. It's essential that such systems are maintained correctly. Showers, for example, run consistently at 20-45°C, water can be left standing in the pipework and the showerhead may stagnate. This presents a legionella risk and if the shower is not used for a while, can pose a significant threat.

A legionella risk assessment is required by employers with five or more employees.

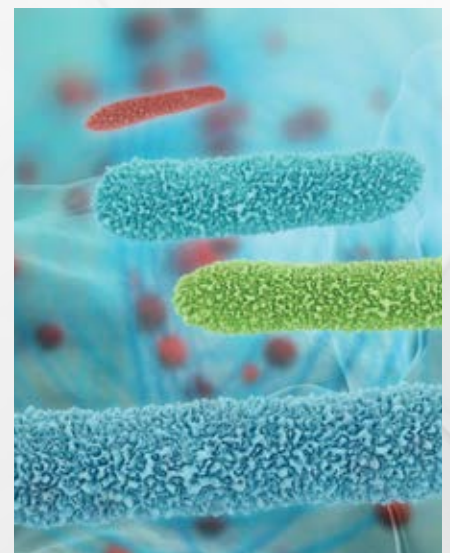
Do you have the right expertise?

Anyone in charge of such systems is required to understand the risk of legionella, how it is transmitted, how

to manage and assess the risks and how to apply the relevant legislation.

To help organisations of all types to meet their legionella control responsibilities, Spirax Sarco recently formed a partnership with SUEZ Water Conditioning Services UK division to offer a one-day Legionella Awareness training course at Spirax Sarco's UK Steam Technology Centre in Cheltenham. If completed successfully, the course leads to a Level 2 Award in Legionella Awareness (QCF).

Legionella awareness must be a high priority for anyone responsible for their organisation's training programme – the risks of not taking action are too great to ignore.



FIND OUT MORE

For more information, email training@uk.spiraxsarco.com, phone 01242 535211 or visit sxsc.com.uk/LegionellaAwarenessLA1





Flash steam recovery saves ingredients maker £40,000 a year



A Spirax Sarco energy recovery system has enabled a food and drink ingredients manufacturer to slash its energy costs by £40,000 per year.

The company uses steam to heat drum dryers to cook its ingredients. Previously, two pumps returned condensate from the drum dryers to the boiler house. This was proving inefficient with flash steam being lost to atmosphere, resulting in substantial energy losses. "The system was no longer energy efficient – we were literally losing flash steam out of the room," explains the company's Project Manager.

Spirax Sarco conducted an audit of the site. This identified the opportunity to save substantial energy and reduce

carbon emissions by 348 tonnes annually through the installation of a Spirax Sarco Flash Recovery Energy Management Equipment (FREME) solution.

Year-on-year savings

With the FREME installed, condensate from the drum dryers is now fed to a flash recovery vessel, which separates condensate and flash steam into two streams. Each stream then flows through a dedicated plate heat exchanger, which transfers the energy to the boiler feedwater. Because FREME is a closed, pressurised system, returned condensate is fed into the boiler at much higher temperatures than a conventional system open to atmosphere. This reduces the amount of work the boiler needs to do, cutting energy use.

The investment in the FREME saved the company £40,000 in 12 months with similar savings expected moving forwards, thus achieving a payback of around two years.

The FREME system is also covered by a 12-month Spirax Sarco Service Contract. "It makes good business practice to have new systems covered with a service contract. Spirax Sarco's knowledge of the system, its prompt attention and the availability of parts mean reduced downtime in the event of a problem, thereby maintaining the cost saving benefits of the system," says the company's Maintenance Manager.

FIND OUT MORE

For more information on Spirax Sarco's FREME solution, visit [sxsc.com.uk/FREME](https://www.sxsc.com.uk/FREME)





News



Dame Janet Trotter, Lord-Lieutenant of Gloucester, presents the Queen's Award to Spirax Sarco at the company's Cheltenham Technology Centre

FLOWMETER WINS QUEEN'S AWARD FOR INNOVATION

The Spirax Sarco TVA flowmeter has won the Queen's Awards for Enterprise: Innovation 2015, one of the UK's highest accolades that recognises outstanding achievement by UK companies in design and manufacture.

The TVA is a variable area flowmeter that incorporates a proprietary sensor and unique mathematical algorithms to provide reliable, accurate and cost-effective steam metering over a wide range of flow rates.

Find out more about the TVA at sxsc.com.uk/TVAFlowmeter



SPIRAX SARCO ACQUIRES INSURANCE INSPECTION SPECIALIST

Spirax Sarco has expanded its services portfolio by acquiring Scotland's Valve and Control Engineering Ltd (VCE). VCE manages annual boiler insurance inspections and recertification by preparing boilers and associated plant for inspection, organising inspector visits and undertaking the repair and refurbishment needed for recertification.

VCE's services are now available to all Spirax Sarco customers in Scotland and its service capability is being extended to include control valves and other steam products.

Training

2016 training brochure details new courses

Spirax Sarco's 2016 training brochure is now available, including new courses on boiler house risk assessment, water treatment and Legionella awareness.

Booking is now open and with some courses likely to fill up fast, please book as early as possible to secure your place.

Assessing boiler house risk

Responding to customer demand, Spirax Sarco has launched a one-day course about boiler house risk assessments based on INDG436

guidance for the safe management of industrial steam and hot water boilers. The legal aspects are covered by a qualified Health and Safety trainer, followed by a guided practical risk assessment exercise. Candidates will leave with a template for a risk assessment and the key areas of focus.

Preventing Legionnaire's

It's vital to reduce the risk from water-borne bacteria that cause Legionnaire's disease. A new course will help those managing hot and cold water systems to understand how to apply legislation with a focus on the HSE's Approved Code of Practice and technical guidance (HSG 274).

This one-day course leads to a Level 2 Award in Legionella Awareness accredited by Ofqual.

Treating boiler water

Also new in 2016 is a boiler water treatment course that explains why water treatment of steam plant is important for safe and efficient operations. The one-day course helps delegates develop a practical guide to water treatment and the skills to put a strategy in place to prevent scale, corrosion and fouling.

For more information on these courses please see the 2016 training course brochure or visit sxsc.com.uk/SpiraxTraining

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