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BLUE STEAM

Your regional magazine

spirax sarco

Close the loop of your steam system to battle the bill

The cost of fuel is one of those topics that we keep coming back to. We all know that costs are rising and that it can become more and more challenging to find savings. Then there's the ambitious carbon emissions targets we're being challenged to meet. So if you're a steam user, where do you turn in your search for major savings?

When it comes to the future of energy, we prefer to look at the glass as half-full. Let's take, for example, a food manufacturing company, which recently identified potential savings of up to £50,000 per year from heat recovery. Pretty impressive, right? How did they do it? Quite simply, by investing in a steam system audit. Mathew King, SXS Business Development Specialist, explains:

"The problem of big bills isn't set to go away any time soon either, as prices continue to rise."

"FUEL PRICE HIKES AND THEIR IMPACT ARE INEVITABLE, BUT WITHOUT SOME MITIGATION EFFORTS, THEIR EFFECTS CAN BE SERIOUS. HIGHER ENERGY BILLS, LEAD TO HIGHER PRODUCTION COSTS, WHICH INEVITABLY LEAD TO A MORE EXPENSIVE END-PRODUCT OR SERVICE."

Think positive

"There is a positive trend coming out of this, though," says Mat. "Businesses are starting to get serious about energy efficiency. In fact, many of our customers are starting to set a really good example for others to follow." This didn't happen overnight, though.

One hospital, for example, underwent an extensive audit which flagged control, optimisation and distribution of steam as areas for improvement – with the potential for annual combined savings standing at over £200,000!" He continues: "The great thing about audits is that you can tailor them to your needs. You can have the all-inclusive steam and thermal energy audit that covers everything, from the boiler house to the steam traps. Alternatively, you can create a bespoke solution that focuses solely on the areas you've identified as needing a bit of TLC.

"The process starts by benchmarking the performance of your energy centre and the efficiency of steam generation, identifying areas for improvement. From there, distribution is reviewed to ensure your losses are minimal and that your condensate is returned wherever possible. Finally, your in-process steam usage is evaluated, to maximise efficiency and identify opportunities for heat recovery or utilisation improvements. The result should mean significantly improved performance and cost saving potential for your business.

Speak to a specialist

"Rising fuel prices isn't the only challenge the industry faces. There's also a shortage of in-house specialist skills, which means that most companies won't be able to identify any opportunities with their steam systems, unless they approach a professional. Mat concludes: "As a benchmark figure, you could be looking at cost savings of around 20 per cent by commissioning a steam and thermal energy audit, which could amount to hundreds of thousands of pounds. If you look at our hospital, food manufacturing and chemical customers, though, the potential is there to save even more."

Food & Drink Manufacturing

IS STEAM IN DIRECT CONTACT WITH MY PROCESS ?

RAW MATERIALS	PROCESS	PACKAGING
Blanch	Cook	Extrude
Sterilise	Prove	Seal
Defrost	Pasteurise	Humidify
		Cure
		Sterile package

WHICH TYPE OF STEAM IS RIGHT FOR MY PROCESS ?

PLANT STEAM	FILTERED STEAM	CLEAN STEAM
Contamination hazard	Reduce contamination	Eliminate contamination 100%
Suitable when not directly in contact with food and drink process and products.	Improve steam system design and test regularly to reduce contamination risk.	Generate contaminant free steam and completely remove contamination risk.

To learn more, visit spiraxsarco.com

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News World

Egypt

Our service offer

Spirax Sarco Egypt Services can help to maintain your steam system at its optimum level, ensuring that steam reaches the point of use at the correct quantity, quality, and pressure. Our services are tailored and integrated to suit your resources, plant requirements, and budget. Qualified and experienced engineers will work with you to implement the improvements to your system and then help you to maintain the resulting performance gains which usually give very rapid returns on your investment.

- 1) Steam Survey for Efficiency Improvement
- 2) Steam Traps Survey
- 3) Installation and Commissioning of our Equipment
- 4) Repair and Reconditioning of our Equipment
- 5) Service Contracts

Middle East

Clean Steam Generation, a growing interest for the healthcare industry

We are seeing an aligned understanding throughout the Gulf Cooperation Council (GCC) healthcare industry towards the importance of steam quality and purity for sterilisation. This focus is essential to mitigate the risk of cross-contamination and as a result actions are being developed to fully comply with industry-wide accepted guidelines. Spirax Sarco is supporting its customers to develop the design specifications for the site CSSD (Central Sterile Services Department), including supply of centralised steam-to-steam Clean Steam Generation units (third-party certified to industry standards) to guarantee 100% compliance.

East Africa

Process Optimisation

Tea Drying

Industry : Food & Bev

Place : Kenya

Objective : Optimisation of steam usage in Tea Industry

Solution : Installation of Control valves on steam supply lines to Fluidized Bed Drier

Results : 11 000£ Wood - savings / year
11.9 % Reduction in wood usage
17 months Pay back period

The Issue:

Firewood makes up 70 per cent of energy used in drying tea leaves instead of furnace oil and electricity which are expensive in Kenya. In the Tea industry, steam is used in withering of green leaves and drying of fermented dhool: – Withered tea leaf that has been macerated through a Rotorvane, Triplex CTC machine and fermented for about 90 minutes. The drying of the dhool is done using hot air in a fluidized bed drier. Steam is used to heat air that is fanned through radiator banks.

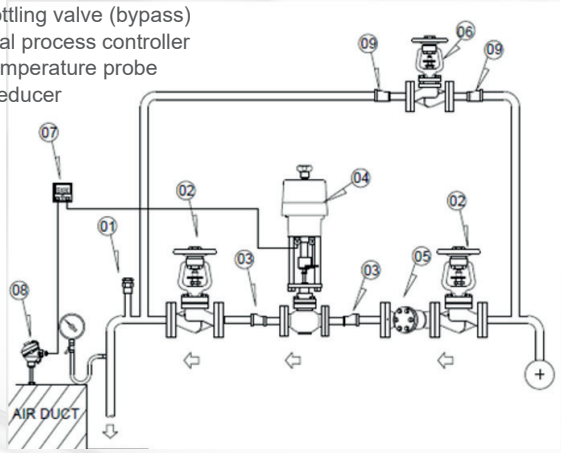
The government issued a blanket ban on logging for a period of three months aimed at stopping the deforestation and the near depletion of natural ecosystems. Tea factories in Kenya face possible economic closure following a government ban on logging that has hit hundreds of factories that rely on firewood to run their processing machines. To mitigate the situation one of the private tea factories in Kenya approached Spirax Sarco East Africa for advice on areas where steam usage can be optimized and energy saved.

The Solution:

Spirax Sarco East Africa proposed the usage of control valves to modulate the supply of steam to the fluidized bed drier (FBD), which is a major steam consumer in the factory. The factory installed six control valve stations which were complete with all the equipment needed to process and control the steam efficiently. The schematic below illustrates a typical station being used to great effect on one radiator bank in the FBD.

Item Description

01 - ½" Vacuum breaker
02 - DN50 Isolation valve, bellows sealed
03 - Eccentric reducer
04 - DN32 Electrically actuated automatic control valve assembly
05 - DN50 Strainer, #100 mesh
06 - DN40 Throttling valve (bypass)
07 - SX80 Digital process controller
08 - EL2270 Temperature probe
09 - Eccentric reducer



South Africa

Process Optimisation

Lye Fruit Peeling

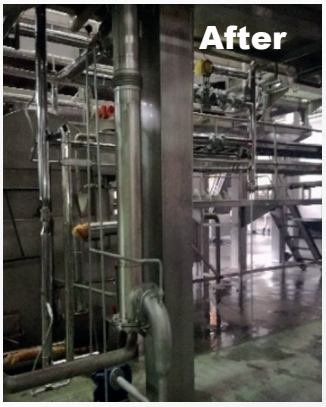
Industry : Food

Place : South Africa

Objective : Process optimisation

Solution : Replace the heat exchangers with turflow and APT 14

Results : 35 000£ steam cost savings / year
40% improvement on start up time
215 kW energy use reducing
Larger fruit volume throughput



The Issue:

A food plant had identified the aged and ineffective Tube & Shell heat exchangers as critical processing elements of the fruit line process. The Tube and Shell heat exchangers didn't provide stable temperature exchange from the steam and could no longer provide the required heat output for the expected yield and food quality.

The Solution:

Spirax Sarco proposed to install a Turflow combined with an Automatic Pumping Trap (APT) to meet both the heat demand and also to improve the process yield. The new solution even freed up more space in the working environment due to its compact component orientation. Not only is the Turflow more efficient, it also helps deliver the required heat output using less steam consumption – an essential requirement to meet the customer's criteria. This allowed an increase to the pumped circulation rate to the sprayers, which increased the rate of solution spray over the contact area over the fruit, increasing quality.

Next Step:

Extra Turflow Units are to be installed into the facility with additional condensate removal APT and MFP14 pumps to manage condensate recovery targets.

Romania

Energy Recovery

Brewing Industry

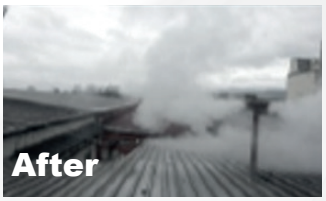
Industry : Brewery

Place : Romania

Objective : Energy recovery

Solution : TDS energy recovery solution
Steam recovery from vents through a Turflow system

Results : Energy recovered is 45,000£ /year
Payback period : 11 months



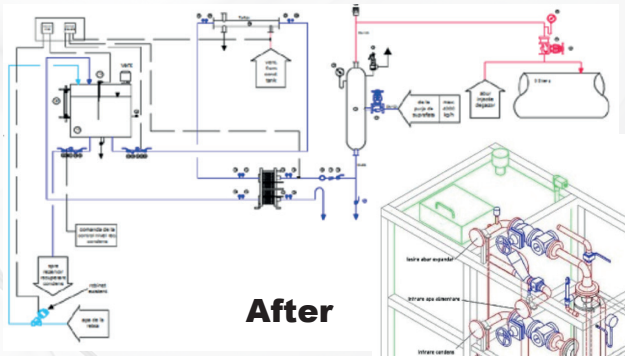
The Issue:

Spirax Sarco's Sales Engineer has identified a great energy recovery opportunity during a visit at one of Romanian customer. The heat energy contained in the TDS blow down was not recovered. Also, deaerator failures were causing huge amount of flash steam losses throughout the vents. The flash steam lost through all the vents from the boiler house was not recovered.

The Solution:

Spirax Sarco proposed to install:

- TDS energy recovery system. In this way the customer is now able to use the recovered flash steam to heat the boiler feed water.
- In order to recover the flash steam from the vents, we proposed them a Turflow heat exchanger.



Benefits:

Spirax Sarco's solution delivered the customer several benefits : energy recovery, reduced costs of the feed water and water treatment, and significant savings, that helped them to recover their investment in 11 months. In five years, Spirax Sarco's approach will have helped the customer to save 228 k£.

Service: Steam trap survey

A correctly sized and functioning steam trap is a vital component of any steam system. There can be hundreds of steam traps in a single plant. They are very important in terms of ensuring process quality, safety and energy savings. Spirax Sarco, as steam specialists, has been carrying out steam trap surveys in its customers' installations for decades. Sébastien Guérin, Director of Service and Integrated Solution department (SSI) of Spirax Sarco France, answered a few questions, which you might be interested in…

Sébastien Guérin
Director of SSI department SXS France

> "AN EXPERIENCED TECHNICIAN CAN SURVEY BETWEEN 55 AND 60 STEAM TRAPS PER DAY"

What is a steam trap survey?

It is a holistic assessment of the steam traps on a customer site. We draw up an inventory of all the existing steam traps and collect the data related to each one: technology, manufacturer, diameter, position, installation and condition. Each trap is logged with a unique identification number.
Following the survey, a report is given to the customer, displaying detailed technical sheets with a photo for each failed steam trap. A sheet is also created for each recommended improvement.

How is a steam trap survey carried out ?

A Spirax Sarco technician goes to the customer's site and carries out an assessment of each steam trap relating to the duty. During this process, they will analyse and check whether each steam trap is optimised to the process for which it is used. To ascertain a steam trap condition, the technicians have at their disposal both an ultrasonic detector and a laser/contact thermometer. These two devices are used in conjunction with each other, with the thermometer playing an important role to confirm diagnosis from the ultrasonic output.
An experienced technician can survey between 55 and 60 steam traps per day depending on their accessibility, as it is important to adhere to local health and safety requirements.

What is the annual average steam traps failure rate for a customer?

From experience, the average steam trap failure rate for a customer is 10% per year. This statement is based on a statistical analysis coming from 40,000 steam traps surveyed per year by Spirax Sarco France over a multiple year period. The 10% failures can be broken down into, 80% leaking live steam and 20% failed closed. The average cost of annual steam losses from a leaking steam trap can reach €3,000 (given an average steam cost of €30/tonne of steam and operating over 8400h/year).

What are the consequences if you don't survey your steam trap population regularly?

What really matters is not the survey itself, but the actions you take following the assessment. Some failures can lead to significant damage to the installation if corrective action is not taken, costing many times more than the steam trap or the energy wastage, in addition to creating Health and Safety risks.
A failed closed steam trap will prevent condensate from draining, potentially resulting in water hammer, which can pose serious safety issues. In addition, water accumulation in the pipe, will decrease the heat exchange by preventing the free flow of steam and consequently make the process less efficient.
When we talk about a leaking steam trap, it is not like a leaking tap in the home, the financial losses from lost energy can be significant. Furthermore, if steam migrates into the condensate return system, then processing capacity can be reduced from the back pressure created on each piece of operating plant. This bi-phase mix (steam/water) can cause pipe damage, which can lead to safety issues for the installation and personnel working on site. Maintaining the steam trap population, with correctly selected, sized and functioning steam traps will ensure the steam plant is operating efficiently, saving both energy and subsequent downstream maintenance. The costs to refurbish become exponential, compared with preventative maintenance. Consider also the effect on processing equipment failure or health and safety risks. On this basis we recommend annual trap surveys with prompt remedial work to ensure optimum steam system performance.

So why should you call Spirax Sarco for your steam trap audit ?
With more than 100 years of experience of steam and condensate systems and thousands of steam plants assessed around the globe, Spirax Sarco is an unparalleled specialist to help you get the most from your manufacturing facility.
Spirax Sarco steam trap surveys will help you to :

- **Identify energy savings.**
- **Improve the reliability and operational efficiency of your plant.**
- **Manage your production costs.**
- **Train your team "with real-life field experience."**

Our steam trap surveys are designed to help you leverage increased value from your plant, contact us to help you.

Case study

Steam trap surveys payback within four months

Spirax Sarco steam trap surveys are highlighting energy and maintenance savings that are achieving paybacks of less than four months at a chemicals producer in Warrington. The first survey at the site also revealed a 50% failure rate for fixed orifice traps from another supplier.

Following the success of an initial survey, the chemical company has rolled out a programme of trap surveys around its entire Warrington site, which has a population of several hundred steam traps. “It’s hard to fully quantify the savings, but I’d say the payback on a survey is typically three to four months,” says the Energy Manager. Furthermore, the chemical company decided to opt for Spirax Sarco steam traps with Quick fit fittings. This installation gave them double block and bleed, which enables them to replace faulty traps without waiting months for a scheduled plant shutdown and means the company can benefit from energy savings immediately.

Industry : Chemicals

Place : United Kingdom

Objective : Energy & Maintenance savings

Solution : Make a complete steam trap survey

Results : 50% of the steam traps were failed

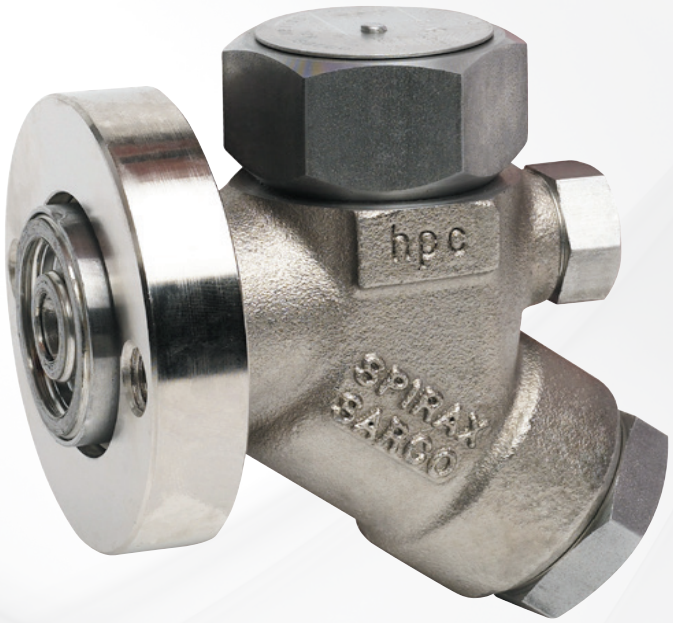
Quick fit system steam traps have been installed.
Annual survey.

Payback period : 4 months

> “STEAM TRAP SURVEYS ARE HIGHLIGHTING ENERGY AND MAINTENANCE SAVINGS THAT ARE ACHIEVING PAYBACKS OFLESS THAN FOUR MONTHS”

The customer is a world leader in silica and alumina technology, with over 900 employees and eight manufacturing sites in five continents. Its products include liquid and solid silicates, gel and precipitated silica and a range of zeolites for detergent and other applications. Production rates vary at the Warrington site, consuming up to 50 tonnes of steam an hour via an extensive distribution system. The initial two-day steam trap survey was ordered after it became clear that a significant number of traps had failed. “They didn’t cause us any problems with our process, but they were obviously wasting energy,” says the energy manager. The failures also created a maintenance issue, since condensate was not being removed effectively and was accumulating in the pipes.

The chemical company asked Spirax Sarco to focus on the traps around the boiler plant and the pipework leading to the process plant. The survey found a particular problem with the fixed orifice traps. Frustratingly, they had to sit on the results for several months until the next plant shutdown, because it was impossible to isolate the affected traps and remove them safely while the plant was up and running. This is a common problem on many sites and the Warrington plant sometimes operates for up to three years without a break. Since then, the customer has standardised on Spirax Sarco steam traps equipped with Quick fit fittings. The Quick fit system allows maintenance staff to isolate a defective trap and remove it safely in a matter of minutes, “Now if we spot Spirax a problem, we can do something about it straight away ”, says the energy manager.



Thermodynamic steam trap with quick fit system

The company has also asked Spirax Sarco to continue providing annual surveys to keep the plant running as energy efficiently as possible. “No one can afford to waste energy these days, especially with the way gas prices are rising”, adds the energy manager.

Steam Game

Try to find the words !

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                    G U C
                H Z F K U P U K T
              N T N O P R F O F T T B V
            S I W S F Q J V G G J G L P Q X C
          T C M M L A H T U R F L O W F P H O L
        Q S P P K G F L S P R R A Z B B Z D Z N B
        J U R R T R D L T W R F W J U Y C Q U T N
      C F A M O L C L C O R S O D U N E N E R G Y F
      I R U E V Q R E E K A T W C M E T S Y S F A P
  E V U O I E J N E J H I T N G E O Y L T A O O E O
  Y S R N E M X F L C O L W T O N S Y I Z B O T M Y
  U T R I O E L W C C N R S Z R Y I S K O L D T A I
T V R S U W N O T H V H A P K Z A E A I F U A U E T L
N E M C U P T M P I K F A N L M O P P M F E N S T F S
A W C M I R H Z V T H H C B E T Y T P P P S D A S K R
  H B I C D V K B W I S J E K T E S L E U T B V N A
  J I K V J B E X U M M W O S B N W I H L E E I A R
  H A H I R T N Y E F B I A B Q C I C A X A V N E Z
    M X T M E D A U D R Z S S V O R A U P M E G L
    H B B O P S T E A M T R A P S S T M F P R S C
      F K W V G W R K L D W A T T Z I C V U A I
      T E K C U B D E T R E V N I Q O S P A G N
        O O O M X A R I P S Q L B O N Z S M E
          U U C X H I W T Z F C C R N H H S
            X X T Y W V F P N L A C D
              E P Q T C P M O Q
                V M Z
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- Application
- Blue Steam
- Clean Steam
- Cost
- Energy
- Float trap
- Food and Beverage
- Improvement
- Inverted bucket
- Maintenance
- Optimisation
- Process
- Project
- Savings
- Service
- Spirax
- Steam trap
- Survey
- System
- Turflow

Steam quiz answers – Blue Steam March 2018

1-A ; 2-B ; 3-A ; 4-B

5-B, C, D

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