



Product Overview

A quick guide to products for steam and related industrial fluids

First for Steam Solutions

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spirax/sarco



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You need more than just the world's most comprehensive range of steam and condensate loop products.

It's a good starting place to know that we can offer every component found in your steam and condensate loops. 12,000 products. But that alone doesn't solve your challenges.

Gain total control over your steam processes

By explaining your core business — and the steam processes it needs — to your local Spirax Sarco contact, they acquire the foundation they need to think in plant-wide terms for your unique process solutions. Their proposals are site specific, tailored to your current operating conditions and focused on providing increased control.

- Higher quality, more consistent steam
- Enhanced energy savings and recovery
- Better system-wide metrics
- Easier commissioning, start-ups and balancing of systems
- Improved safety
- Full compliance to local and international regulations and your sustainability goals (e.g., learning your current CO2 emission levels)
- Streamlined and optimized maintenance programs
- Life cycle cost analysis (LCCA) to minimize your total cost of ownership.
- Guaranteed performance

Start where you are

Obviously, we're in it for the long haul. But your needs might be very immediate: troublesome boiler controls, inadequate flow measurements, premature failure of steam traps... We'll start where you are, bringing a collective expertise of over 100 years of steam control to even the most basic equipment challenge.

How to use this overview

The following pages quickly display all of our main product groups, which display all of the processes shown in figure 1 (other than the boiler itself).

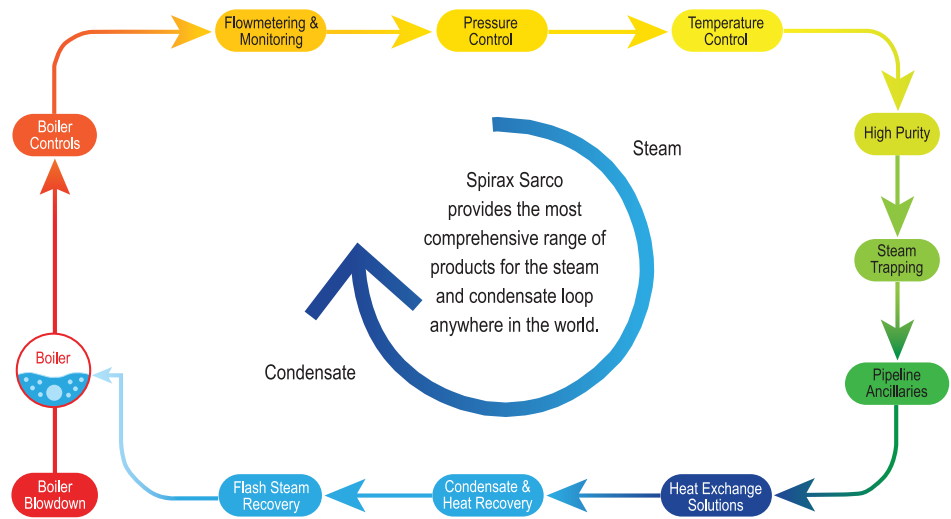


figure 1: steam condensate loop

For our complete product line, you can download our technical information at: www.spiraxsarco.com/global/us

Better yet, call us so you can begin leveraging the expertise of your local contact at: **1-800-883-4411**

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6 Complete Integrated Solutions

Packaged heat exchangers, product assemblies, system audits, design, installation, maintenance and project management.

10 Boiler Controls and Systems

Feedtanks, level controls and alarms, feedpump check valves, boiler blowdown valves, TDS control systems, steam injection systems, sample coolers, heat recovery systems, conductivity meters, condensate contamination detectors, blowdown vessels and vent heads.

12 Flow Measurement

Variable area orifice, target variable area, inline and insertion vortex, insertion turbine, transit-time ultrasonic, thermal mass, electromagnetic flowmeters, and flow computers.

14 Control Systems

Pneumatically or electrically actuated two-port valves, positioners, programmable electronic controllers, pneumatic transmitter controllers, pressure reducing valves, surplussing valves, safety valves, self-acting temperature control valves and high limit temperature cut-outs.

16 Steam Traps

Thermodynamic, float and thermostatic, balanced pressure, inverted bucket and bimetallic steam traps, sealed and quickfit steam traps, Spiratec steam trap performance monitors and steam trapping stations.

18 Condensate Pumps and Energy Recovery

Automatic steam (or gas) powered fluid pumps, pump-trap combinations, electric powered condensate recovery units and flash steam recovery vessels.

20 High Purity Products

Temperature controls, pressure control instrumentation, steam traps, sample coolers, ball valves, separators and filters.

21 Pipeline Ancillaries

Manifolds, separators, bellows sealed stop valves, check valves, diffusers, strainers, sight glasses, pressure gauges, air vents, vacuum breakers, hosedown stations and ball valves.



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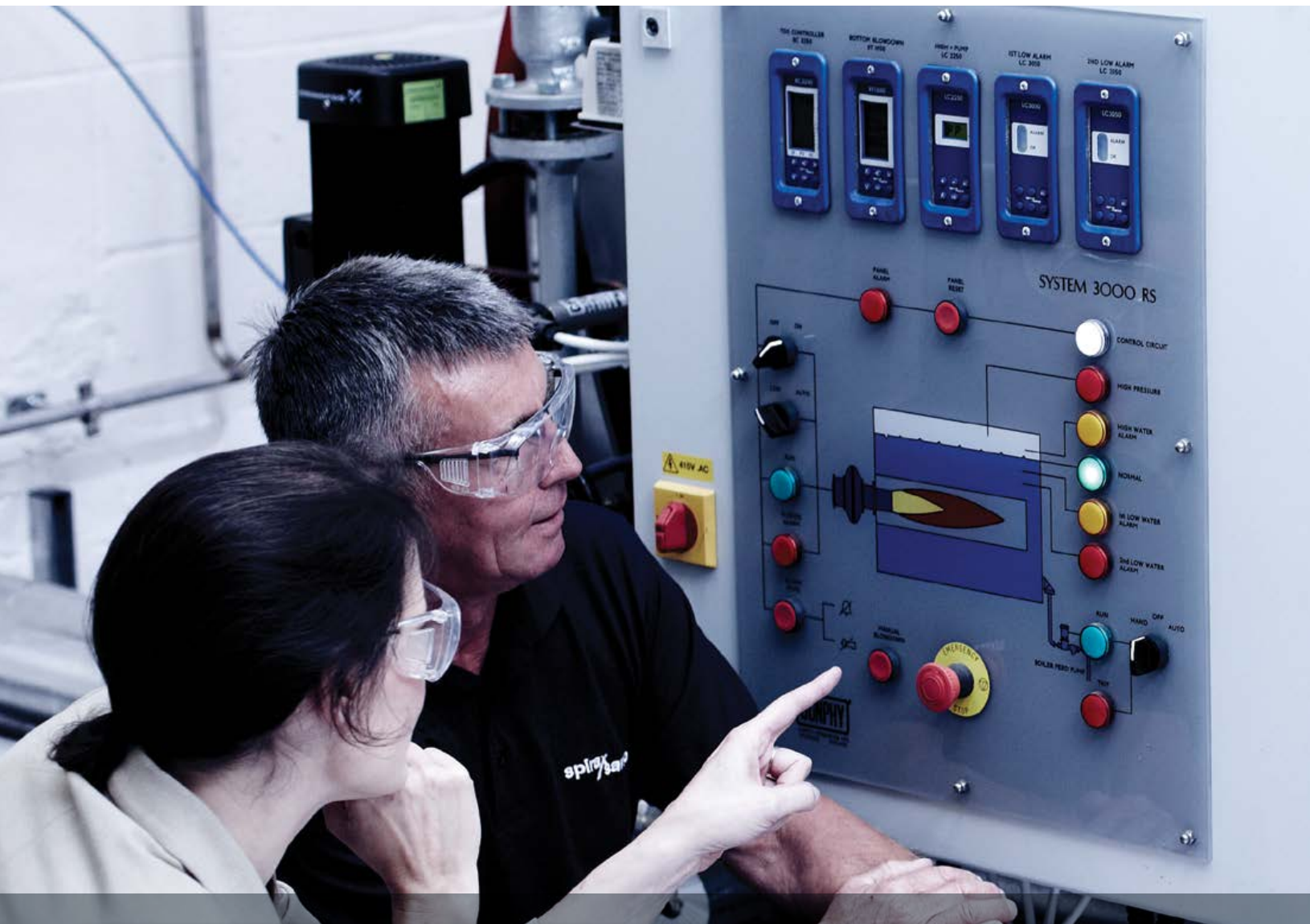


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Product overview



Customer focused solutions partner



Ready assembled control systems



System audits



Steam condition monitoring

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Complete Integrated Solutions

Businesses today are increasingly relying on outside expertise for management of their energy sources. This allows them to concentrate more on their core business activities.

Spirax Sarco has the expertise and products our customers require regarding the use of steam and other related industrial fluids. Our offerings make us the perfect partner as a solutions provider. These solutions can range from simple product assemblies to major turnkey projects, such as boiler house upgrades.

System Services

At Spirax Sarco, we offer a complete range of services to ensure the effective and safe management of steam, condensate and other industrial utility fluid systems.

These Services Include:

- Tailored audits to identify areas for improving system efficiency, and ensure compliance with Health, Safety and Environmental legislation
- Steam System Conditioning and Quality Testing programs that deliver reduced cost of ownership and optimized heat transfer throughout the system
- Design of customer-specific energy saving solutions and strategies
- Design of process improvement solutions to increase product quality and / or yield
- Installation of new and replacement products to improve energy utilization, system reliability and reduce water and chemical usage
- Commissioning and routine servicing, in addition to advice on Planned Preventative Maintenance programs, to fully optimize process performance and uptime
- Project management to ensure seamless on-time, on-budget completion of large turnkey contracts
- Equipment recalibration and repair facility to help maintain system safety and process availability.

Thermal Energy Solutions

1. Standard Heat Transfer Solutions

Packaged heat exchange solutions can be provided to meet your exact requirements, offering a highly efficient solution to heating water with steam. Compact units, which include the EasiHeat,™ QuickHeat,™ and RediHeat systems, are pre-assembled to offer quick, simple installation, and speedy commissioning.

2. Custom Heat Transfer Solutions

Specifically and individually designed to suit your application requirements. Packages include clean steam generators, shell and tube steam to hot water systems, and hydronic packages.

3. Heat Recovery Packages

We offer configured solutions, with flexible modularity to suit various systems, helping to reduce capital costs. Spirax Sarco heat recovery solutions enable users to recover usable energy from various sources; boiler blowdown, flash steam, and more. These packages provide improved efficiencies, and subsequently financial benefits such as attractive return on investment, and short payback periods.



1. Compact standard heat transfer packages



2. Clean steam generators



2. Custom heat transfer solutions



3. Heat recovery packages

Heat Transfer Products

4. Desuperheaters

A broad range of both fixed and variable area desuperheaters that provide precise control and reduction of superheated steam temperature enabling the resultant steam suitable for use in a wide variety of process applications.

5. Steam Jet Thermocompressor

Are you wasting potential energy by venting flash steam? If so, Spirax Sarco's Steam Jet Thermocompressor is an energy saving device that compresses low-pressure steam, often waste steam, to a higher acceptable pressure that can be recycled back into the process.



4. Desuperheaters



5. Steam Jet Thermocompressor

Packaged Products

Assemblies of products all selected and sized to provide an integrated solution. Examples of packaged solutions are:

6. Condensate Pump / Steam Trap Assemblies

Condensate pumps with steam trap and / or receiver for the effective removal and return of condensate.



6. Pump and pump trap packaged solutions for condensate management

7. Control Valve / Flowmeter Stations / Pressure Reducing Stations

Pre-assembled stations including matched products to condition the fluid prior to controlling its temperature, pressure etc., or measuring its flowrate. Includes all necessary downstream products.



7. Pressure reducing station



Boiler Control and Systems

An extensive range of boiler controls and systems are available. Whether it's a completely new boiler house plant or a simple blowdown valve replacement, Spirax Sarco will have the answer.

1. Boiler Blowdown Systems

As steam forms it leaves behind impurities in the boiler water that will concentrate unless removed. The TDS (Total Dissolved Solids) in the boiler must be accurately controlled. High TDS can result in carryover of boiler water and impurities causing problems with production and plant. Low TDS due to too much blowdown increases fuel and water treatment chemical costs. Systems are available for all sizes and types of boiler.

2. Sample Coolers

To be sure that a boiler is operating at the desired concentration of TDS it is necessary to take a sample of the water and test it. The stainless steel sample cooler lets the operator do this safely and accurately.

3. Steam Injection Systems

Steam injection systems can be used to inject steam into feedtanks to drive off the dissolved oxygen. This reduces the amount of oxygen scavenging chemicals required, and maintains a high and steady feedwater temperature to the boiler.

4. Level Controls and Alarms

Significant developments have taken place in recent years considerably improving the standards of safety and reliability of boiler level controls.

Probes without moving parts and modern electronic controllers are so reliable that major boiler accidents should be a thing of the past.

5. Heat Recovery Systems

Flash steam recovery from blowdown has two advantages. In addition to the heat recovered the flash steam is condensed to 'pure' water, reducing the amount of make-up water and chemical treatment required.

For certain conditions, it may be more economical to pass the blowdown directly to a heat exchanger without using a flash vessel. Spirax Sarco can provide a range of alternative heat recovery solutions.



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6. Bottom Blowdown Valves

For the precise and regular control of precipitated solids in steam boilers. A choice of manual key operated or fully, automated valves are available.

7. Vent Heads

The vent head separates condensate from flash steam and vents it safely without spray. Vent heads are manufactured in stainless steel for a corrosion resistant long life.

8. Blowdown Vessels

Blowdown vessels are now manufactured to ASME VIII to allow operation to an ambient temperature of 14°F.

9. Conductivity Meters

The temperature compensated conductivity meter is an essential instrument to have in the boiler house for checking boiler water and feedwater TDS levels, and calibrating control instrumentation.

10. Condensate Contamination Detection Systems

Even low levels of contamination can cause foaming, scaling and corrosion in the boiler. Continuous condensate contamination monitoring can protect the boiler, ensure product quality and maximize energy and water savings.

The contamination detection system monitors the conductivity of the condensate and will raise an alarm and divert it to drain if a pre-set limit is passed.



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Flowmeters

No matter what your thermal energy management goals are, Spirax Sarco's range of flowmeters can help assess your thermal energy production, usage, and distribution. Our flowmeters have an unrivaled reputation for accuracy, turndown and reliability. Advanced communication and configuration capabilities make our flowmeters suitable for your current and future needs. A comprehensive selection of flow computers which can be linked to plant and building management systems, complement the range.

1. Gilflo ILVA Flowmeters

The Gilflo ILVA range of flowmeters offers an unrivaled turndown ratio of up to 100:1 and can be used to meter most industrial fluids including steam and gases. Available in pipeline sizes from 2" to 12". A precision cone profiles the flow for a more accurate flow measurement.

2. Flow Computers

A range of flow computers is available to give automatic density compensation plus analog, pulse, Modbus RTU, TCP/IP, BACnet MS/TP and IP outputs. The units also have built-in timers and event loggers enabling peak flows, temperatures, pressures and totals to be recorded. Units for heat metering applications are also available.

3. TVA Flowmeters

The innovative Spirax Sarco TVA Flowmeter range has been designed to meet the challenge of measuring both minimum and maximum flowrates to deliver pinpoint steam metering accuracy combined with quick and easy installation.

Accurate and repeatable measurement over a wide flow range with a turndown of 50:1. Available in 2", 3", and 4" pipeline sizes.

4. Insertion Turbine Flowmeters

Spirax Sarco's Rotor Insertion flowmeters provide significant cost savings for line sizes from 3" to 80" without compromising performance. With high accuracy, wide turndown and a unique low-mass rotor design, the rotor insertion flowmeter gives you the benefit of 50 years of practical experience. The unique insertion design measures liquids, or gases, including steam, and can be installed without process shutdown.

5. Vortex Flowmeters

Spirax Sarco's Vortex Insertion and Inline flowmeters have no moving parts, rugged construction, with microprocessor-based electronics for high accuracy in many flowmetering applications including liquids, gas, and steam. Vortex flowmeters provide accurate measurement with lower maintenance, and lower total cost of ownership than other flowmeter technologies in line sizes ½" to 80".



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6. Ultrasonic Flowmeters

The Ultrasonic flowmeters clamp onto the outside of the pipe and measure fluid flow through the use of ultrasonic waves. The transducers do not come into contact with the fluid and therefore do not create pressure drop, or contaminate fluid.

Ultrasonic flowmeters have a low total ownership cost due to non-intrusive design and high reliability.

7. Electromagnetic Flowmeters

The Electromagnetic flowmeters measure all electrically conductive liquids with and without solids in the fluid including water, wastewater, slurries, chemicals, and mining applications. SENSORPROM® Technology technology facilitates easy transmitter setup and replacement with automatically re-programming of any new transmitter without loss of data and accuracy. Comprehensive diagnostic and service menu enhancing trouble shooting and meter verification.

8. Thermal Mass Flowmeters

The Insertion and Inline Thermal Mass flowmeter provides accurate mass flow measurement of clean, dry gases using constant temperature differential sensing for fast response and are highly accuracy at low flows. The unique CAL-V feature allows for in-situ testing of the meter's accuracy by testing the functionality of the sensor and the processing circuitry.



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Control Systems

To enable you to make the right choice for your application Spirax Sarco has developed a range of control systems ranging from simple self-acting controls to systems that will fit into highly sophisticated control loops.

1. Electrically Actuated Control Valves

Two-port valves manufactured in a wide choice of materials for pressures up to 300 psig and having connections in sizes up to 4".

The actuators are suitable for HVAC or industrial process applications and are available with VMD, mV or mA input signals.

Options include: Fail-safe choice, analog positioning card and position feedback.

2. Pneumatically Actuated Control Valves

Two-port control valves manufactured in a wide choice of materials for pressures up to 300 psig and having connections in sizes up to 8".

Pneumatic actuators are low profile to NAMUR standard, spring-to-open or spring-to-close, and incorporate a fully rolling diaphragm. A handwheel option is available.

3. Positioners

To complement the range of pneumatically actuated control valves, pneumatic and electropneumatic positioners will allow small actuators to close against higher differential pressures, eliminate hysteresis and improve accuracy and positioning time.

Variants are available with automatic commissioning, smart control, programmable functions and digital communications.

4. Programmable Electronic Controllers

Panel mounted single loop controllers suitable for single or multi-setpoint control. They incorporate PID, auto TUNE and ADAPTIVE algorithms. Multi-input options are available.

5. Pneumatic Controllers

For the control of pressure or temperature. Pneumatic controllers are available with simple proportional control action, or with the addition of integral and derivative action. Temperature sensing is via a nitrogen filled direct expansion system and pressure sensing by interconnecting pipework to an internal bourdon tube.



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6. General Service Bronze Control Valves

These bronze body two and three-port globe valves are designed for light industrial and general utility service. They feature threaded NPT inlet and outlet ports with ANSI 250 pressure ratings as standard.

Other features include: pneumatic actuation, Class IV (metal seating) and Class VI (PTFE soft seating) shut-off capability, 300 series stainless steel trim, full and reduced capacity CV's, equal percentage and linear trim choices, and ½" to 2" connection sizes.

7. Direct Acting Pressure Reducing and Surplussing Valves

These are self-powered valves designed to control the pressure of water, steam and gas. They are available in a wide range of materials and pipeline connections.

8. Pilot Operated Pressure Reducing and Surplussing Valves

Like direct acting pressure reducing valves, these valves are self-powered. Pilot operation provides accurate control under large load change conditions. Available in cast iron, cast steel and stainless steel in sizes up to 4".

9. Safety Valves

Vital for the protection of people and plant. A comprehensive range of safety valves is available in bronze, iron and carbon steel body materials. These valves conform to ASME standards with a range of connections and sizes up to 6". Options include: soft seal, open or closed bonnet, with or without easing lever.

10. High Limit Temperature Cut-Out

Designed to protect personnel and product, the high limit temperature cut-out is a self-powered, independent overheat safeguard for use with two-port and three-port valves.

It is inherently 'fail-safe', and can provide remote indication of operation.

11. Self-Acting Temperature Controls

Self-acting temperature control systems are ideal for applications demanding rugged reliability and low maintenance. They are particularly suited to harsh or hazardous environments.

They are used in conjunction with two-port or three-port control valves to form a flexible control system in terms of capillary length and temperature range.



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Steam Traps

It is essential, without loss of live steam, to remove condensate, air and other non-condensable gases from steam systems. The Spirax Sarco range of steam traps allows the best choice to be made for all applications. A steam trap performance monitoring system complements the range.

1. Thermodynamic Steam Traps

Thermodynamic steam traps combine reliability, simplicity and efficiency of operation; with just one moving part (a hardened stainless steel disc). They give a blast discharge with clean, tight shut-off. They are able to withstand: superheat, waterhammer, corrosive condensate, freezing and vibration. The TD trap is the first choice for removal of condensate from steam distribution systems.

- Sizes up to 1".
- For operating pressures up to 3625 psig.
- Body material: carbon steel, stainless steel or alloy steel.

2. Float and Thermostatic Steam Traps

Float & Thermostatic steam traps are extremely versatile and work efficiently on both light and heavy condensate loads. Although compact in size, the discharge capacity is high and continuous, ensuring maximum heat transfer. These traps are the best choice for draining processes with automatic temperature control.

An integral air vent is fitted as standard and an adjustable needle valve is available as an option, to prevent steam locking for certain applications.

- Sizes up to 4".
- For operating pressures up to 1160 psig.
- Body material: cast iron, SG iron, cast steel or stainless steel.

3. Balanced Pressure Thermostatic Steam Traps

Balanced pressure thermostatic steam traps adjust automatically to varying steam pressures and have excellent air venting characteristics during plant start-up and during normal operation. They have large discharge capacities for their size and the robust design of the internals gives a good life expectancy.

- Sizes up to 1".
- For operating pressures up to 464 psig.
- Body material: brass, cast iron, cast steel or stainless steel.

4. Sealed Steam Traps

Sealed maintenance free steam traps.

Range: balanced pressure, inverted bucket and bimetallic versions.

- Sizes up to 1".
- For operating pressures up to 652 psig.
- Body material: stainless steel.

5. Inverted Bucket Steam Traps

Inverted bucket traps are the most robust type of the mechanical traps and will resist waterhammer. When the check valve option has been fitted in the inlet, they can be used with superheated steam. They are available with a wide selection of valve orifices for precise pressure and load matching.

- Sizes up to 3".
- For operating pressures up to 1687 psig.
- Body material: cast iron, cast steel, alloy steel or stainless steel.



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6. Bimetallic Thermostatic Steam Traps

Bimetallic steam traps can conserve energy by discharging sub-cooled condensate in those applications which can utilize sensible heat. They are the most robust of all the thermostatic steam traps, being able to withstand waterhammer and corrosive condensate.

- Sizes up to 4".
- For operating pressures up to 1160 psig.
- Body material: cast steel, alloy steel or stainless steel.

7. Universal Steam Traps

The comprehensive range of pipeline connectors coupled with world leading steam trap technology reduces plant downtime, maintenance costs and ensures zero emissions, while maintaining system efficiency.

Range: Suitable for use with balanced pressure, thermodynamic, inverted bucket, float and bimetallic steam traps.

- Sizes up to 1".
- For pressures up to 667 psig.
- Body material: generally stainless steel.



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8. Spiratec Steam Trap Monitors

Every steam trap that fails to operate properly can cause problems elsewhere in the steam system. Spiratec can continuously monitor your steam traps to show their operation and warn of malfunctions.

It will detect if traps are passing live steam or if they are waterlogged.

The system either uses sensor chambers mounted upstream of conventional steam traps, or integral sensors in pipeline connectors or steam traps, giving a signal to an external test point.

- Sizes up to 2".
- For pressures up to 464 psig.
- Body material: carbon steel, SG iron or stainless steel.

9. STAPS Wireless Steam Trap Monitors - Spirax Total Acoustic Performance Solution)

The STAPS Wireless steam trap monitor from Spirax Sarco has been designed for easy, non-intrusive installation. STAPS Wireless utilizes both ultrasonic and temperature sensing to diagnose trap conditions utilizing priority algorithms and reports the data via a wireless reporting system.



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Condensate Pumps and Energy Recovery

To maximize energy efficiency it is essential to return clean condensate to the boiler house. Spirax Sarco's range of condensate handling equipment allows you to achieve this effectively and economically.

1. Automatic Steam (or Gas) Powered Condensate Pumps

This range of self-contained pumps use steam or other pressurized gas as motive power and is designed to remove and recover condensate (or other fluids) under all operating conditions.

They are ideal for use in hazardous areas where electrical pumps would not be suitable, and for the efficient drainage of heat exchangers.

2. Automatic Steam Powered Condensate Pump Traps

APT's (Automatic Pump Traps) offer the benefit of a pump and a steam trap as one item. This ensures complete condensate removal from processes, even under vacuum; thus, maximizing thermal efficiency at all times, as well as recovering valuable hot condensate for re-use.

3. Electric Powered Condensate Recovery Units

A range of electrically powered condensate return pumps specially designed with low NPSH (Net Positive Suction Head) requirements to handle hot condensate in a compact size.

4. Flash Tanks and Flash Recovery Vessels

Flash steam is allowed to separate from the condensate in the vessel. The flash steam may then be used in a low pressure steam system and the separated condensate returned to the boiler house.



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High Purity Products

Many industries try to avoid the risk of contamination, resulting in a growing need for clean steam, pure steam and water of WFI (Water For Injection) quality. Products suitable for these high purity systems must be designed and manufactured to a high standard to ensure compliance with the exacting rules and regulations set for example by the biopharmaceutical, food/beverage and healthcare industries. Spirax Sarco's extensive range of high purity products extends from steam generation through distribution to usage.

1. Pure and Clean Steam Trapping

A comprehensive range of thermodynamic and thermostatic steam traps developed specifically for clean and pure steam applications. This range includes traps that minimize condensate back-up for critical SIP (steam-in-place) applications.

2. Sanitary Ancillary Products

To complete your high purity system, Spirax Sarco offers a broad range of products including: check valves, sample coolers, sanitary ball valves, steam separators and direct acting pressure regulators.



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Pipeline Ancillaries

To achieve long and reliable service from steam plant equipment, it is necessary that the steam is clean, dry and that maintenance can easily be carried out.

Spirax Sarco provides the complete range of products to ensure the condition of the steam and the steam system itself is properly maintained.

1. Manifolds

A compact range of fabricated and forged steel manifolds designed for steam tracing applications. The manifolds have 4, 8 or 12 tracer line connections and are supplied with integral piston type isolation valves.

Screwed and socket weld connections available.

2. Bellows Sealed Stop Valves

Bellows sealed stop valves are ideal for any application where minimal maintenance and zero emissions are required.

- Pipeline sizes up to 8".
- For pressures up to 1156 psig.
- Body material: cast iron, carbon steel or stainless steel.

3. Check Valves

This range of valves offers an effective, low maintenance solution for the prevention of reverse flow in pipelines.

- Pipeline sizes up to 4".
- For pressures up to 725 psig.
- Body material: bronze, stainless steel, cast iron, steel and SG iron.

Connections: screwed, flanged and socketweld.

4. Separators

Separators remove moisture from steam or gas pipelines. They provide a drain point for condensate droplets moving along the pipe wall and deflect entrained droplets out of the main flow. Separators, therefore, ensure that steam or gas is delivered to its point of use dry - particularly where droplet free steam is required, such as sterilizers, humidification, and where steam has direct contact with product.

- Pipeline sizes up to 18".
- For pressures up to 600 psig.
- Body material: cast iron, SG iron, carbon steel or stainless steel.



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5. Trap Diffusers

When fitted to the outlet of a steam/air trap that is discharging to atmosphere, the diffuser will greatly reduce the noise level and will offer protection from high velocity discharge.

6. Strainers

Strainers protect expensive downstream equipment, such as control or flowmetering devices, from damage.

- Pipeline sizes up to 14".
- For pressures up to 6251 psig.
- Body material: bronze, cast iron, alloy steel, cast steel or stainless steel.

8. Sight Glasses, Sight Checks and Pressure Gauges

A wide range of sight glasses, sight check valves and pressure gauges are readily available.

9. Washdown Stations

For general cleaning and washdown applications the hosedown station is the perfect tool. Hot water is economically provided by safely mixing steam and cold water.

10. Air Vents and Vacuum Breakers

Air vents and vacuum breakers, for use on steam and water systems, are designed to protect plant and process equipment.

- Pipeline sizes up to 1".
- For pressures up to 600 psig.
- Body material: brass, carbon steel or stainless steel.

11. Ball Valves

Spirax Sarco has a broad range of ball valves to suit most application requirements.

These ball valves are available as a manual valve or can be supplied with a pneumatic actuator.

- Pipeline sizes up to 8".
- For pressures up to 2030 psig.
- Body material: cast steel or stainless steel.



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Did you know...

Our website has more detailed information about all our products.

For more information, please visit our website at www.spiraxsarco.com/global/us



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