

# Compact FREME

flash recovery energy management equipment

HEAT TRANSFER SOLUTIONS



*First for Steam Solutions*

EXPERTISE | SOLUTIONS | SUSTAINABILITY

**spirax**  
**sarco**

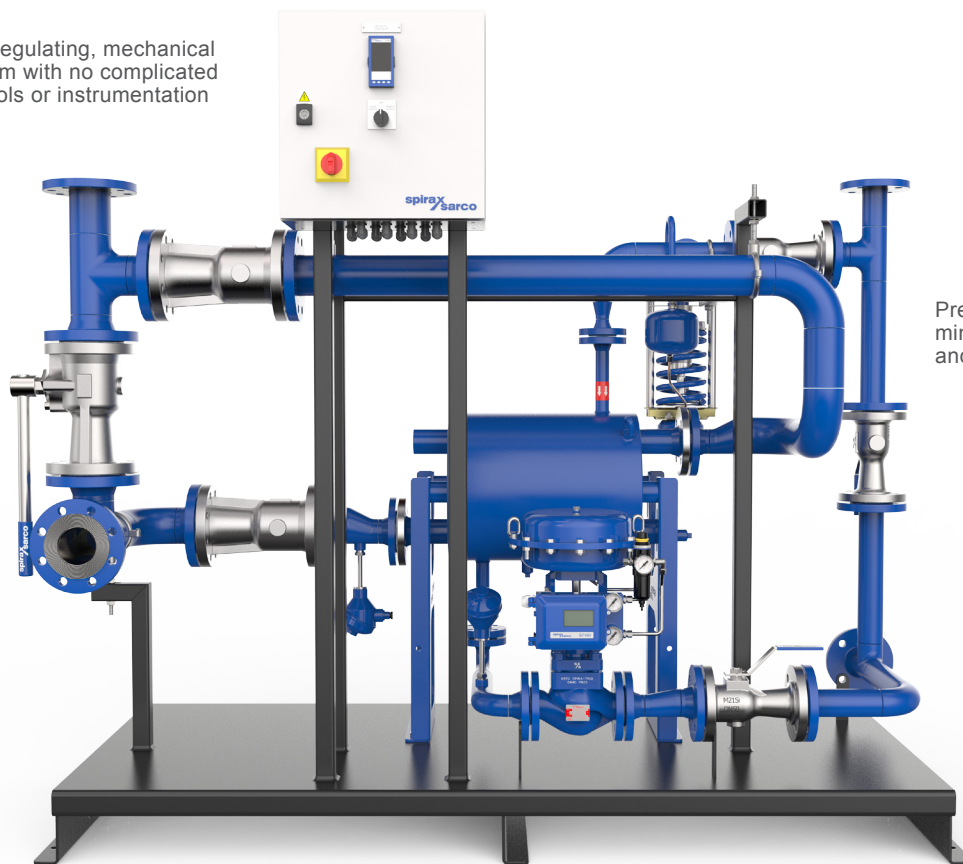
## Spirax Compact FREME

### Flash steam and condensate heat recovery system

Spirax Compact FREME (Flash Recovery Energy Management Equipment) is an innovative heat recovery system that delivers major energy savings by recovering waste heat from a condensate return system and using it to pre-heat boiler feedwater. Heat and water previously lost can be effectively recovered, reducing utility bills, water treatment chemical costs and CO<sub>2</sub> emissions.

Spirax Compact FREME is proven to be able to achieve energy savings of up to 26%, giving a potential return on investment within months.

Self-regulating, mechanical system with no complicated controls or instrumentation



Pre-assembled unit minimises design and installation time

Plate & shell heat exchangers offer efficient and robust heat transfer technology

Guaranteed to reduce your energy bills and CO<sub>2</sub> emissions

Saves energy by increasing boiler efficiency and reducing boiler blowdown

Reduces unsightly plumes of flash steam

### Award winning engineered systems

Spirax FREME won the IChemE Innovation and Excellence Award in Energy in 2009, and came runner up in the Carbon Trust Innovation for Energy Award 2010 and CIBSE Low Carbon Performance Award 2010.



Awards for innovation and excellence  
**09** Winner



THE CIBSE LOW CARBON PERFORMANCE AWARDS | 2010

## Proven energy savings

Using condensate returned from the steam distribution system to heat boiler feedwater is an extremely effective energy saving measure. For every 6°C rise in boiler feedwater, 1% is typically knocked off the boiler energy bill.

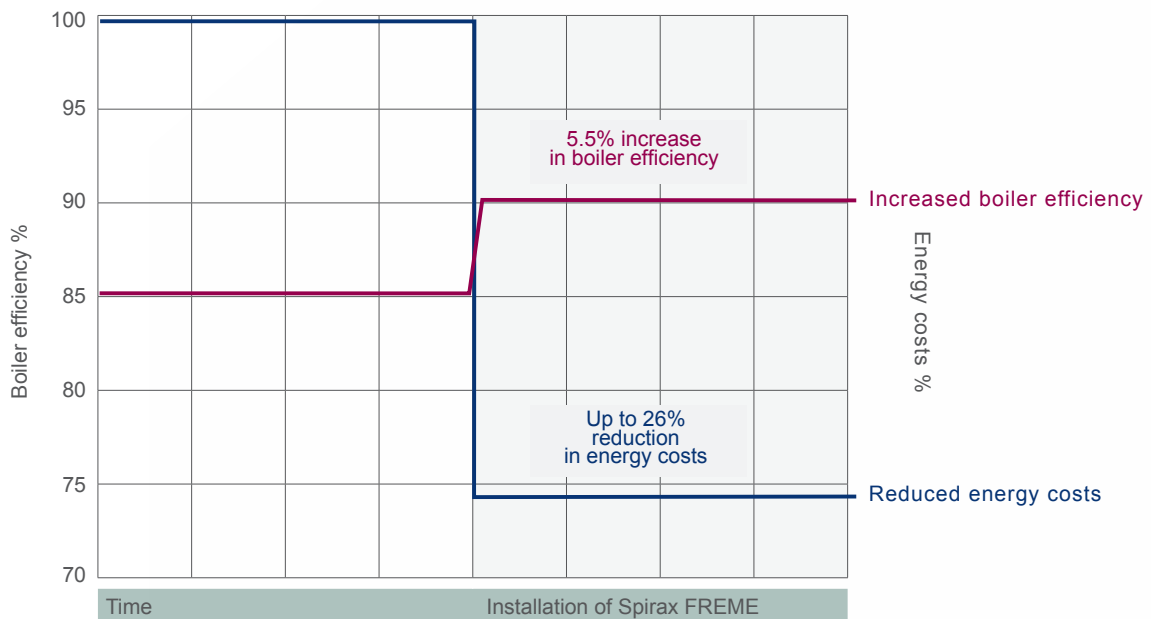
However, many steam systems fail to recover all the heat in returned condensate because:

- It would raise the feedtank temperature from the typical 85°C to 90°C to above boiling point, causing cavitation that can damage boiler feed pumps.
- Up to half of the recoverable energy in condensate can be lost as flash steam when condensate leaves a pressurised steam system and returns to atmospheric pressure.

The Spirax Compact FREME system solves all these issues by feeding virtually all the energy from the returned condensate into the high-pressure side of the boiler feedpumps. The higher pressure means the boiler feedwater can be heated to well over 100°C without boiling and causing pump cavitation.

By installing a Spirax Compact FREME within your plant, nearly all plant condensate and flash steam will be returned and its energy recovered. As well as saving this valuable energy, Spirax Compact FREME eliminates external venting of flash steam, visibly supporting your company's environmentally friendly operations and brand image.

### Benefits achieved after the installation of Spirax FREME in a typical application



### Benefits for every industry

Spirax Compact FREME can bring significant benefits to steam system operators in any industry.

- Brewing and distilling
- Food and beverages
- Hospitals and health
- Laundries
- Oil and petrochemical
- Pharmaceutical
- Pulp and paper
- Rubber and tyres
- Sugar refining



## Product range

Feedwater flowrate kg/h	Type	Dimension / weights approximate in mm and kg				Connections			
		Height	Length	Width	Weight	Condensate		Feedwater	
						Inlet	Outlet	Inlet	Outlet
5000	1-FR-5000	1765	2040	1043	700	DN50	DN25	DN50	DN50
10000	2-FR-10000	1705	2550	1043	750	DN80	DN50	DN50	DN50
15000	3-FR-15000	1705	2550	1043	775	DN80	DN50	DN50	DN50

## Spirax Sarco - your heat recovery solution provider

We have long realised that our customers want assistance with complex heat recovery applications, which do not form part of their core business but can make a big difference to their environmental impact and energy usage.

We can assess your system requirements, provide pre-engineering services, project management, installation, commissioning, start-up assistance and training.

You will deal solely with Spirax Sarco throughout the process and we will take on responsibility for everything, taking the stress out of designing, specifying, building and installing complicated steam, condensate and water systems.



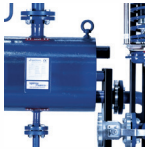





### Abbey corrugated wins award

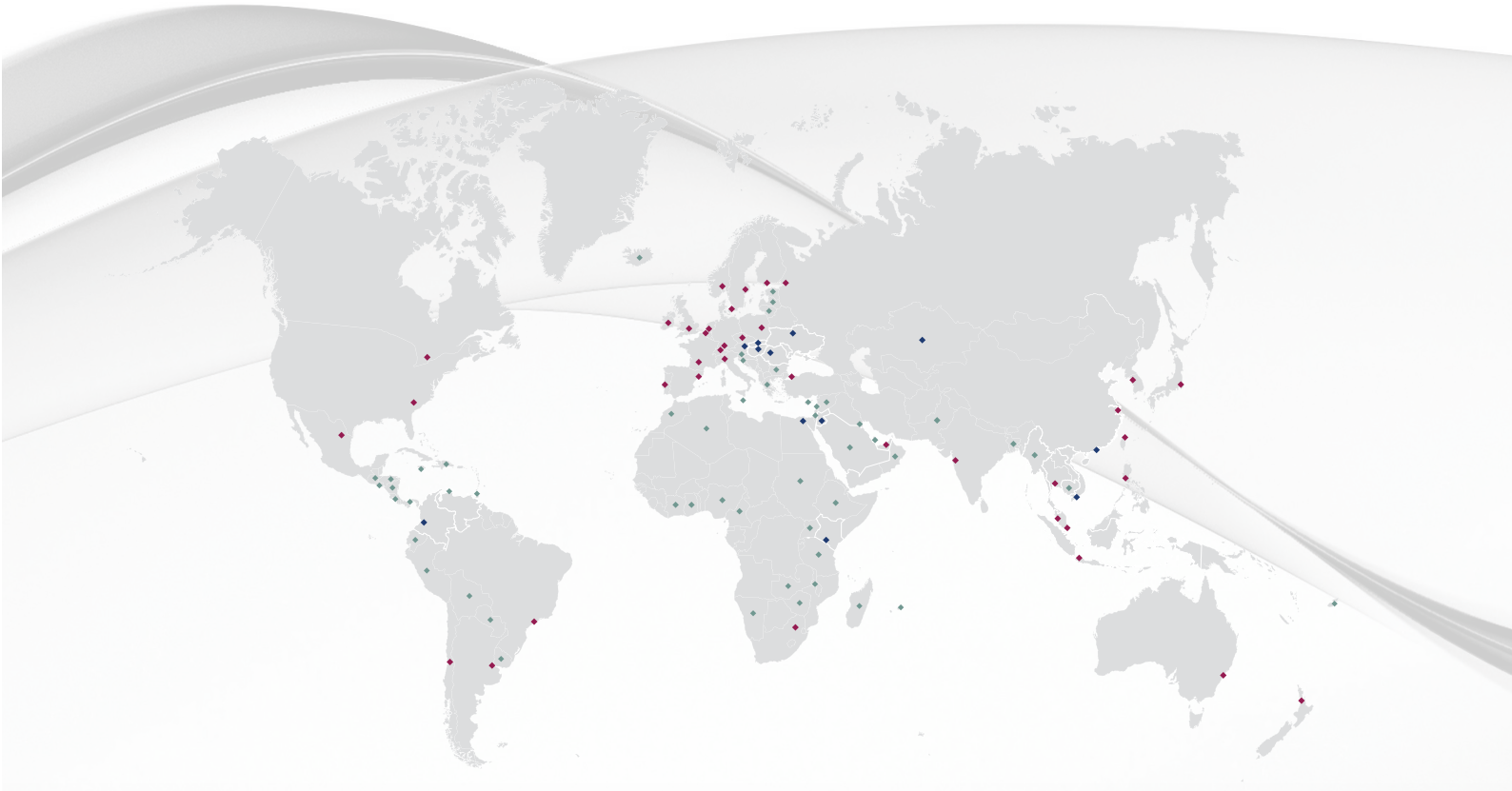
A Spirax FREME system helped Abbey Corrugated become one of just twelve organisations across England and Scotland to be awarded the “Carbon Trust Standard”. The system was the most valuable energy saving project undertaken by Abbey during its major energy reduction campaign - Paul Gale, Abbey Corrugated Facilities Manager said - “The savings from this project were in the region of 25% of the gas used by the boiler.”



## Key features and benefits

Key features	Key benefits
	<p>Environmentally friendly</p> <p>Reduces steam raising costs, utility bills and CO<sub>2</sub> emissions.</p> <p>Increases boiler efficiency and reduces boiler blowdown.</p> <p>Reduces or completely removes unsightly plumes of flash steam.</p>
	<p>Low costs of ownership</p> <p>Significant savings – fuel, water and feedwater chemicals – provide a rapid return on investment.</p> <p>High quality, low maintenance components – reduces maintenance costs.</p>
	<p>Unique plate and shell heat exchangers</p> <p>New generation of heat exchangers provides a compact, durable and highly efficient heat transfer solution.</p>
	<p>Pre-assembled unit</p> <p>Fully assembled and tested ready for installation and trouble-free commissioning.</p> <p>Single vendor cuts administration costs.</p>
	<p>Self-regulating mechanical system</p> <p>Imposes minimal back pressure on existing steam system, maintaining process productivity.</p> <p>No pumps, complicated controls or instrumentation.</p>
	<p>One design suits all</p> <p>Any system venting flash steam can make significant savings by installing a Spirax Compact FEME.</p>





**Operating Companies**

**EMEA**

- Belgium
- Czech Republic
- Denmark
- Finland
- \* France
- Germany
- Ireland
- \* Italy
- Middle East
- Norway
- Netherlands
- Poland
- Portugal
- Russia
- South Africa
- Spain
- Sweden
- Switzerland
- Turkey
- \*UK

**Americas**

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- \* Brazil
- Canada
- Chile
- \*Mexico
- \*USA

**Asia Pacific**

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- \* China
- India
- Indonesia
- Japan
- Malaysia
- New Zealand
- Philippines
- Singapore
- South Korea
- Taiwan
- Thailand

\* Manufacturing sites

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- Malawi
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- Qatar
- Saudi Arabia
- Slovenia
- Sudan
- Syria
- Tanzania
- Uganda
- Zambia
- Zimbabwe

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- Ecuador
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- Guatemala
- Honduras
- Jamaica
- Netherland Antilles
- Nicaragua
- Pakistan
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- Paraguay
- Peru
- Trinidad and Tobago
- Uruguay

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- Cambodia
- Fiji
- Myanmar



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