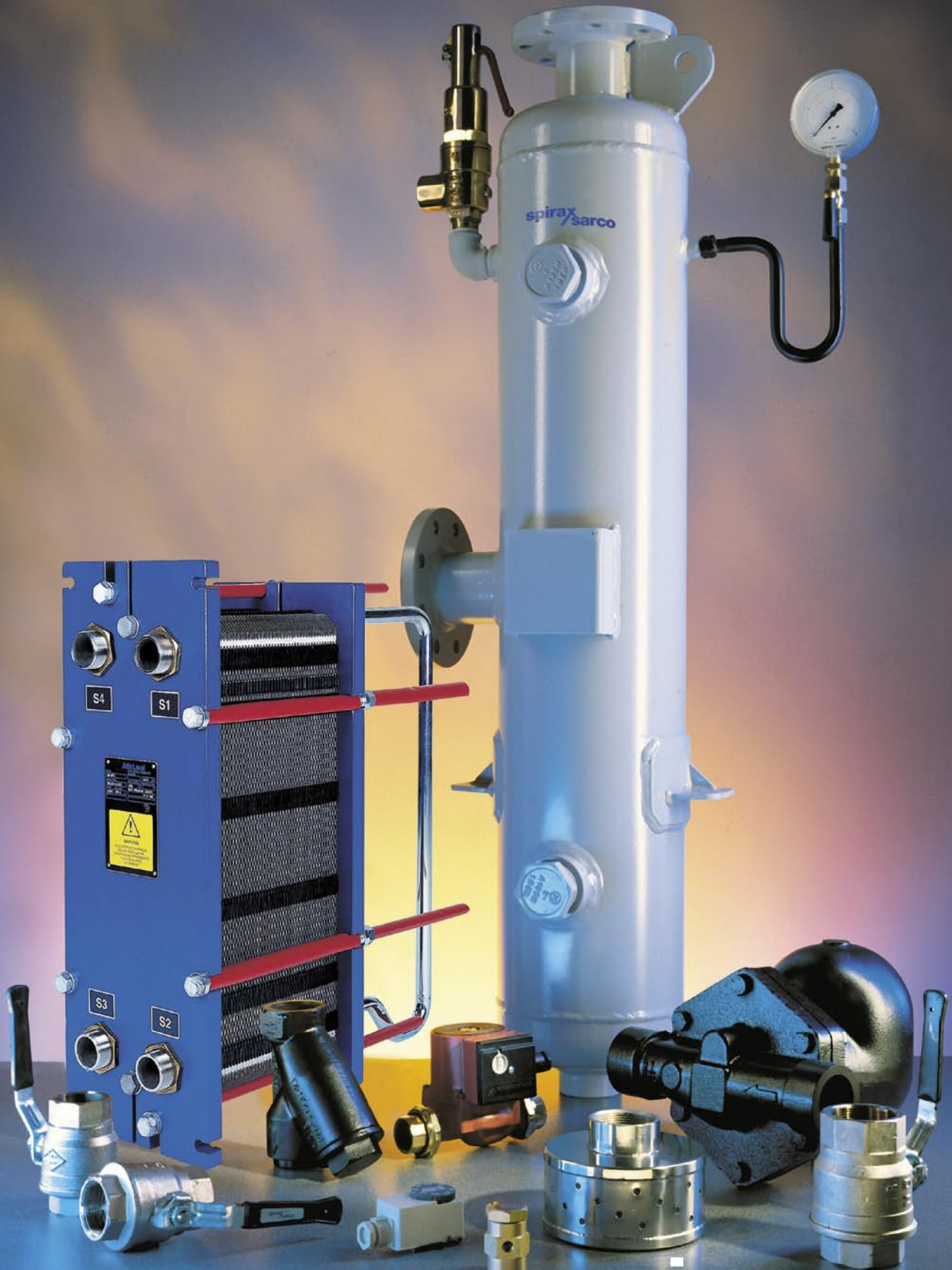


Heat recovery from boiler blowdown



spirax
/sarco

Increase energy efficiency and cut costs by re

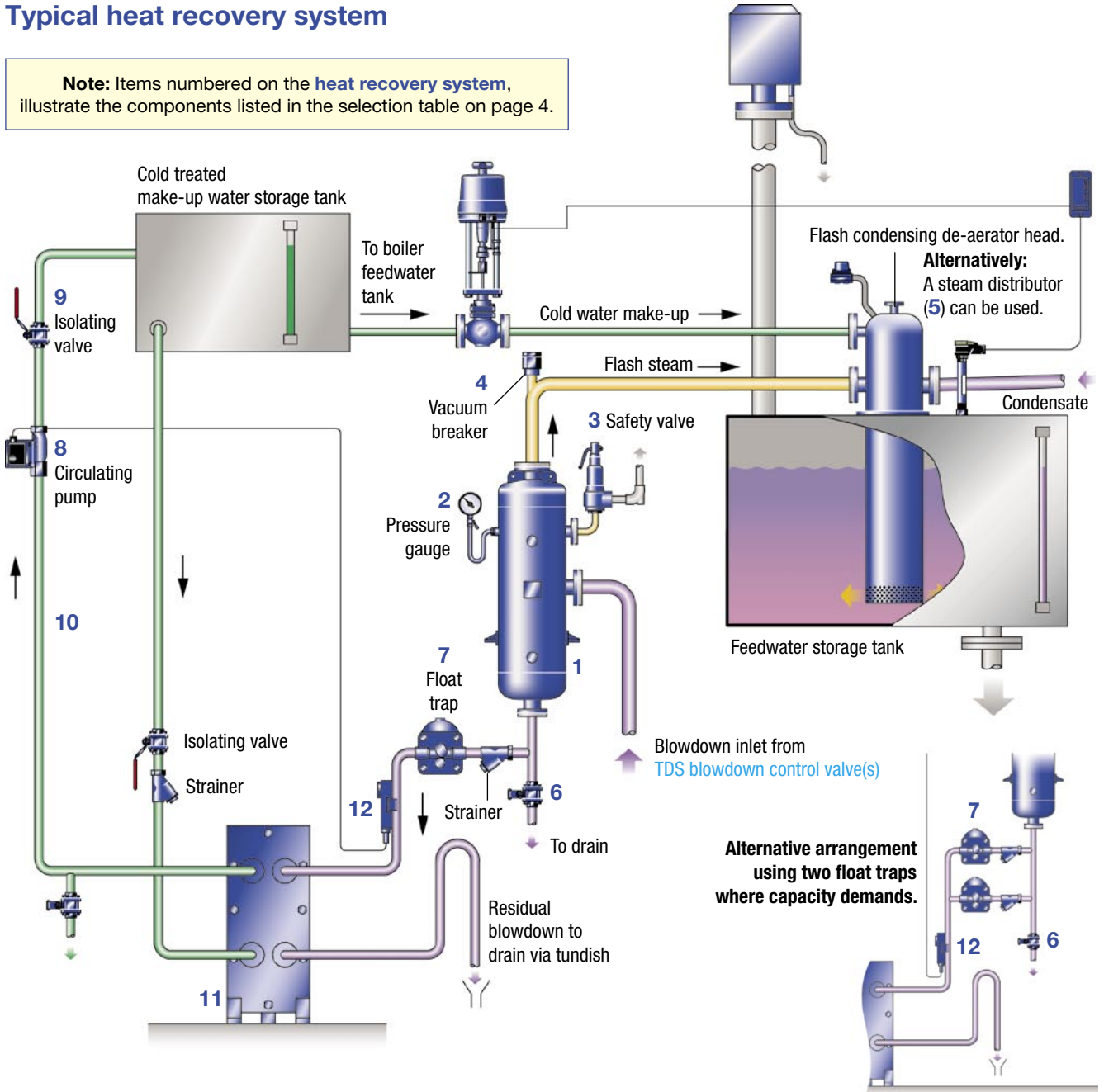
Steam boilers need to be blown down to control the level of total dissolved solids (TDS) in the boiler water. Usually, a TDS system opens a valve to discharge boiler water when the conductivity rises above a preset limit. Relatively low TDS feedwater then replaces the discharged boiler water.

How the system works

Steam flashes from the blowdown water in the flash vessel, and is fed directly back to the feedtank. A float trap drains the residual water, which, if still hot, is fed into a heat exchanger to warm the circulating cold water make-up.

Typical heat recovery system

Note: Items numbered on the **heat recovery system**, illustrate the components listed in the selection table on page 4.



User benefits

- Can recover up to 80% of the heat from blowdown.
- Reduces expensive treated make-up water by recovering flash steam.
- Rapid pay-back time from complete system package.
- Flash vessel designed and constructed to ASME VIII for enhanced safety.
- Stainless steel heat exchanger plates can be removed for examination without disturbing pipework.
- Reduces temperature of blowdown water for safer disposal.

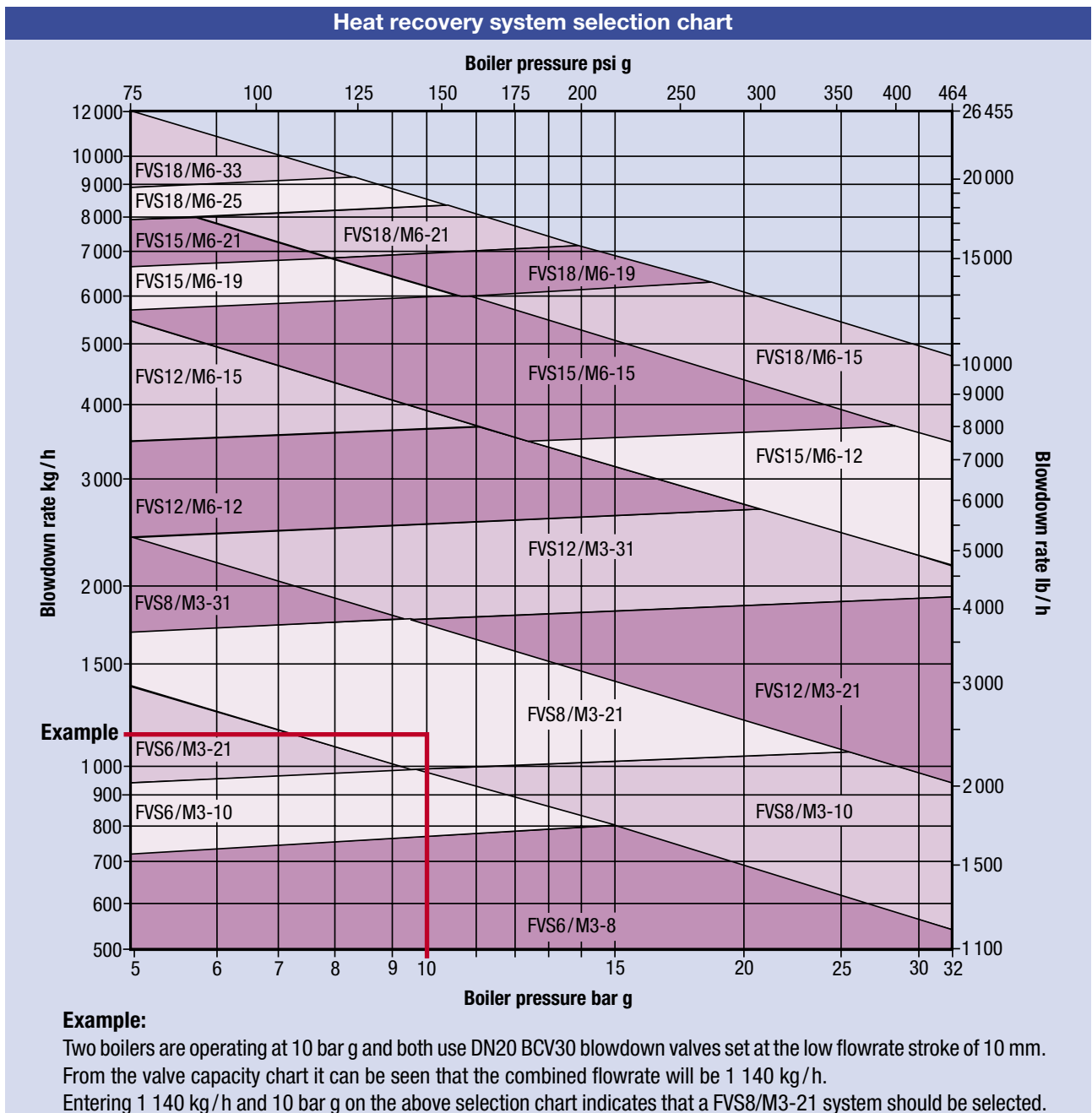
Recovering heat and water from TDS blowdown

System selection

The blowdown flowrate is determined by the capacity of the TDS blowdown control valve(s) and the boiler pressure. Heat recovery systems should always be sized on the maximum boiler blowdown rate except in the case of multiple boilers where it is known that the boilers will never operate together.

The tables below show the capacities of the Spirax Sarco BCV1 and BCV30 **TDS blowdown control valves**:

TDS blowdown control valve capacities kg/h									
Boiler pressure bar g	BCV1		DN20 BCV30			DN40 BCV30			
	Standard setting	High setting	10 mm stroke	15 mm stroke	20 mm stroke	5 mm stroke	10 mm stroke	15 mm stroke	20 mm stroke
5.0	123	368	380	530	730	450	2 900	3 450	3 550
7.0	140	415	460	710	1 150	475	3 300	4 100	4 500
10.0	165	495	570	950	1 500	500	3 700	4 750	5 450
14.0	200	590	674	1 110	1 620	540	4 380	6 110	6 810
15.0	-	-	700	1 150	1 650	550	4 550	6 450	7 150
20.0	-	-	780	1 250	1 700	800	5 750	8 100	8 650
32.0	-	-	940	1 400	1 800	1 300	8 400	10 300	11 050



Component selection table

From the example on page 3: The FVS8/M3-21 would include all of the components within the purple area in the table below.

Flash vessel systems

Item	Flash vessel system reference	FVS6/			FVS8/			FVS12/				FVS15/				FVS18/						
		M3-8	M3-10	M3-21	M3-10	M3-21	M3-31	M3-21	M3-31	M6-12	M6-15	M6-12	M6-15	M6-19	M6-21	M6-15	M6-19	M6-21	M6-25	M6-33		
1	Flash vessel	FV6 (BSP)			FV8 (BSP/PN16)			FV12 (BSP/PN16)				FV15 (BSP/PN16)				FV18 (BSP/PN16)						
2	Pressure gauge set	Comprising: 4" gauge 0-4 bar g, U-syphon and cock			Comprising: 4" gauge 0-4 bar g, U-syphon and cock			Comprising: 4" gauge 0-4 bar g, U-syphon and cock				Comprising: 4" gauge 0-4 bar g, U-syphon and cock				Comprising: 4" gauge 0-4 bar g, U-syphon and cock						
3	Safety valve	SV615AS ½" screwed BSP* set at 2 bar g			SV615AS ¾" screwed BSP* set at 2 bar g			SV615AS 1" screwed BSP* set at 2 bar g				SV615AS 1¼" screwed BSP* set at 2 bar g				SV615AS 1½" screwed BSP* set at 2 bar g						
4	Vacuum breaker	VB14 ½" screwed BSP			VB14 ½" screwed BSP			VB14 ½" screwed BSP				VB14 ½" screwed BSP				VB14 ½" screwed BSP						
5	Steam distributor	SD40 1½" screwed BSP			SD50 2" screwed BSP			SD80 3" screwed BSP				SD100 DN100 flanged PN16				SD150 DN150 flanged PN16						
6	Flash vessel drain valve	Spirax-Monnier (non-venting) ball valve 2" screwed BSP			Spirax-Monnier (non-venting) ball valve 2" screwed BSP			Spirax-Monnier (non-venting) ball valve 2" screwed BSP				Spirax-Monnier (non-venting) ball valve 2" screwed BSP				Spirax-Monnier (non-venting) ball valve 2" screwed BSP						
7	FT14-4.5 Float trap(s)	1½" BSP			2" BSP			2" BSP				2" BSP		2" BSP x 2		2" BSP		2" BSP x 2				

* Female connection. Please note the valve connection size is also smaller than the connection on the vessel.

Heat exchanger systems

Item	Heat exchanger system reference	FVS6/			FVS8/			FVS12/				FVS15/				FVS18/								
		M3-8	M3-10	M3-21	M3-10	M3-21	M3-31	M3-21	M3-31	M6-12	M6-15	M6-12	M6-15	M6-19	M6-21	M6-15	M6-19	M6-21	M6-25	M6-33				
8	Electric pump (240 V only)	RP1 1" BSP			RP1 1" BSP			RPS2 ¾" BSP		RPS2 1" BSP		RPS2 1" BSP		RPS3 1½" BSP		RPS3 1½" BSP		RPS3 1½" BSP		RP5 2" BSP			RP4 2" BSP	
9	Tank isolating valves	Spirax-Monnier (non-venting) ball valve 1¼" BSP			Spirax-Monnier (non-venting) ball valve 1¼" BSP			Spirax-Monnier (non-venting) ball valve 1¼" BSP				Spirax-Monnier (non-venting) ball valve 2" BSP				Spirax-Monnier (non-venting) ball valve 2" BSP								
10	Pump strainer Fig 12SG Fig 13CI	1¼" BSP			1¼" BSP			1¼" BSP		2" BSP		2" BSP				2" BSP								
11	Plate heat exchanger	1¼" BSP			1¼" BSP			1¼" BSP		2" BSP		2" BSP				2" BSP								
12	Thermostat	Type HTS3			Type HTS3			Type HTS3				Type HTS3				Type HTS3								

How to specify

Spirax Sarco boiler blowdown heat recovery system type FVS8/M3-21 comprising:-

FV8 flash vessel complete with pressure gauge set, safety valve, vacuum breaker, steam distributor, drain valve and float trap. Flash vessel to be manufactured complete with data dossier in accordance with ASME VIII.

Plate heat exchanger complete with circulating pump, tank isolating valves, pump strainer and thermostat.

All wetted parts of the heat exchanger to be in 316 grade stainless steel.

Some of the products shown may not be available in certain markets.

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