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ISO 9001

spirax sarco

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Packaged Heat Exchanger Systems Type PHS-C with Corrugated Tube Heat Exchanger

- Hot water for heating, for process or for washing purposes.
- High heat transfer rates with the water flowing through the corrugated tubes.
- Stable temperature control even with wide load changes.
- Spirax Sarco heat exchanger, steam control and condensate products.
- Fully assembled skid-mounted system.
- Designs tailored to suit the application.

Heat exchanger systems
The packaged corrugated tube heat exchanger system uses steam to provide accurate heating of low temperature hot water (LTHW), domestic hot water (DHW) or hot water for process. Systems can be customised for any heating duty from 10 kW to over 1 MW and are supplied fully assembled and pressure tested ready for installation.

Steam supply
Proper steam conditioning is essential for reliable operation of any heat transfer equipment. The system therefore includes an inlet steam isolating valve, strainer, steam separator, steam trapping and air venting of the supply and an inlet pressure gauge. Inlet saturated steam pressures up to 10 bar g can be used as standard.

Pressure reduction and safety devices
A steam pressure reducing valve giving accurate control of the downstream pressure is included together with downstream pressure gauge. A safety valve is not normally required. A high limit shut-off valve or actuated ball valve safely isolates the steam supply in the case of excessively high water temperature.

Temperature control
The steam flowrate is modulated to exactly match the heat demand. The control valve is normally pneumatically actuated and the system uses a Pt100 temperature sensor and electronic controller for precise control with a fast response. A pneumatic temperature controller can be used to avoid the need for an electrical power supply, alternatively where no compressed air is available an electrically actuated valve is an option.

Heat exchanger
A corrugated tube heat exchanger is used manufactured in stainless steel throughout. The water flows through the tubes which have special indentations to generate turbulence for a high heat transfer coefficient. The end connections of the heat exchanger are easily removed for examination or cleaning of the straight tubes.

Condensate removal
Effective condensate removal from the heat exchanger under all operating conditions is essential to achieve a stable water temperature. At part load the pressure inside the heat exchanger may go below atmospheric so a pressure powered pump / steam trap is used to ensure condensate removal even under vacuum. The Spiratec steam trap monitoring system is used to ensure lasting energy efficiency and in addition adequate isolating valves and check valves are fitted to allow easy maintenance.

Pipework
All pipework is sized correctly for the application and is fabricated using modern welding techniques and approved welders and weld procedures. Flanged products are used where possible for reliability and easy maintenance. Steam and condensate pipework is carbon steel. The water pipework on the secondary side is in stainless steel throughout.

Electrics and pneumatics
All control equipment is pre-wired and piped ready for connection of electrical power and an air supply.

Support frame
The whole system is delivered pre-assembled on a compact frame and baseplate suitable for moving into position with a fork lift truck.

Local regulations may restrict the use of this product to below the conditions quoted.
In the interests of development and improvement of the product, we reserve the right to change the specification.

Dimensions and weights (approximate) in mm and kg

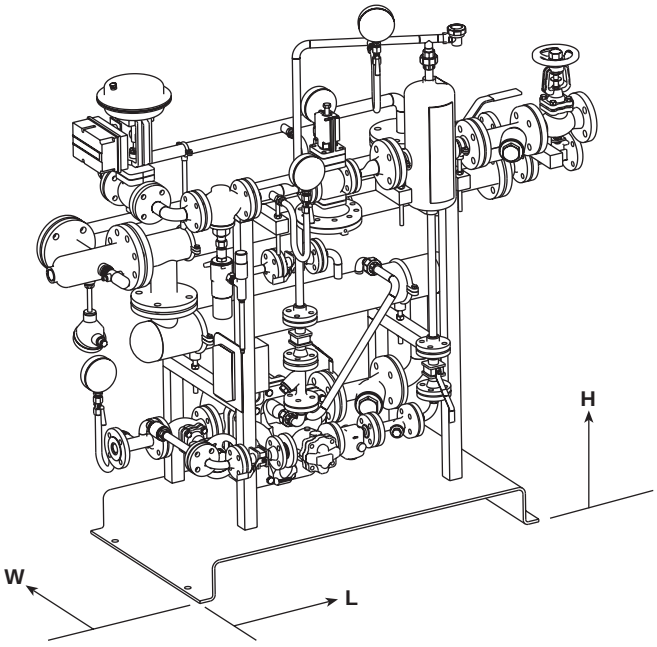
The information is given here as a guide only. Every packaged heat exchanger system is designed to suit the application so dimensions, weights and pipe sizes are subject to change.

Type	Heat load	Overall dimensions			Weight	Maximum size of piping connections DN		
	kW	H	L	W		Steam	Condensate	Water
For low temperature hot water e.g. 71°C to 82°C								
PHS-CL2	110	1 670	1 600	650	350	25	25	25
PHS-CL3	250	1 700	1 600	730	380	40	25	32
PHS-CL4	500	1 860	1 615	820	500	50	25	40
PHS-CL5	800	2 000	1 640	910	850	65	25	50
PHS-CL6	1 100	1 750	1 640	1 040	900	80	50	65
PHS-CL52	1 700	1 860	2 700	1 100	950	100	50	65
PHS-CL62	2 000	2 000	2 730	1 200	1 000	100	50	65
For domestic hot water e.g. 10°C to 65°C								
PHS-CD2	80	1 670	1 600	680	350	25	25	32
PHS-CD3	200	1 700	1 600	730	380	32	25	50
PHS-CD4	390	1 750	1 664	820	400	50	25	65
PHS-CD5	630	1 860	1 730	915	500	65	25	80
PHS-CD6	874	2 000	1 730	1 040	850	80	25	100
PHS-CD42	1 100	1 750	2 664	1 000	900	50	50	65
PHS-CD52	1 800	1 860	2 700	1 200	950	65	50	80
PHS-CD62	2 000	2 000	2 730	1 210	1 000	80	50	100

Designations

The type designations given in the table above mean:

PHS	Packaged heat exchanger system
-C	With corrugated tube heat exchanger
L	For low temperature hot water applications (LTHW)
D	For domestic hot water (DHW) or similar process applications
2, 3, 4, 5, 6	Nominal heat exchanger shell diameter (inches).
42, 52, 62	Indicates 2 m heat exchanger length, others are 1 m heat exchanger length



Typical specification

The LTHW / DHW heating system shall be a Spirax Sarco packaged corrugated tube heat exchanger system. The system shall come complete with steam conditioning, safety devices, pneumatic /electric controls, heat exchanger and condensate removal equipment. All items shall be pre-assembled and mounted on a compact frame.

How to order

All systems are designed for the required heat load with control systems and ancillaries to suit the application. The best way of ensuring that we have all the necessary information for quotation and manufacture is to complete our enquiry data sheet. Copies can be supplied on request. Any special requirements or access limitations should be detailed.

Domestic hot water and process applications

In many cases the fast response of the corrugated tube heat exchanger system will mean that large hot water storage tanks are no longer required. The system uses pumped hot water circulation and essentially becomes 'instantaneous'. A pneumatically actuated control valve with electronic controller is essential for these fast response systems.

Scale formation

For open systems where the water is being used for washing etc. there is continuous make-up and there may be a danger of scale formation in the heat exchanger. This depends mainly on the water quality and expert advice from a water treatment specialist should be sought. By reducing the steam pressure and by careful design of the system the heat exchanger metal temperature can be kept low to minimise scale formation. After long service the heat exchanger end flanges may easily be removed for cleaning of the tubes. If the water is scale forming, a pumped water velocity of 2.5 m/s through the tubes has been found to prevent deposits. Regular chemical cleaning may be also considered.