EasiHeat

Description

The EasiHeat range provides a compact, turn-key solution that delivers superior energy efficient performance for a wide range of steam to water heating applications, globally.
These systems can be sized for heating duties from approximately 70 kW to 3.45 MW and are supplied fully assembled and pressure tested.

Example of the DHW Dual Control system

Applications

- Heating systems (HTG) for closed circuit space heating applications with relatively stable load conditions
- Domestic Hot Water systems (DHW) for open circuit, heated potable water applications including showers, washrooms and kitchens
- Process Hot Water systems for open and closed circuit heated water applications with high fluctuations in load conditions

Options	Benefits	Suitable applications
Steam control	Fast reacting temperature control. Provides a high level of set point accuracy +/- 1°C (+/-2°C for EL actuators) under static loads and +5°C/-10°C under dynamic loads	Fluctuating load conditions where temperature control accuracy is important
Condensate control	Designed to sub-cool the condensate to 95°C, ensuring all of the useful energy in the steam is used within the unit for maximum energy efficiency	Stable load conditions or applications where reduced temperature response times are acceptable e.g. heating
Dual control	The innovative design combines all the benefits of both steam and condensate control - Fast reacting temperature control - Provides a high level of set point accuracy - Designed to sub-cool the condensate to 95°C	For temperature critical control applications with rapid changes in load conditions
Digital insights	Remote condition monitoring and insights to ensure optimal performance is maintained, enhance system efficiency, minimise unplanned downtime and improve safety	For applications where: - Temperature control is important - Uninterrupted hot water supply is critical - Monitoring system performance and efficiency is of value

EasiHeat Steam Control System

EasiHeat Condensate Control System

EasiHeat Dual Control System

Standard features

Some features of EasiHeat are included as standard for all control options, these are listed in the table below.

Feature	Benefits	Option
Gasket Plate Heat Exchanger (GPHE)	A high efficiency and low volume to pressure ratio. Sized and selected to suit the specific duty requirements. Reduced inspection requirements and fully maintainable	Number of plates and gasket materials are selected to suit each application
Control Panel	A colour touch screen provides ease of use and clear visual access to all operating parameters and alarms. A light tower provides visual indication to the EasiHeat status. Enables digital connectivity and communications, if selected. 7 days' data can be downloaded via USB	Panel and connectivity options are selected to suit each customer requirement and application
Class VI Shut Off	Control valves have steam tight reversible seats.	N/A
Control Actuation Supply	Actuators for control and isolation valves to provide flexibility for customer preference to suit the installation location	Pneumatic
		Electric
Pipework & Support Framework	All packages are delivered on a compact frame and baseplate to ensure ease of installation and mobility	Stainless Steel Grade 304
		Carbon Steel
		Fitted Wheels (Yes/No)
Insulation	The packages can also be insulated to maximise energy efficiency	On request, installation specific

Configurable features

All EasiHeat systems are designed for the required heat load with features to suit each application and requirement, the tables below describe the configurable features available.

Safety features

Feature	Benefits	Option
Fail-safe High Limit	High limit temperature control to ensure the system will automatically and safely shut down to prevent the risk of scalding should a problem occur	- Spirax Standard - European Standard EN14597 - Italy INAIL - None
Integrity test including: **- Steam supply failure alarm** **- Supply feedwater failure alarm** **- Sequenced shut down**	A steam side pressure test using compressed air to prove the integrity of heat exchanger gaskets and plates from damage and risks associated with cross contamination. Requires TA31, PA31 and valve position feedback	Yes No
Uninterrupted Power Supply (UPS)	In the event of power outage, UPS will provide a safe sequenced shutdown of the EasiHeat system.	Yes No (Mandatory for EL actuators when you don't have independent high limit)
Additional manual steam isolation	A range of local isolation options to support maintenance procedures and processes	On request

Advanced control features

Control features are displayed locally on the PLC or via communications protocol into existing control systems.

Feature	Benefits	Option
Forward Control – Thermal, including: **- Sequenced shut down** **- Undersized alarm**	Monitors the return water temperature and initiates PID changes to reduce the risk of system shutdown from high temperature overshoot. Requires TA11	Yes No
Forward control – Flow, including. **- Supply feedwater failure alarm** **- Sequenced shut down** **- Undersized alarm**	Monitors the return water flowrate and initiates PID changes to reduce the risk of system shutdown from high limit overshoot. Requires FA11	Yes No

Insights

Feature	Benefits	Option
Communications	Various communications protocol options are available to ensure a seamless integration with existing control systems	BACnet/IP PROFINET Modbus TCP/IP BACnet MS/TP PROFIBUS Modbus RTU BACnet/IP with BTL certificate (BTL cert) BACnet MS/TP with BTL certificate EtherNet/IP None
Energy Consumption display	Energy is displayed in kW on the HMI to see a live display during operation. Trending energy consumption is only available as a digital insight. Requires TA11, FA11	Yes No
Steam supply failure alarm, including, **- Undersized alarm**	To highlight scenarios of no steam supply to the heat exchanger. Requires PA31	Yes No
Condensate outlet temperature alarm	To highlight energy losses into the condensate return system. Requires TA41	Yes No

Configurable features (continued)

Digital Insights

Digital insights are cloud-based via a wireless cellular router unless stated otherwise and are offered as a bolt-on to the EasiHeat solution.

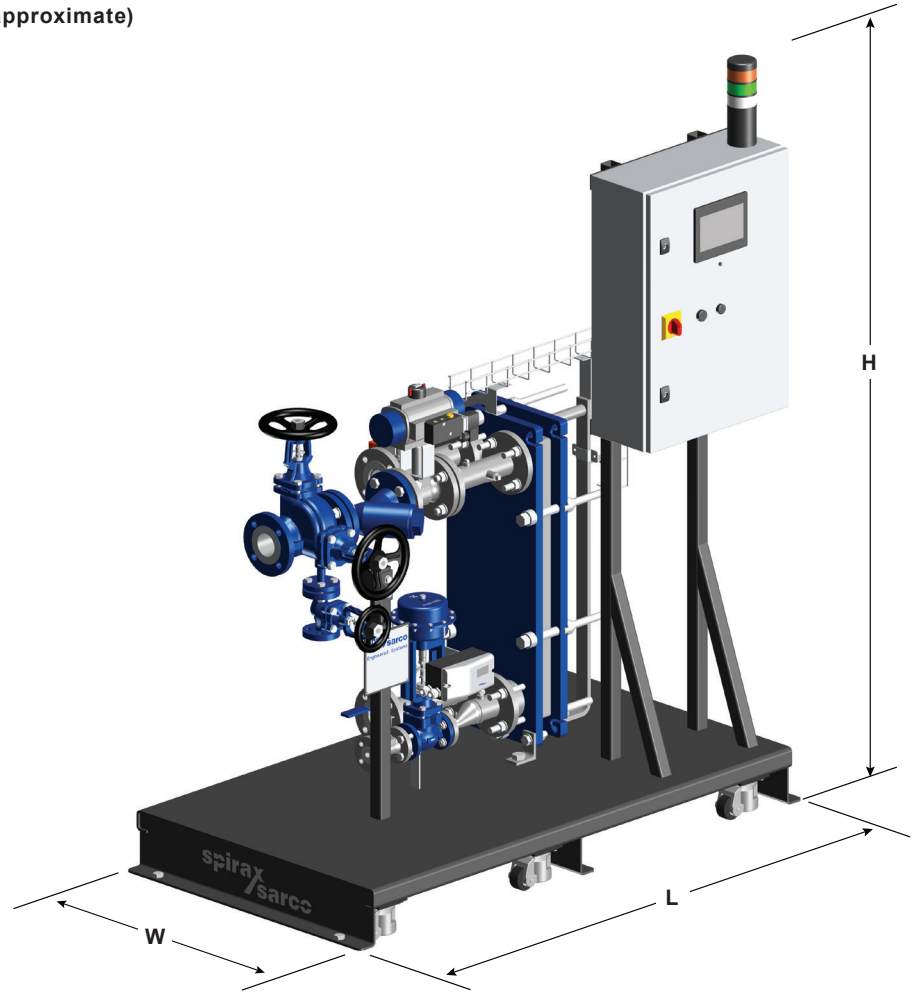
Feature	Benefits	Option
Legionella risk indicator *	Raises an alarm to indicate hazardous conditions within the hot water system whereby, the growth of legionella bacteria is more likely. Requires TA01	Yes
		No
Gasket wear detection	Estimates the remaining useful life of the heat exchanger gaskets, helping to optimise maintenance schedules and prevent unexpected leaks. Requires TA31	Yes
		No
Scaling detection, including, **- Supply feedwater failure alarm** **- Sequenced shut down** **- Undersized alarm**	Detects when the heat exchanger starts fouling to prevent energy loss, system inefficiency and potential damage to the heat exchanger. Requires FA11 + TA11 + TA31, TA41	Yes
		No
Energy Monitoring, including, **- Supply feedwater failure alarm** **- Sequenced shut down** **- Undersized alarm**	Energy data is trended via Connect (cloud-based platform). The information can be retrieved and viewed across a range of times to highlight opportunities to improve system performance. Requires FA11, TA11	Yes
		No

* Available as a feature within the PLC.

Servicing

Spirax Sarco offer field maintenance services such as commissioning and maintenance contracts to maintain performance, compliance and efficiency of EasiHeat systems for total peace of mind. Service offerings can differ by region due to varying capabilities. For more information, please contact your local Spirax Sarco office or sales engineer.

Dimensions (approximate)



Metric		Maximum dimensions (mm)			Largest piping connections		
Type	Valve actuation	H	L	W	Steam	Water	Condensate
EHDSC	EL or PN	1980	2600	850	DN200	DN100	DN50
EHDDC	EL or PN			950	DN150		DN25
EHHSC	EL or PN			870	DN200		DN50
EHHDC	EL or PN			850	DN150		DN25
EHHCC	EL or PN			870	DN150		DN25

Imperial		Maximum dimensions (inches)			Largest piping connections		
Type	Valve actuation	H	L	W	Steam	Water	Condensate
EHDSC	EL or PN	77	103	34	8"	4"	2"
EHDDC	EL or PN			38	6"		1"
EHHSC	EL or PN			35	8"		2"
EHHDC	EL or PN			34	6"		1"
EHHCC	EL or PN			35	6"		1"

*** Piping connections sized to order and will depend on the load and heat exchanger size.**

Options selected may impact overall dimensions.

Pressure and temperature limits

Pipework design condition	PN16
Maximum saturated steam design pressure to heat exchanger	* 9 bar g
Maximum water pressure	9 bar g
Maximum water temperature	105 °C
Maximum gasket temperature	* 180 °C
Maximum ambient temperature	50 °C

* 12 bar g high pressure design and 200 °C high temperature gaskets available on request.

Electrics and pneumatics

All control equipment is pre-wired and piped ready for connection to the air supply and power source.

Electrical panel supply requirements	Mains single phase power e.g. 230 Vac/50-60 Hz to suit regional requirements	
Actuators supply	Electric (Supplied from panel)	24 Vac/50-60 Hz
	Pneumatic	Maximum 9 bar g
Power consumption		400 W
Control panel IP Rating		IP54

Materials

Steam and condensate pipework		Carbon steel
Steam control valve and condensate pump trap		SG Iron
Water side pipework	HTG	Carbon steel
	DHW	Stainless steel
Condensate control valve		SG Iron

Enquiries

All systems are designed for the required heat load with controls to suit the application. The best way of ensuring that we have all the necessary information for quotation and manufacture is to contact your local Spirax Sarco office or sales engineer. Special requirements should be detailed.

EasiHeat nomenclature - Split 1

				Example
1	Application Type	EHDSC	= EasiHeat Domestic Hot Water (Steam side control)	**EHDSC**
		EHDDC	= EasiHeat Domestic Hot Water (Dual control)	
		EHHSC	= EasiHeat Heating (Steam side control)	
		EHHCC	= EasiHeat Heating (Condensate control)	
		EHHDC	= EasiHeat Heating (Dual control)	
2	Steam Control Valve Size	0	= None	**3**
		1	= DN32 -TS6-M	
		2	= DN40 -TS6-M	
		3	= DN50 -TS6-M	
		4	= DN65 -TS6-M	
		5	= DN80 -T8-M	
		6	= DN100 -T10-M	
3	Steam Control Valve Kv	0	= None	**36**
		#	= Available Kvs for all valves *	
4	Insulation	N	= None	**N**
		L	= Lagged	
5	Split Range	N	= None	**0**
		#	= Split range Kv value *	
6	Condensate Control Valve Size	0	= None	**0**
		1	= DN15	
		2	= DN20	
		3	= DN25	
		1.1	= DN15 – Large inlet	
		2.1	= DN20 – Large inlet	
		3.1	= DN25 – Large inlet	
7	Condensate Control Valve Kv	0	= None	**0**
		#	= Kvs available for valve bodies including microflutes *	
8	Heat Exchanger Plate Count	#	= Plates for sized HEX from DLL *	**26**
9	Heat Exchanger Channel Type	LL	= L-L	**MH**
		LW	= LWi-LNa	
		MH	= MH-ML	
		MW	= MWi-MNa	
		HH	= H-H	
		HW	= HWi-HNa	

* values for # come from the EasiHeat sizing software

EasiHeat nomenclature - Split 1, continued on next page

EasiHeat nomenclature - Split 1 (continued)

				Example
10	Gasket Material	G1	= EPDMP	G4
		G2	= Heat-seal	
		G3	= WRAS EPDMW (UK only)	
		G4	= EPDMP - 12 barg design pressure	
		G5	= Heat-seal - 12 barg design pressure	
		G6	= WRAS EPDMW (UK only) - 12 barg design pressure	
11	Global Variance	UK	= UK	EU
		EU	= Europe	
		AS/UL	= Americas/ASME/UL	
		CA	= Canada CRN	
		KO	= Korea	
		JA	= Japan	
		CH	= China	
		SI	= Singapore	
		MA	= Malaysia	
12	Application Type	PN	= Pneumatic	PN
		EL	= Electric	
13	Condensate Removal	N	= None	ST
		ST	= Steam Trap	
		PT	= Pump Trap	
		PTHC	= High Capacity Pump Trap	

EasiHeat nomenclature - Split 2

				Example
14	High Limit	N	= None	SIHL
		SIHL	= SxS Standard Independent High Limit	
		IHL	= Independent High Limit compliant with BS EN 14597:2012 (UK)	
		INAIL	= Independent High Limit INAIL	
15	Manual Steam Isolation	N	= None	V2
		V1	= Ball Valve	
		V2	= BSA	
		V3	= DBB3	
16	System Recirculation	N	= None	N
		R	= Recirculation	
17	Control Panel	P1	= ABB PLC Control Panel	P1
		P3	= Siemens PLC Control Panel	
		B1	= Process Control Panel	
18	Frame Type	SS	= Stainless Steel	CS
		CS	= Carbon Steel Painted	
19	Package Supports	S	= Static	S
		W	= Wheels	
20	Panel Location	S	= Standard (Steam Side)	S
		M	= Mirror (Water Side)	
21	Extras	N	= None	GP
		GP	= Pressure Gauge Pack	
		AP	= Package Air Preparation Set	
		GP AP	= Gauge Pack and Air Preparation Set	

EasiHeat nomenclature - Split 3

				Example
22	Integrity Test	N	= None	**N**
		T	= Integrity Valve Set	
23	Data Collection	00	= None	**00**
		01-09	= Data Collection Gateway (Location Dependent)	
24	Control Valve Feedback	N	= None	**N**
		Y	= Control Valve Feedback Included	
25	TA11 Temperature sensor – Secondary side inlet	N	= None	**Y**
		Y	= Included	
26	TA31 Temperature sensor – Primary side (steam)	N	= None	**Y**
		Y	= Included	
27	TA41 Temperature sensor - Condensate Outlet	N	= None	**N**
		Y	= Included	
28	TA01 Legionella Guardian	N	= None	**N**
		Y	= Water Return Temperature Sensor Included	
29	PA31 Pressure sensor - Primary side (steam)	N	= None	**N**
		Y	= Included	
30	FA11 Inlet Flowmeter - Secondary side (water)	N	= None	**Y**
		Y	= Included	
31	UPS Uninterruptible Power Supply	N	= None	**N**
		Y	= Included	
32	Communications	C0	= None	**C6**
		C1	= BACnet/IP	
		C2	= PROFINET	
		C3	= Modbus TCP/IP	
		C4	= BACnet MS/TP	
		C5	= PROFIBUS	
		C6	= Modbus RTU	
		C7	= BACnet/IP with BTL certificate	
		C8	= BACnet MS/TP with BTL certificate	
		C9	= EtherNet/IP	

Spirax EasiHeat™ DHW nomenclature example:

Split 1	1	2	3	4	5	6	7	8	9	10	11	12	13
	EHDSC	**3**	**36**	**N**	**0**	**0**	**0**	**26**	**MH**	**G4**	**EU**	**PN**	**ST**

Split 2	14	15	16	17	18	19	20	21
	SIHL	**V2**	**N**	**P1**	**CS**	**S**	**S**	**GP**

Split 3	22	23	24	25	26	27	28	29	30	31	32
	N	**00**	**N**	**Y**	**Y**	**N**	**N**	**N**	**Y**	**N**	**C6**