

**SHELL AND TUBE & PLATE
HEAT EXCHANGERS**

DESCRIPTION

Adcatherm heat exchangers are divided in several lines, from the traditional shell and tube to the PHE (plate heat exchangers), and offer solutions for many different industrial heat transfer applications.

MAIN FEATURES

Different types of materials and designs available, according to the application.

OPTIONS: Packaged units, heating coils, special designs.

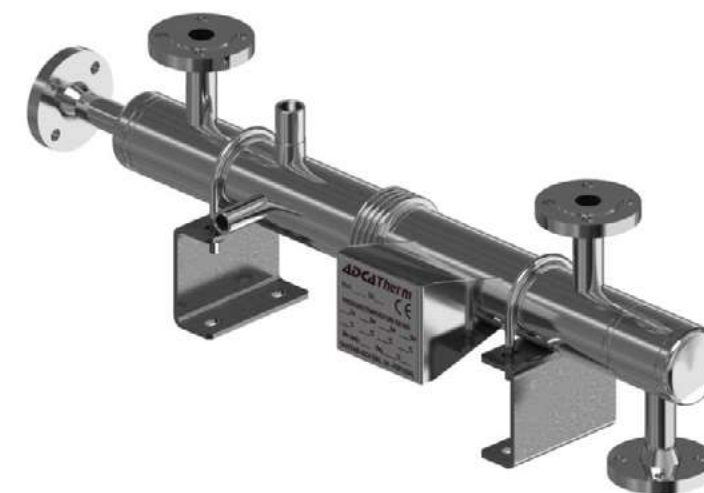
USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE MODELS: STSH/STSV – Shell and tube sealed.
STH/STV – Shell and tube bolted.
PAT – Plate heat exchanger (gasketed and bolted).

ORDER REQUIREMENTS: Type of fluids and correspondent pressures.
Flow rates.
Inlet and outlet temperatures.
Output.



STV



STSH



PAT



**PLATE HEAT EXCHANGERS
PAT**

DESCRIPTION

The ADCATherm PAT plate heat exchangers (gasketed and bolted), consist of a variable number of pressed heat transfer plates clamped together between a fixed and a movable pressure plate, all assembled in a metal frame.

MAIN FEATURES

- Compact and easy to install.
- Corrosion-resistant stainless steel plates.
- Highly efficient heat transfer.
- Flexible configuration, allowing increase of heat transfer area by adding extra plates.
- Low liquid content.
- Easily serviced due to gasketed and bolted design.



OPTIONS: Special designs and materials (titanium, special alloys, lined flanged connections, etc).
Thermal insulation.
Stainless steel frame.

USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE MODELS: PAT00 to PAT30.
PATL00 to PATL50.
PATR00 to PATR50.

CONNECTIONS: Female threaded ISO 228 or NPT.
Flanged EN 1092-1 PN 10 or ASME B16.5 Class 150.
Others on request.

INSTALLATION: Vertical installation. Horizontal installation on request.
See IMI – Installation and maintenance instructions.

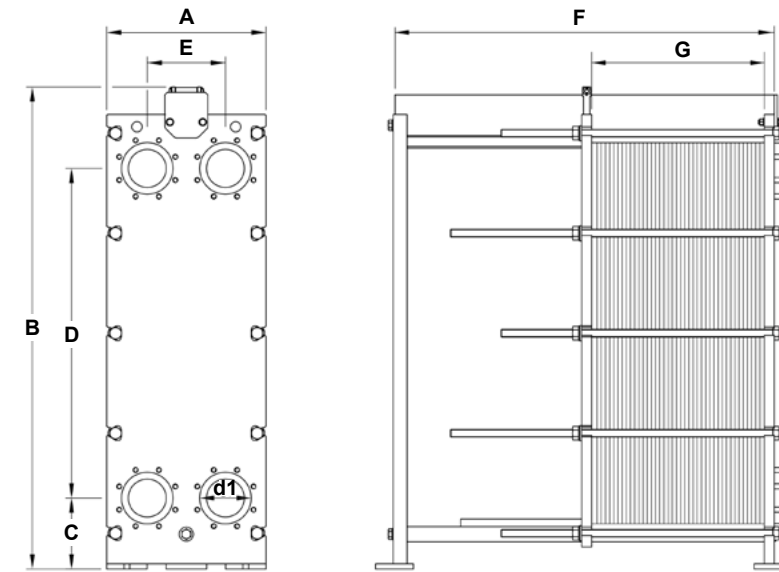
CE MARKING – GROUP 2 (PED – European Directive)

Non-standardized product designed acc. to requirements. Conformity assessment and CE marking are carried out case by case.

LIMITING CONDITIONS *

Maximum operating pressure		10 bar
Maximum operating temperature	NBR seals	140 °C
	EPDM seals	150 °C
	TF-EPDM or TF-NBR seals	150 °C
	EPDM-HT seals	180 °C
	FKM seals	180 °C
Minimum allowable temperature		-20 °C

* Actual limiting conditions may vary depending on the requirements and final design.
Design code: ASME VIII div. 1.



DIMENSIONS (mm)

MODEL	A	B	C	D	E	F Min. - Max.	G *	d1	W ** (m ²)	W1 *** (m ²)
PAT00	160	330	40	250	60	120 - 200	K x 2,45	1"	0,864	0,018
PAT01	300	835	200	535	115	250 - 1600	K x 3,20	2"	23,93	0,087
PAT10	400	1164	230	760	186	400 - 1300	K x 2,70	50	53,8	0,20
PAT30	578	1813	260	1316	280	700 - 2900	K x 3,10	100	245	0,49
PATL00	350	860	200	560	160	200 - 400	K x 4,10	2"	6,12	0,12
PATL10	440	1102	230	706	222	400 - 1300	K x 4,50	100	28	0,20
PATL30	620	1548	278	1023	300	700 - 3300	K x 5,20	150	143,10	0,45
PATL50	810	1936	320	1345	400	700 - 3300	K x 5,20	200	332	0,83
PATR00	220	440	68.5	308	102	200 - 300	K x 3,20	11/4"	2,19	0,043
PATR10	460	1212	230	804	230	400 - 1800	K x 3,20	100	96,9	0,255
PATR30	630	1824	280	1302	309	700 - 2400	K x 3,60	150	254,2	0,62
PATR50	800	2222	320	1520	360	900 - 4100	K x 4,00	200	512,87	0,948

* Distance between pressure plates. K: number of heat transfer plates.

** W: Maximum total surface area (m²).

*** W1: Surface area per plate (m²).

Remarks: Connections (d1) are sized according with the process conditions. For certified values, please consult the manufacturer.
Other sizes and designs can be supplied on request.

MATERIALS

DESIGNATION	MATERIAL
Heat transfer plates	ASME SA240 316L; ASME SA240 304L; Titanium ASME SB265 Gr. 1; Titanium ASME SB265 Gr. 11; Nickel ASME SB162; Hastelloy ASME SB575
Frame and pressure plates	ASME SA516 Gr.60 or S355J2-N; ASME SA240 316; ASME SA240 304;
Gaskets *	NBR; EPDM; EPDM-HT; FKM; TF-EPDM; TF-NBR
Connections	AISI 304 / 1.4301; AISI 316 / 1.4401; NBR; EPDM; Titanium
Tightening bolts and nuts	AISI 304 / 1.4301; ASTM A193 Gr. B7

* Available spare parts.

**SHELL AND TUBE HEAT EXCHANGERS
STS
(Steam to water – Vertical installation)**

DESCRIPTION

The ADCA ST series steam to water shell and tube heat exchangers are shorter and lighter than the alternative shell and tube exchangers manufactured with smooth pipes. The use of extruded low fin tube has the advantage that it can improve the external surface and thermal performance.

MAIN FEATURES

Corrosion-resistant stainless steel low finned tube bundle and shell construction.
Straight tubes for easy cleaning.
Expansion bellow in the shell, avoiding excessive tube stresses caused by thermal expansion and contraction.

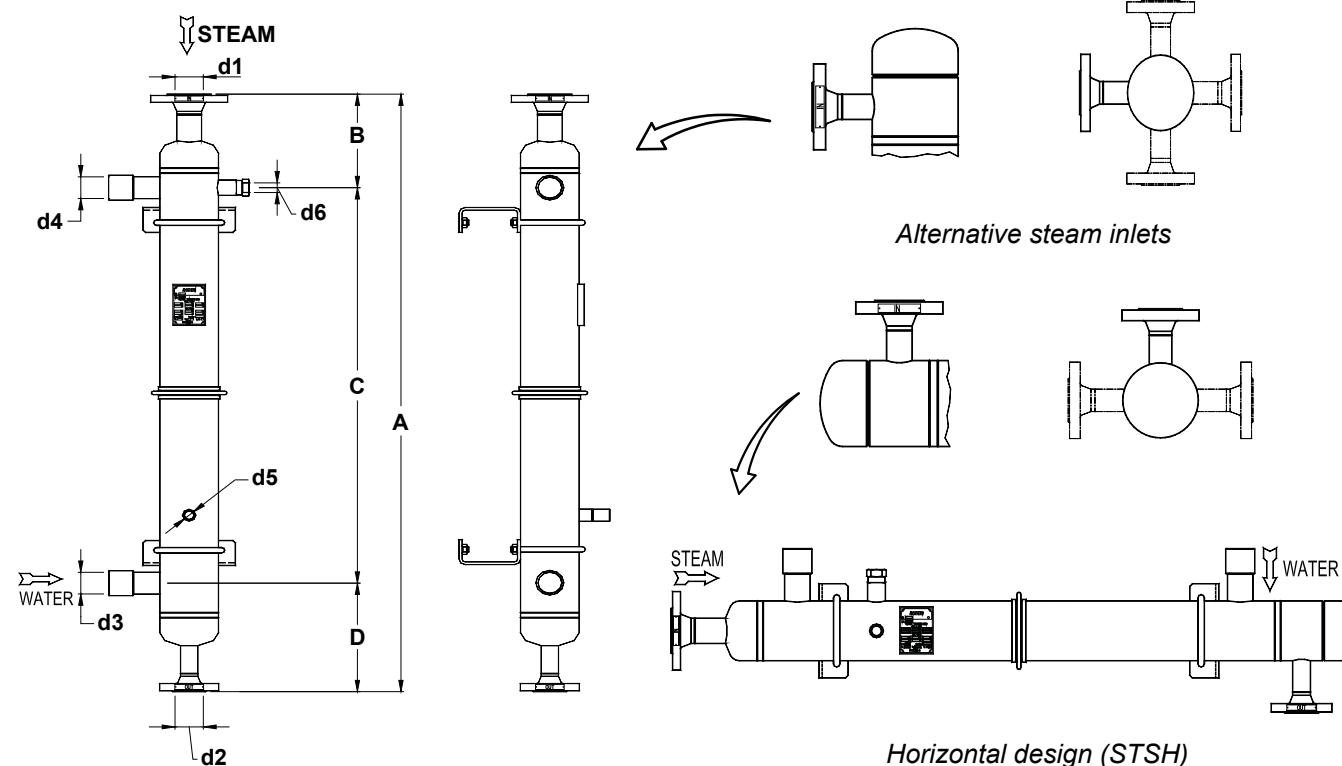
OPTIONS: Horizontal installation (STSH).

USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE MODELS: STSV – vertical installation.

INSTALLATION: Vertical or horizontal (different condensate heads execution).
See IMI – Installation and maintenance instructions.

ORDER REQUIREMENTS: Steam pressure and temperature.
Inlet and outlet water temperature.
Water mass flow or heat exchanged.



ALTERNATIVE CONNECTIONS		
CLAMP	ROUND THREAD	FLANGE

Remark: Different designs and dimensions on request.

CE MARKING – GROUP 2 (PED – European Directive)

PN 16	Category Tube side	Category Shell side
STSV 3.075 to 8.150	1 (CE marked)	SEP

MATERIALS

DESIGNATION	MATERIAL
Tube bundle	AISI 316L / 1.4404
Tube sheet	AISI 316 / 1.4401
Heads and shell	AISI 316 / 1.4401; AISI 316L / 1.4404
Inlet / outlet pipes	AISI 316 / 1.4401
EN flanges	AISI 316 / 1.4401
ASME flanges	AISI 316 / 1.4401
Sockets	AISI 316 / 1.4401
Supports	AISI 304 / 1.4301

BODY LIMITING CONDITIONS *			
PN 16		CLASS 150	
ALLOWABLE PRESSURE	RELATED TEMPERATURE	ALLOWABLE PRESSURE	RELATED TEMPERATURE
16 bar	50 °C	16 bar	50 °C
15 bar	100 °C	15 bar	100 °C
12,7 bar	200 °C	12,6 bar	200 °C
12 bar	250 °C	–	–

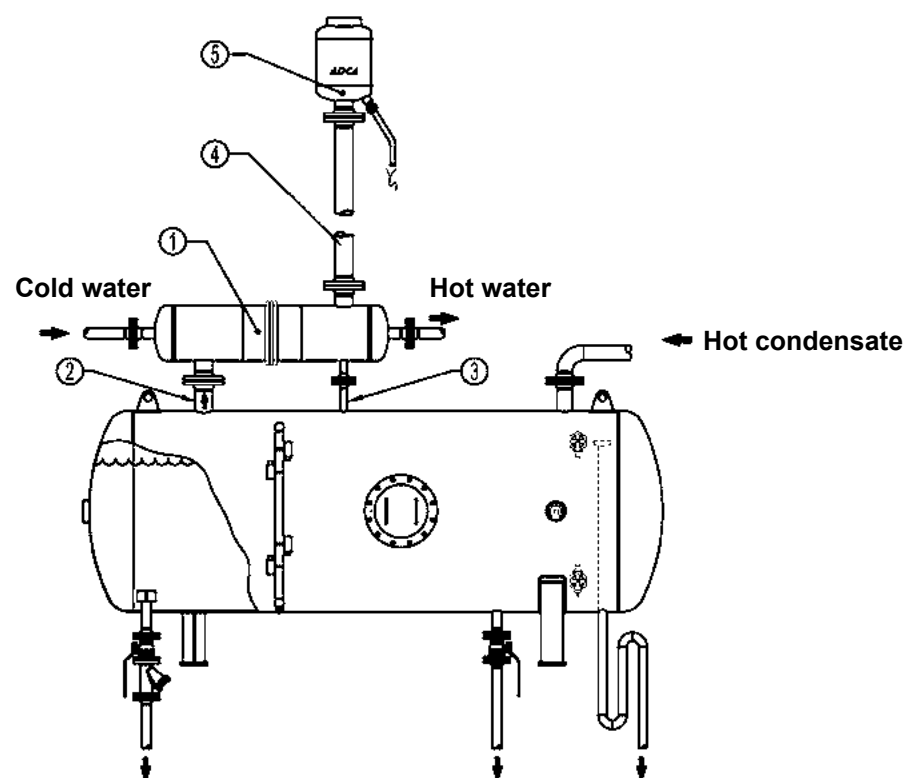
Min. operating temp.: -10 °C; Design code: AD-Merkblatt.
* Rating according to EN 1092-1:2018.
PMO – Maximum operating pressure for saturated steam: 13 bar.

DIMENSIONS (mm)

MODEL	A	B	C	D	E	F	G	H	d1 *	d2 *	d3 *	d4 *	d5	d6
STSV 3.075	1045	225	595	225	250	105	145	100	DN 40	DN 25	11/2"	11/2"	1/2"	3/4"
STSV 3.100	1295	225	845	225	250	105	145	100	DN 40	DN 25	11/2"	11/2"	1/2"	3/4"
STSV 3.150	1795	225	1345	225	250	105	145	100	DN 40	DN 25	11/2"	11/2"	1/2"	3/4"
STSV 4.075	1075	240	595	240	274	117	157	125	DN 40	DN 25	11/2"	11/2"	1/2"	3/4"
STSV 4.100	1325	240	845	240	274	117	157	125	DN 40	DN 25	11/2"	11/2"	1/2"	3/4"
STSV 4.150	1825	240	1345	240	274	117	157	125	DN 40	DN 25	11/2"	11/2"	1/2"	3/4"
STSV 5.075	1098	251,5	595	251,5	300	130	170	154	DN 50	DN 40	2"	2"	1/2"	3/4"
STSV 5.100	1348	251,5	845	251,5	300	130	170	154	DN 50	DN 40	2"	2"	1/2"	3/4"
STSV 5.150	1848	251,5	1345	251,5	300	130	170	154	DN 50	DN 40	2"	2"	1/2"	3/4"
STSV 6.075	1126	265,5	595	265,5	330	145	185	182	DN 65	DN 40	2"	2"	1/2"	3/4"
STSV 6.100	1376	265,5	845	265,5	330	145	185	182	DN 65	DN 40	2"	2"	1/2"	3/4"
STSV 6.150	1876	265,5	1345	265,5	330	145	185	182	DN 65	DN 40	2"	2"	1/2"	3/4"
STSV 8.075	1136	280,5	595	280,5	380	170	210	232	DN 80	DN 50	2 1/2"	2 1/2"	1/2"	3/4"
STSV 8.100	1406	280,5	845	280,5	380	170	210	232	DN 80	DN 50	2 1/2"	2 1/2"	1/2"	3/4"
STSV 8.150	1906	280,5	1345	280,5	380	170	210	232	DN 80	DN 50	2 1/2"	2 1/2"	1/2"	3/4"

* Merely indicative values. Final sizes will be determined after order, considering the effective flow rates and connections.

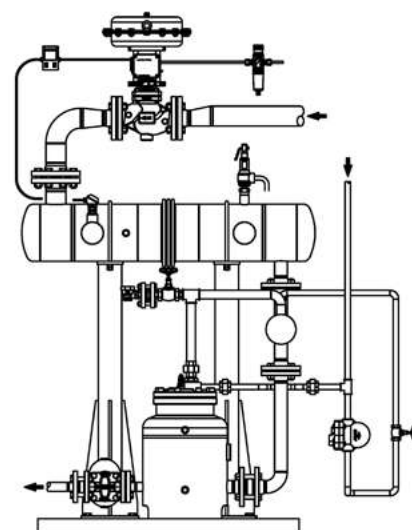
**TYPICAL INSTALLATION AS FLASH STEAM VENT CONDENSER
(Steam to the shell)**



POS. N°	MATERIAL
1	STS heat exchanger
2	Receiver vent
3	Drain (condensate)
4	Vent to atmosphere
5	EH - Exhaust head

Flash steam vents energy recovery. When heating water or another process fluid using this steam, which is usually wasted, both boiler operation period and energy consumption are reduced, consequently reducing the pollution emissions as well.

**TYPICAL INSTALLATION AS PART OF A "PWHU"
(Packaged Water Heating Unit)**



The PWHU unit allows several options for the preparation of hot water for consumption or heating. It can be supplied complete with the feed water system, expansion and recirculation for closed circuit operation, or simply prepared to supply process hot water.

For drawing simplifying purposes some components and accessories have been omitted.

**TUBULAR HEATING COILS
R
(STEAM TO WATER)**

DESCRIPTION

The ADCA R series steam to water tubular heating coils are shorter and lighter than the alternative tubular heating coils manufactured with smooth pipes. The use of extruded low fin tube has the advantage that it can improve the external surface and thermal performance.

MAIN FEATURES

Corrosion-resistant low finned stainless steel tube bundle construction. Straight tubes for easy cleaning. Floating head at the end of the tube bundle, avoiding tube stresses caused by thermal expansion and contraction.

OPTIONS: Special designs.

USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE

MODELS: R5, R6, R8 and R10.

CONNECTIONS: Flanged EN 1092-1 PN 16.
Flanged ASME B16.5 Class 150.
Threaded on request.

INSTALLATION: Horizontally on vertical or horizontal vessels.
See IMI – Installation and maintenance instructions.



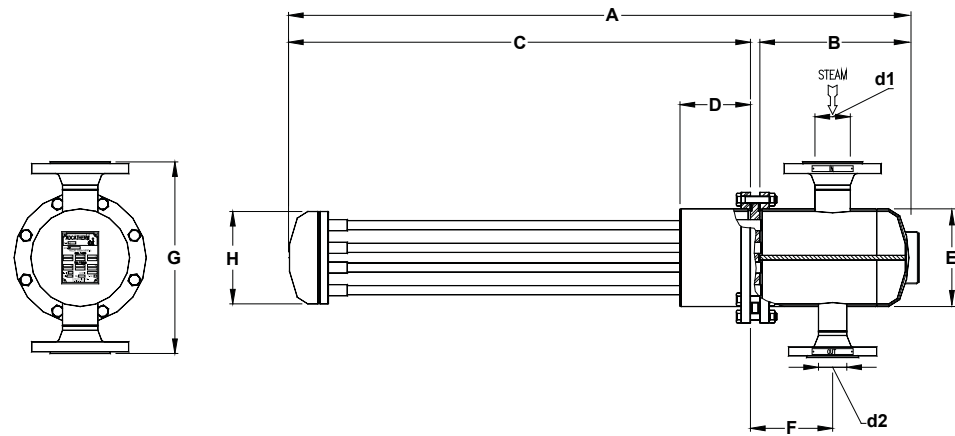
CE MARKING – GROUP 2 (PED – European Directive)

PN 16	Category
R5.075 to R5.150	1 (CE marked)
R6.075 to R6.150	1 (CE marked)
R8.075 to R8.150	2 (CE marked)
R10.075 to R10.150	2 (CE marked)

BODY LIMITING CONDITIONS		
FLANGED PN 16 * ALLOWABLE PRESSURE	FLANGED CLASS 150 ** ALLOWABLE PRESSURE	RELATED TEMP.
16 bar	15,3 bar	50 °C
15 bar	13,3 bar	100 °C
12,7 bar ***	11,1 bar ***	200 °C
12 bar	–	250 °C

Min. operating temp.: -10 °C; Design code: AD-Merkblatt
* According to EN 1092-1:2018.
** According to EN 1759-1:2004.
*** PMO – Maximum operating pressure for saturated steam.

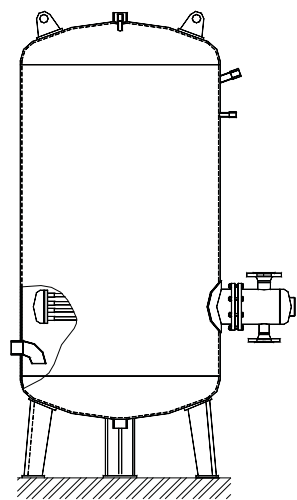
MATERIALS	
DESIGNATION	MATERIAL
Tube bundle	AISI 316L / 1.4404
Tube sheet	AISI 316 / 1.4401
Heads	S235JR / 1.0038; P235GH / 1.0305
Inlet / outlet pipes	P235GH / 1.0305
EN flanges	P250GH / 1.0460
ASME flanges	ASTM A105 / 1.0432
Sockets	ASTM A105 / 1.0432
Supports	S235JR / 1.0038



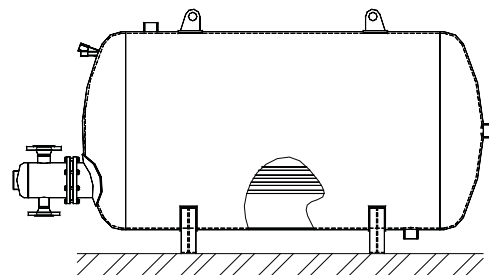
DIMENSIONS (mm)										
MODEL	A	B	C	D	E	F	G	H	d1 *	d2 *
R5.075	1019	244	759	120	139	146	340	123	40	25
R5.100	1269	244	1009	120	139	146	340	123	40	25
R5.150	1769	244	1509	120	139	146	340	123	40	25
R6.075	1044	260	784	120	168	146	370	152	65	40
R6.100	1294	260	1035	120	168	146	370	152	65	40
R6.150	1794	260	1535	120	168	146	370	152	65	40
R8.075	1116	320	776	130	220	146	420	198	80	50
R8.100	1366	320	1028	130	220	146	420	198	80	50
R8.150	1866	320	1526	130	220	146	420	198	80	50
R10.075	1111	318	768	130	273	150	473	250	80	50
R10.100	1361	318	1018	130	273	150	473	250	80	50
R10.150	1857	318	1518	130	273	150	473	250	80	50

* Merely indicative values. Sizes to be determined according to flow conditions.
Since each coil is built to suit specific plant requirements, consult manufacturer for certified dimensions and weight.

TYPICAL INSTALLATION



Vertical vessel



Horizontal vessel

SHELL AND TUBE HEAT EXCHANGERS
STH
(Steam to water – Horizontal installation)

DESCRIPTION

The ADCA ST series steam to water shell and tube heat exchangers are shorter and lighter than the alternative shell and tube exchangers manufactured with smooth pipes. The use of extruded low fin tubes has the advantage that it can improve the external surface and thermal performance.

MAIN FEATURES

Corrosion-resistant stainless steel low finned tube bundle construction. Straight tubes for easy cleaning. Floating head at the end of the tube bundle, avoiding tube stresses caused by thermal expansion and contraction.

USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE MODELS: STH/S – carbon steel shell.
STH/SS – completely in stainless steel.

CONNECTIONS: Flanged EN 1092-1 PN 16.
Flanged ASME B16.5 Class 150.
Female threaded ISO 7 Rp or NPT.

INSTALLATION: Can be installed on floor, walls or hanging from the ceiling.
Steam runs inside the tubes and process water outside.
See IMI – Installation and maintenance instructions.

ORDER REQUIREMENTS: Steam pressure and temperature.
Inlet and outlet water temperature.
Water mass flow or heat exchanged.



CE MARKING – GROUP 2 (PED – European Directive)

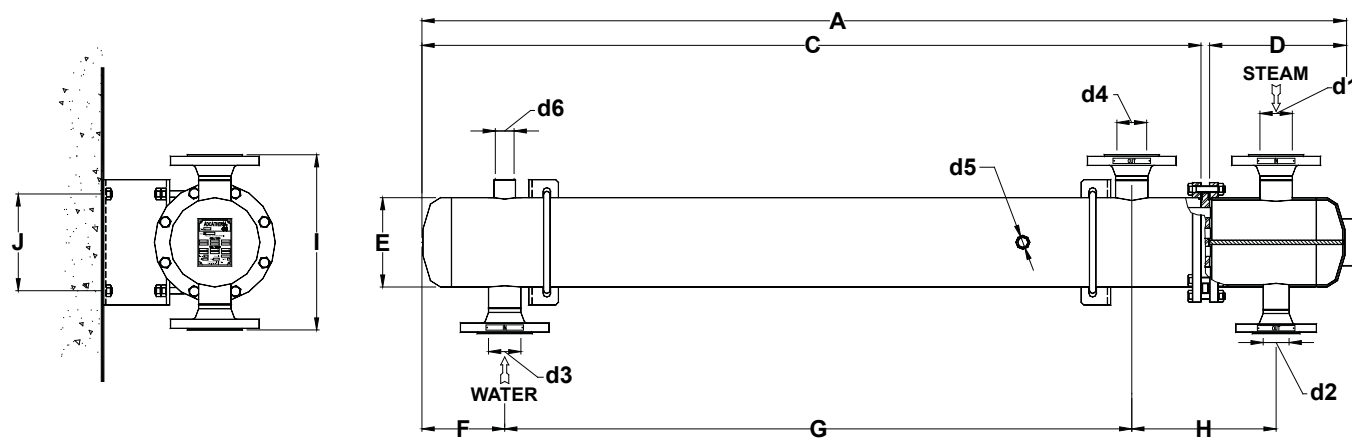
PN16	Category Tube side	Category Shell side
STH4.075 to 4.150	1 (CE marked)	SEP
STH5.075 to 5.150	1 (CE marked)	SEP
STH6.075 to 6.150	1 (CE marked)	SEP
STH8.075 to 8.150	2 (CE marked)	SEP
STH10.075 to 10.150	2 (CE marked)	SEP
STH12.075 to 12.150	2 (CE marked)	SEP

BODY LIMITING CONDITIONS *

PN 16		CLASS 150	
ALLOWABLE PRESSURE	RELATED TEMPERATURE	ALLOWABLE PRESSURE	RELATED TEMPERATURE
16 bar	50 °C	16 bar	50 °C
15 bar	100 °C	15 bar	100 °C
12,7 bar	200 °C	12,6 bar	200 °C
12 bar	250 °C	–	–

Min. operating temp.: -10 °C; Design code: AD-Merkblatt.
* Rating according to EN 1092-1:2018.
PMO – Maximum operating pressure for saturated steam: 13 bar.

MATERIALS		
DESIGNATION	STH/S	STH/SS
Tube bundle	AISI 316L / 1.4404	AISI 316L / 1.4404
Tube sheet	AISI 316 / 1.4401	AISI 316 / 1.4401
Heads	S235JRG2 / 1.0038; P235GH / 1.0345	AISI 316 / 1.4401; AISI 316L / 1.4404
Inlet / outlet pipes	P235GH / 1.0345	AISI 316 / 1.4401
EN flanges	P250GH / 1.0460	AISI 316 / 1.4401
ASME flanges	ASTMA105 / 1.0432	AISI 316 / 1.4401
Sockets	ASTMA105 / 1.0432	AISI 316 / 1.4401
Supports	S235JRG2 / 1.0038	AISI 304 / 1.4301



DIMENSIONS (mm)															
MODEL	A	C	D	E	F	G	H	I	J	d1 *	d2 *	d3 *	d4 *	d5	d6
STH4.075	965	785	166	114	120	550	207	314	116	50	25	50	50	1/2"	3/4"
STH4.100	1215	1035	166	114	120	800	207	314	116	50	25	50	50	1/2"	3/4"
STH4.150	1715	1535	166	114	120	1300	207	314	116	50	25	50	50	1/2"	3/4"
STH5.075	1050	790	245	140	160	510	276	340	150	65	40	65	65	1/2"	3/4"
STH5.100	1300	1040	245	140	160	760	276	340	150	65	40	65	65	1/2"	3/4"
STH5.150	1800	1540	245	140	160	1260	276	340	150	65	40	65	65	1/2"	3/4"
STH6.075	1093	820	255	168	180	500	288	368	180	65	40	65	65	1/2"	3/4"
STH6.100	1343	1070	255	168	180	750	288	368	180	65	40	65	65	1/2"	3/4"
STH6.150	1843	1570	255	168	180	1250	288	368	180	65	40	65	65	1/2"	3/4"
STH8.075	1176	840	320	220	197	487	304	420	230	80	50	80	80	1/2"	1"
STH8.100	1426	1090	320	220	197	737	304	420	230	80	50	80	80	1/2"	1"
STH8.150	1926	1590	320	220	197	1237	304	420	230	80	50	80	80	1/2"	1"
STH10.075	1185	855	306	273	205	448	356	473	285	80	50	80	80	1/2"	1"
STH10.100	1435	1105	306	273	205	698	356	473	285	80	50	80	80	1/2"	1"
STH10.150	1935	1605	306	273	205	1198	356	473	285	80	50	80	80	1/2"	1"
STH12.075	1307	877	407	324	277	400	430	540	336	100	50	100	100	1/2"	1"
STH12.100	1557	1127	407	324	277	650	430	540	336	100	50	100	100	1/2"	1"
STH12.150	2057	1627	407	324	277	1150	430	540	336	100	50	100	100	1/2"	1"

* Merely indicative values. Final sizes will be determined after order, considering the effective flow rates and connections.
Pipe connections are sized considering the correct thermal insulation, not included but recommended to be applied after the installation.

SHELL AND TUBE HEAT EXCHANGERS
STV
(Steam to water – Vertical installation)

DESCRIPTION

The ADCA ST series steam to water shell and tube heat exchangers are shorter and lighter than the alternative shell and tube exchangers manufactured with smooth pipes. The use of extruded low fin tubes has the advantage that it can improve the external surface and thermal performance.

MAIN FEATURES

Corrosion-resistant stainless steel low finned tube bundle construction. Straight tubes for easy cleaning. Floating head at the end of the tube bundle, avoiding tube stresses caused by thermal expansion and contraction.

USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE MODELS: STV/S – carbon steel shell.
STV/SS – completely in stainless steel.

CONNECTIONS: Flanged EN 1092-1 PN 16.
Flanged ASME B16.5 Class 150.
Female threaded ISO 7 Rp or NPT.

INSTALLATION: Wall mounting or floor (needs special supports). Steam runs inside the tubes and process water outside. See IMI – Installation and maintenance instructions.

ORDER REQUIREMENTS: Steam pressure and temperature.
Inlet and outlet water temperature.
Water mass flow or heat exchanged.

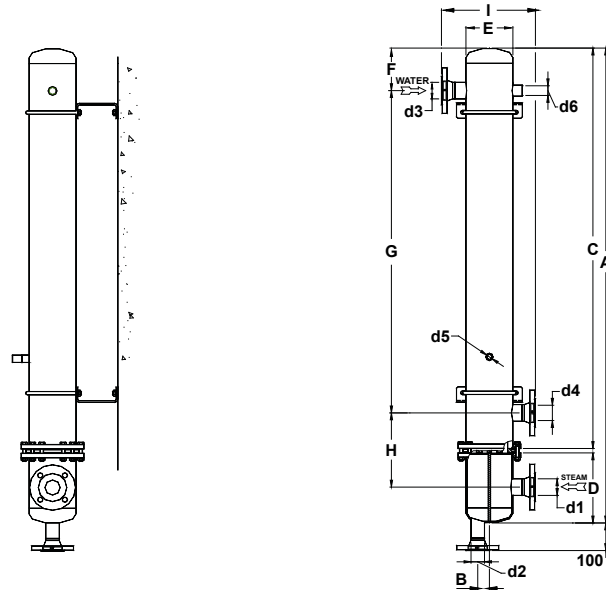


CE MARKING – GROUP 2 (PED – European Directive)		
PN16	Category Tube side	Category Shell side
STV4.075 to 4.150	1 (CE marked)	SEP
STV5.075 to 5.150	1 (CE marked)	SEP
STV6.075 to 6.150	1 (CE marked)	SEP
STV8.075 to 8.150	2 (CE marked)	SEP
STV10.075 to 10.150	2 (CE marked)	SEP
STV12.075 to 12.150	2 (CE marked)	SEP

BODY LIMITING CONDITIONS *			
PN 16		CLASS 150	
ALLOWABLE PRESSURE	RELATED TEMPERATURE	ALLOWABLE PRESSURE	RELATED TEMPERATURE
16 bar	50 °C	16 bar	50 °C
15 bar	100 °C	15 bar	100 °C
12,7 bar	200 °C	12,6 bar	200 °C
12 bar	250 °C	–	–

Min. operating temp.: -10 °C; Design code: AD-Merkblatt.
* Rating according to EN 1092-1:2018.
PMO – Maximum operating pressure for saturated steam: 13 bar.

MATERIALS		
DESIGNATION	STV/S	STV/SS
Tube bundle	AISI 316L / 1.4404	AISI 316L / 1.4404
Tube sheet	AISI 316 / 1.4401	AISI 316 / 1.4401
Heads	S235JRG2 / 1.0038; P235GH / 1.0345	AISI 316 / 1.4401; AISI 316L / 1.4404
Inlet / outlet pipes	P235GH / 1.0345	AISI 316 / 1.4401
EN flanges	P250GH / 1.0460	AISI 316 / 1.4401
ASME flanges	ASTM A105 / 1.0432	AISI 316 / 1.4401
Sockets	ASTM A105 / 1.0432	AISI 316 / 1.4401
Supports	S235JRG2 / 1.0038	AISI 304 / 1.4301



DIMENSIONS (mm)															
MODEL	A	B	C	D	E	F	G	H	I	d1 *	d2 *	d3 *	d4 *	d5	d6
STV4.075	965	28	785	166	114	120	550	207	314	DN 50	DN 25	DN 50	DN 50	1/2"	3/4"
STV4.100	1215	28	1035	166	114	120	800	207	314	DN 50	DN 25	DN 50	DN 50	1/2"	3/4"
STV4.150	1715	28	1535	166	114	120	1300	207	314	DN 50	DN 25	DN 50	DN 50	1/2"	3/4"
STV5.075	1050	35	790	245	140	160	510	276	340	DN 65	DN 40	DN 65	DN 65	1/2"	3/4"
STV5.100	1300	35	1040	245	140	160	760	276	340	DN 65	DN 40	DN 65	DN 65	1/2"	3/4"
STV5.150	1800	35	1540	245	140	160	1260	276	340	DN 65	DN 40	DN 65	DN 65	1/2"	3/4"
STV6.075	1093	40	820	255	168	180	500	288	368	DN 65	DN 40	DN 65	DN 65	1/2"	3/4"
STV6.100	1343	40	1070	255	168	180	750	288	368	DN 65	DN 40	DN 65	DN 65	1/2"	3/4"
STV6.150	1843	40	1570	255	168	180	1250	288	368	DN 65	DN 40	DN 65	DN 65	1/2"	3/4"
STV8.075	1176	55	840	320	220	197	487	304	420	DN 80	DN 50	DN 80	DN 80	1/2"	1"
STV8.100	1426	55	1090	320	220	197	737	304	420	DN 80	DN 50	DN 80	DN 80	1/2"	1"
STV8.150	1926	55	1590	320	220	197	1237	304	420	DN 80	DN 50	DN 80	DN 80	1/2"	1"
STV10.075	1185	60	855	306	273	205	448	356	473	DN 80	DN 50	DN 80	DN 80	1/2"	1"
STV10.100	1435	60	1105	306	273	205	698	356	473	DN 80	DN 50	DN 80	DN 80	1/2"	1"
STV10.150	1935	60	1605	306	273	205	1198	356	473	DN 80	DN 50	DN 80	DN 80	1/2"	1"
STV12.075	1307	80	877	407	324	277	400	430	540	DN 100	DN 50	DN 100	DN 100	1/2"	1"
STV12.100	1557	80	1127	407	324	277	650	430	540	DN 100	DN 50	DN 100	DN 100	1/2"	1"
STV12.150	2057	80	1627	407	324	277	1150	430	540	DN 100	DN 50	DN 100	DN 100	1/2"	1"

* Merely indicative values. Final sizes will be determined after order, considering the effective flow rates and connections.
Pipe connections are sized considering the correct thermal insulation, not included but recommended to be applied after the installation.

**PACKAGED WATER HEATING UNITS
PWHU**

DESCRIPTION

The ADCATherm PWHU packaged water heating units are designed for instant hot water heating in a safe and efficient way, using steam as primary fluid. Each system is built to meet application and space requirements in a compact skid package, ready for connection into the system, reducing on-site labour and disruption time.

MAIN FEATURES

Accurate water heating with simple and intuitive controls.
Fully assembled and tested, saving design, assembly and commissioning time.
Compactly mounted in a structural steel metal frame to save floor space.
Tailor made to meet application and space requirements.
Hot water side manufactured in austenitic stainless steel with automatic air venting.
Fitted with ADCATherm PAT plate heat exchanger or ST shell & tube heat exchanger.

OPTIONS:

- Frame and/or primary side manufactured in stainless steel.
- Humidity separator set.
- Independent high limit set.
- Steam pressure reducing set.
- Pump trap set.
- Recirculation pump and bypass set.
- Primary and/or secondary side shut-off set.
- Buffer vessel for semi-instantaneous systems (WAVE).
- ADCATherm shell & tube heat exchanger.
- Thermal insulation.
- Wheels.

USE:

Instant water heating for process and other applications.

CONNECTIONS:

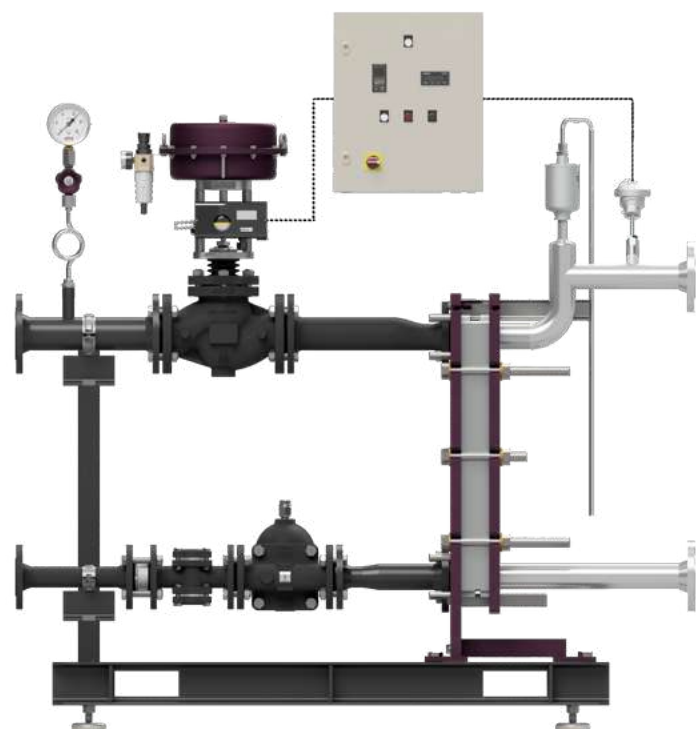
Flanged EN 1092-1 PN 16 or ASME B16.5 Class 150.
Others on request.



CE MARKING
Non-standardized product designed acc. to requirements. Conformity assessment and CE marking are carried out case by case.

LIMITING CONDITIONS *	
Maximum allowable saturated steam (primary) pressure	9 bar
Maximum allowable water (secondary) pressure	9 bar
Maximum operating temperature (EPDM-HT seals)	180 °C
Pipework pressure rating	PN 16

* Valid for units fitted with an ADCATherm PAT plate heat exchanger. Actual limiting conditions may vary depending on the requirements and final design.



Basic unit configuration

CONTROL VALVE AND SENSORS

An ADCATrol globe control valve is in charge of modulating steam flow rate, and carefully sized with nominal or reduced seat to match heat demand and recommended velocities. Fitted with either a pneumatic or electric actuator, with electro-pneumatic or electronic positioner, respectively.
The standard unit includes a fast response ADCATrol Pt100 temperature sensor on the secondary side, installed in a thermowell.

CONTROL PANEL

Steel enclosure (stainless steel on request) equipped with process controllers, volt-free terminals and analog outputs for monitorization of temperatures, alarms and remote setting.
The control panel can be alternatively fitted with PLC and touch screen, with data logging and communication capabilities. Installed control and instrumentation equipment is pre-wired and pneumatic equipment is piped to an air supply manifold, ready for connection.

HEAT EXCHANGER

An ADCATharm heat exchanger is carefully selected to guarantee the best system performance. Units can be supplied with highly efficient and expandable ADCATharm PAT series plate heat exchangers or one of many ADCATharm ST series shell & tube heat exchanger designs.

CONDENSATE DRAINAGE

Each unit is fitted with either a ADCA float steam trap or ADCAMat pump trap, carefully sized to ensure efficient condensate drainage regardless of pressure fluctuations.

FRAME AND PIPEWORK

Equipments are compactly mounted in a structural steel metal frame (stainless steel on request) and the layout can be adjusted to meet installation space requirements.
Pipework is sized for the application with primary side manufactured in carbon steel and valves and fittings in carbon steel or SG iron. Secondary side pipework is manufactured in stainless steel with valves and fittings in stainless steel or brass, if admissible.

HUMIDITY SEPARATOR SET

Includes manual steam and condensate isolation valves, strainer and humidity separator with trapping station.

INDEPENDENT HIGH LIMIT SET

Pneumatic or electrically actuated fail-safe high limit valve to immediately isolating steam supply once a secondary temperature is reached. Set includes independent controls and sensors. High limit valve can be globe or ball type.

PRESSURE REDUCING SET

Includes pressure reducing valve, safety relief valve and pressure gauges. The optional humidity separator set is strongly advised when this set is considered.

PUMP TRAP SET

Complete pumping trap set with receiver carefully sized for the load, ADCAMat pump trap, motive steam supply line with trapping station and air vent.

PUMP AND BYPASS SET

Recirculation pump and bypass valve arrangement, allowing fast response to quick load changes, enhancing and stabilizing temperature control.

SHUT-OFF VALVE SET

Primary side: Bellows sealed shut-off valves and strainer.
Secondary side: Stainless steel ball valves.
Allows manual isolation of the primary and/or secondary sides for convenience or protection.

TECHNICAL DATA *	
Power supply	230 V AC 50/60 Hz
Nominal current	5 A
Main switch	25 A
IP rating (control panel)	IP 65
Pneumatic supply	6 bar minimum
Control voltage	24 V DC
Electric actuators	24 V AC/DC or 230 V AC

* May vary depending on unit configuration and options.

DIMENSIONS

Non-standardized product designed according to requirements. Dimensions and weights are provided case by case. Consult the manufacturer.

HOW TO ORDER

Please request and fill up the PWHU inquiry sheet.



Optional humidity separator set *



Optional independent high limit set *



Optional pressure reducing set *



Optional pump trap set



Optional pump & bypass set *



Optional shut-off valve set *

* Can be integrated on the package or delivered as isolated components to be fitted on the line.

**ADCATHERM
STEAM TO WATER HEATING SYSTEMS**

GENERAL

The AdcaTherm series offers several solutions for water heating in a safe and efficient way, from compact instant production systems to semi-instantaneous and storage systems. Either for room heating, consumption water or process water, Valsteam ADCA will always have a solution for you.

DESCRIPTIONS

PWHU – Packaged Water Heating Units

Complete system conceived for instant production of heated water using steam as primary fluid. Ready to work, just needs the connections to the respective fluids. This system is ideal whenever there is enough energy available for instant heating.

MAIN FEATURES

Rust free, hot water available (using austenitic stainless steel design). Ready and easy to install, saves design and assembly time, as well as floor space. Installation and commissioning time reduction.

WAVE – Water Heating Vessel

Especially suitable for the production of consumable hot water, domestic or industrial. The required amount of steam for instantaneous heating may not be available at all times. In these cases, it's necessary to install a buffer tank (semi-instantaneous system) or even a storage tank (storage system).

MAIN FEATURES

Ready and easy to install, saves design and assembly time. Installation and commissioning time reduction. Extra water for peak periods, reducing the need for extra boiler power. The system can be designed for the amount of energy available, not compromising the remaining process.

OPTIONS: Different types of materials and designs available, according to the application, see ADPWHU.07.5871.

USE: Steam, water, hot condensate and other fluids compatible with the construction.

AVAILABLE MODELS: PWHU, WAVE-P (packaged) AND WAVE-S (split system).

ORDER REQUIREMENTS: Type of application.
Flow rates or detailed description of intended use (number of baths in a set period of time, for instance).
Inlet and outlet temperatures.
Types of fluids and corresponding pressures.
Power (output) or information that can allow its determination.
Room available for installation and other limiting conditions, if any.

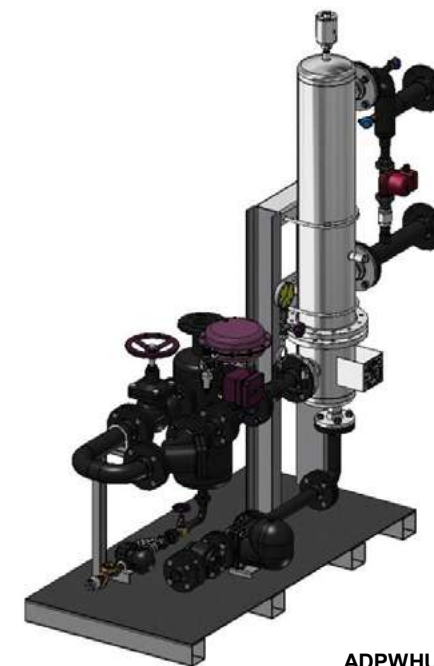
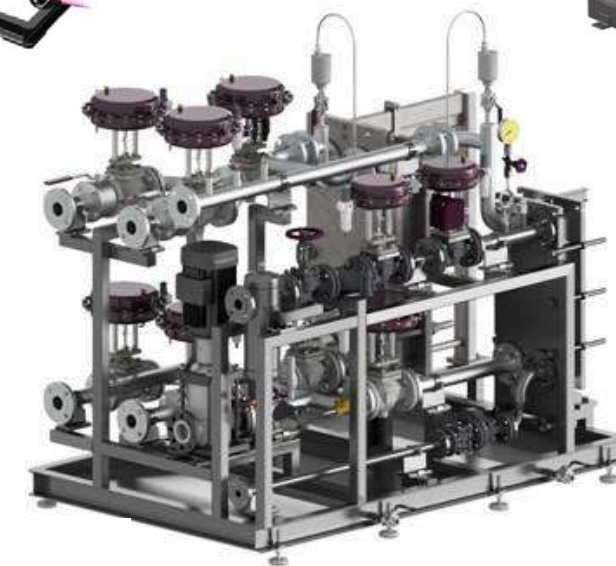
Some examples of an extensive range of AdcaTherm skids already manufactured



ADPWHU.10.6359



ADPWHU.12.6371



ADPWHU.01.2439

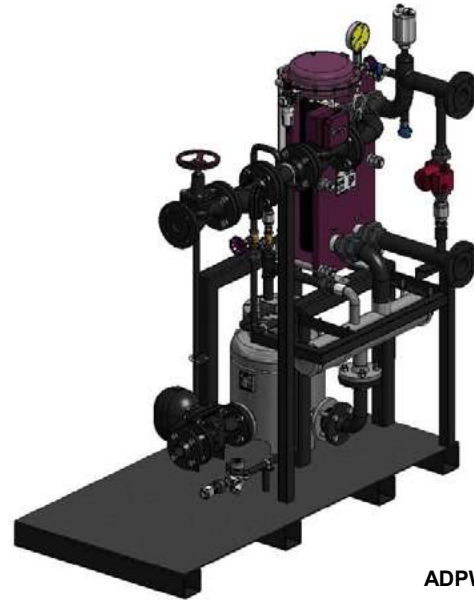


ADPWHU.11.6370

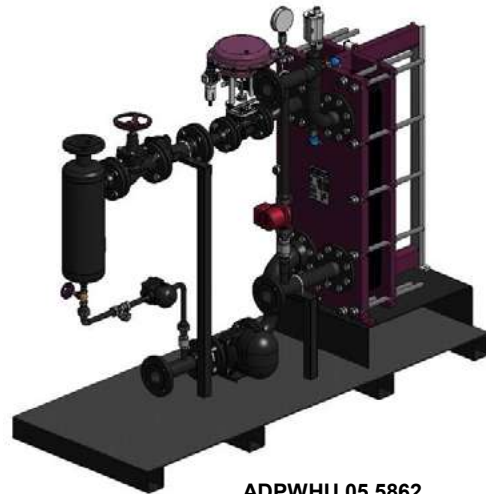




ADPWHU.03.5857



ADPWU.06.5870



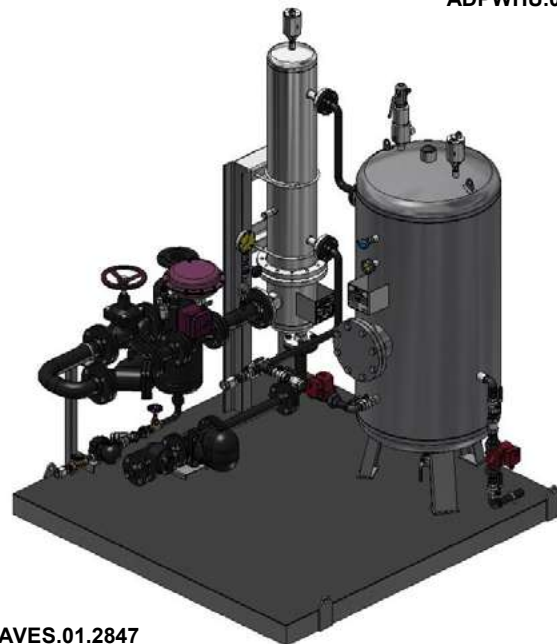
ADPWHU.05.5862



ADPWHU.04.5858



ADWAVEP.02.2848



ADWAVES.01.2847



**ADCATHERM FRECO
FLASH STEAM HEAT RECOVER**

DESCRIPTION

The Adcatherm Freco – flash steam heat recovery unit – is a skid mounted package unit to facilitate heat recovery from flash steam, condensate or both.
The Freco is specially recommended for heating a continuous flow of fluid, such as make-up water to a boiler feed water system.
Non-continuous flow applications may require additional recirculation, relief valves, or other devices, to avoid system damage due to overheating and consequent overpressure.

It is known that the condensate return and its recovery is beneficial and ensures a remarkable energetic efficiency. However, the condensate, which is initially at high temperatures, ends up expanding and losing most of its energy through the formation of flash steam. On the other hand, feed water temperatures higher than 90 °C to the boiler feed pumps when coming from atmospheric vessels will normally cause cavitation on the pumps with all the consequent damages.

The Freco system prevents this problem since it is installed downstream of the pumps, using the high pressures which can be found there, allowing the condensate heating above 100 °C, without the existence of any boiling, and naturally eliminating the chances of cavitation.

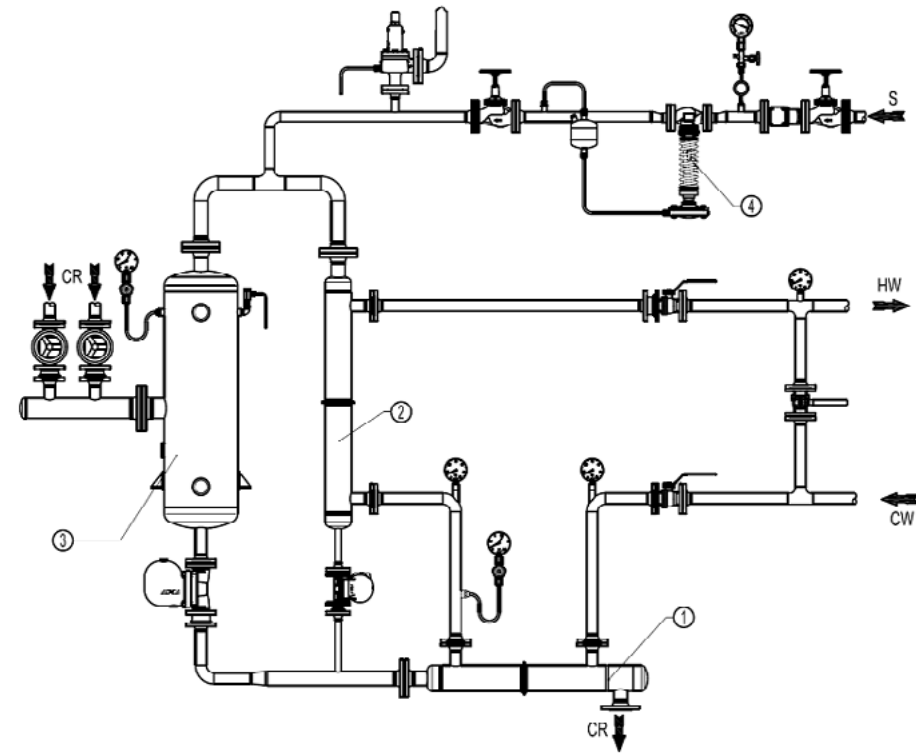
MAIN FEATURES

Different types of materials and designs available, according to the application.

- OPTIONS: Atmospherically vented units, to avoid extra back pressure in the condensate return system.
- USE: Steam, water, hot condensate and other fluids compatible with the construction.
- ORDER REQUIREMENTS: Condensate flow rate and temperature.
 Make-up water flow rate and temperature.
 Operating pressures.
 Steam boiler(s) capacity and operating pressure.



TYPICAL INSTALLATION



The condensate return (CR) is expanded on a flash vessel (3). The flash steam which is produced there and the remaining condensate are then directed to the respective heat exchangers (1 e 2) where, in the meanwhile, the pressurized feed water (CW) is heated (HW) before it passes to the economizer or is directly introduced in the steam boiler (it is recommended to install a by-pass from CW to HW).

The final condensate will then be recovered to the condensate tank, not being at this stage sufficiently hot to cause the feed water overheating.

A pressure reducing station (4) may be considered to ensure the thermal stability of the system.

