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Alfa Laval SHE Cond

Standard spiral heat exchanger for two-phase applications

Introduction

Engineered for two-phase applications, the Alfa Laval SHE Cond is a robust and powerful technology. This spiral heat exchanger range offers a broad spectrum of standard models with a wide variety of diameters and heat transfer surface areas. It can be used to handle very large vapour flows and/or very low pressure drop.

Applications

The Alfa Laval SHE Cond range of spiral heat exchanger are designed for condensing, reflux condensing, reboiling, gas cooling and heating, even in presence of very large vapour or gas flows and/or very low pressure drop. Their high heat transfer efficiency and versatility make them suitable for replacing shell & tubes or other types of heat exchangers for any kind of condensing or reboiling duty.

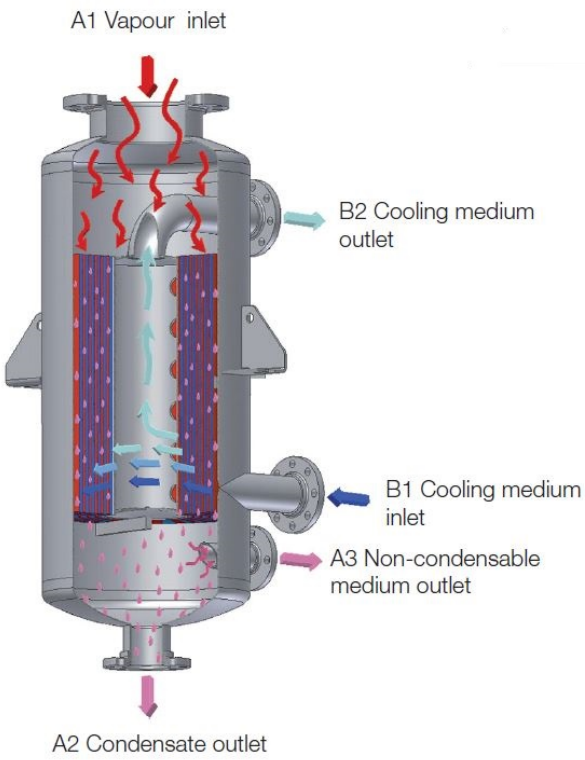
Benefits

- Very low pressure drop and large flow volumes on the cross flow vapour side
- Drastically reduced fouling thanks to the single channel design on cooling circuit
- Full drainability on process (vapour) side
- High versatility
- Minimal space requirement due to very compact design

Working principle

The SHE Cond spiral heat exchanger features one medium in spiral flow while the other is in cross flow, parallel to the axis of the spiral element. The channel with the medium (generally cooling media) in spiral flow is welded shut on each side while the medium in cross flow (generally vapours) passes through the open spiral element. This design combines high liquid velocity in the closed spiral channel with large flow volumes and low pressure drop on the cross flow vapour side.

The single-channel construction eliminates bypassing and reduces fouling. The turbulence of the fluid in the channel constantly flushes away any scaling or deposits as soon as they form. If fouling occurs, thus diminishing the cross section of the channel, the velocity increases and scrubs away deposits at the exact zone affected.



Minimal vapour pressure drop can be easily achieved, so that high-capacity vacuum systems are not needed. A large crossflow area within a short flow length allows the handling of large volume flows in a single unit.

The compact design of the Alfal Laval SHE Cond also provides easy access on the process side. High turbulence ensures a low risk of fouling on the cooling side. If cleaning is needed, chemical cleaning on the cooling side is very efficient because of the single-channel construction.

Technical data

Standard materials	
Heat transfer surface	316L
Shell	316L
Flange	316L (EN 1092-1 PN16 / ASME B16,5 150 lbs)

Minimum design temperature: -100 °C (-148 °F)

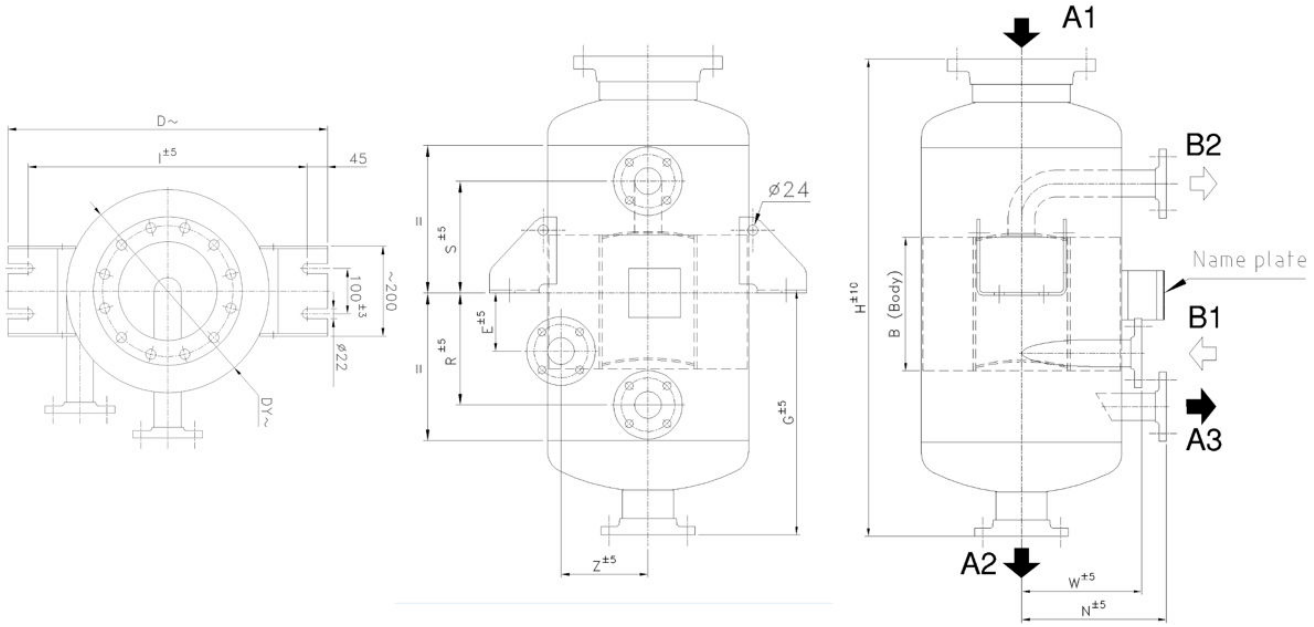
Other design conditions may be available on request

Maximum Allowable Working Pressure (with full vacuum)

Model	150	250	300	400	°C (°F)
1S & 1SD	7,5 (108)	6,5 (94)	6 (87)	5,5 (80)	barg (psig)
2S	7,5 (108)	6,5 (94)	6 (87)	5,5 (80)	barg (psig)
4S	7 (101)	6 (87)	5,5 (80)	5 (72)	barg (psig)
4L	7 (101)	6 (87)	5,5 (80)	5 (72)	barg (psig)
8L	7 (101)	6,5 (94)	6 (87)	5,5 (80)	barg (psig)
14L	7 (101)	6 (87)	5,5 (80)	5 (72)	barg (psig)
30L	7,5 (108)	6,5 (94)	6 (87)	5,5 (80)	barg (psig)
60L	7,5 (108)	6,5 (94)	6 (87)	5,5 (80)	barg (psig)

Design according to ASME VIII Div.1 and to PED

	Heat transfer area	Dy	H	Spacing	Nozzles A1/A2	Nozzles A3	Nozzles B1 / B2	Weight (empty)
Model	$m^2(ft^2)$	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	kg (lbs)
1S	1 (11)	273 (11)	500 (20)	A=5 (0.2) / B=8 (0.3)	250 (10) / 250 (10)	50 (2)	50 (2) / 50 (2)	75 (165)
1SD	1 (11)	273 (11)	640 (25)	A=5 (0.2) / B=8 (0.3)	100 (4) / 50 (2)	50 (2)	50 (2) / 50 (2)	91 (201)
2S	2 (21)	400 (16)	950 (37)	A=B= 5 (0.2)	200 (8) / 100 (4)	50 (2)	50 (2) / 50 (2)	100 (220)
4S	4 (43)	450 (18)	1070 (42)	A=B= 5 (0.2)	200 (8) / 100 (4)	50 (2)	50 (2) / 50 (2)	150 (330)
4L	4,5 (48)	500 (20)	1090 (43)	A=5 (0.2) / B=8 (0.3)	200 (8) / 100 (4)	50 (2)	50 (2) / 50 (2)	180 (397)
8L	8,2 (88)	500 (20)	1410 (55)	A=5 (0.2) / B=8 (0.3)	250 (10) / 100 (4)	50 (2)	80 (3) / 80 (3)	300 (661)
14L	14,4 (155)	650 (26)	1580 (62)	A=5 (0.2) / B=12 (0.5)	250 (10) / 100 (4)	80 (3)	100 (4) / 100 (4)	450 (992)
30L	30,7 (323)	800 (32)	1830 (72)	A=5 (0.2) / B=12 (0.5)	300 (12) / 100 (4)	80 (3)	100 (4) / 100 (4)	900 (1984)
60L	56,1 (603)	800 (32)	2490 (98)	A=5 (0.2) / B=10 (0.4)	300 (12) / 100 (4)	80 (3)	150 (6) / 150 (6)	1400 (3086)



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