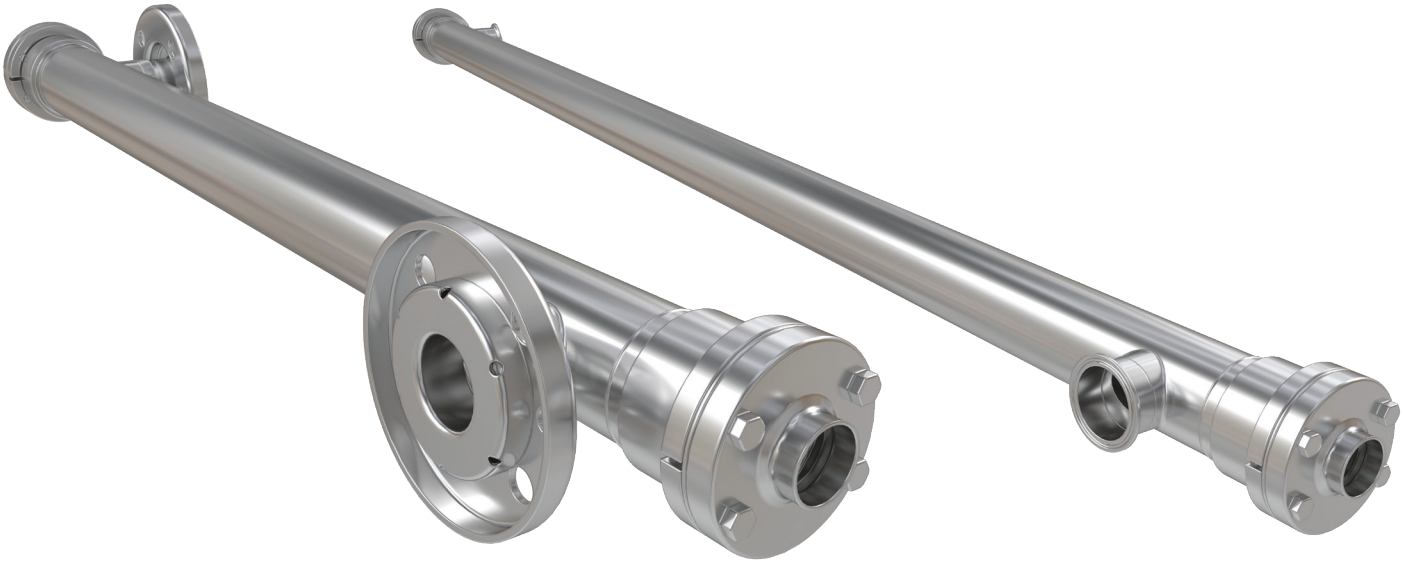
Tetra Pak® Tubular Heat Exchanger S and SA



Introduction

The Tetra Pak® Tubular Heat Exchanger S and SA is a single-pass shell-and-tube heat exchanger. The fluid to be heat treated flows through a group of parallel, small diameter inner tubes with the medium (water, steam or glycol) flowing between and around these. The inner tubes are corrugated, for increased turbulence and heat transfer.

Benefits

- Robust, reliable and durable
- Hygienic design
- Compact and easy to install

Applications

- Indirect, in-line heating or cooling of water
- CIP solutions
- Process water or food product

Features

The unit has a reliable, durable, safe and hygienic design. The small size makes it easy to install.

The heat transfer surface consists of a group of straight inner tubes welded into a tube case at each end. O-rings seal the tube cases from the shell. This design with floating, not fixed or welded, parts absorbs thermal expansion and eliminates the risk of cracking and stress corrosion. It also allows for easy inspection and maintenance.

The heat exchanger is available in seven sizes (SA1 to S4). The standard design fulfils the requirements of the majority of our customers. The unit can also be customized and is available in a variety of heavy duty designs.

The unit can be installed horizontally or vertically, in a frame or on a wall if there's a shortage of floor space. Vertical mounting is recommended when steam is used as heating medium.

Standard design

Material

- Shell: Pressure vessel steel, 1.4404 (AISI 316 L)
- Tube insert: Pressure vessel steel, 1.4404 (AISI 316 L), corrugated

Connections

- Shell side
  - » Inlet: flange PN16 [E]*
  - » Outlet: Socket BSP2" for all models except SA that have flange
- Tube insert side: Flange with welding end [G]
- Shell side for other designs:
  - » Inlet: flange PN16 [E]*
  - » Outlet: socket BSP or flange PN16 [F]

Approval

Approved for below specified temperature and pressure range according to the European pressure equipment directive – PED 2014/68/EU, category I.

- Optional flanges are suitable for standards of EN1092-1 as well as ANSI
- Max design pressure: See tables
- 3-A approval for all models

Design temperature: 180 °C (356 °F).

Max design pressure	SA1	SA2	S0	S1	S2	S3	S4	S4
Tube insert bar(g)	50	50	40	32	23	16.9	11	32
Shell bar(g)	16	16	16	16	9	8	6	8
Category	I	I	I	I	I	I	I	II

Capacity

Temperature (in/out)	SA1*	SA2	S0	S1	S2	S3	S4
50 °C/ 70 °C	3 200	11 500	20 100	30 300	42 500	54 200	100 000
60 °C/ 80 °C	2 500	8 800	15 500	23 600	31 900	42 000	91 800
70 °C/ 90 °C	1 700	6 400	11 400	16 600	23 100	28 600	71 000

*at 600kPa absolute steam pressure

Max flow rate in kg/h for pre-defined temperature intervals at 300 kPa absolute steam pressure and 15 % margin.

Optional Equipment

- Tube pusher
- Counter flange(s) for flange PN16
- Insulation

Other designs and option

Connections

Tube insert side [G]: Eccentric reducer with welding end.
Shell side for the standard design [E+F]:

	SA1 & SA2	S0	S1	S2	S3	S4
Clamp - ISO 2852 (mm)	51	63.5	76	104	104	104
Flange PN 16*						
DIN	DN40	DN65	DN65	DN100	DN100	DN100
ANSI (inches)	2	3	3	4	4	4

Heavy duty design

Approval according to PED 2014/68/EU, category II.
Design temperature: 210 °C (410 °F).

Max design pressure	S0 HD	S1 HD	S2 HD	S3 HD	S4 HD
Tube insert bar(g)	40	40	40	32	32
Shell bar(g)	16	15	14	14	14

Approval according to MHLW

Design temperature: 160 °C (320 °F)

Max design pressure	S0	S1	S2
Tube insert bar(g)	30	22	20
Shell bar(g)	12	12	10

* The dimension of the flanges means that a counter flange fits from both:
DN65: PN16 EN1092-1 and ASME/ANSI B16.5 NPS3 Class150
DN100: PN16 EN1092-1 and ASME/ANSI B16.5 NPS4 Class150

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Unit data

	SA1	SA2	S0	S1	S2	S3	S4
Shell							
Diameter (mm)	70	70	85	108	129	153	153
Volume (l)	1.8	3.8	5.5	9.3	13.5	28.8	28.8
Nr. of inner tubes	7	7	12	19	27	37	37
Diameter (mm)	16	16	16	16	16	16	16
Volume (l)	1.1	2.2	3.8	6.1	8.6	11.8	17.8
Heat transfer Area (m^2)	0.3	0.6	1.1	1.7	2.4	3.3	5.1
Weight (Kg)	11	16	32	43	58	72	78

Measurements

	SA1	SA2	S0	S1	S2	S3	S4
A (mm)	720	1 720	1 720	1 720	1 700	1 700	2 700
B (mm)	1 016	2 016	2 028	2 034	2 038	2 038	3 038
C (mm)	85	85	102	114	124	137	137
D (mm)	85	85	80	92	102	115	115
E							
DIN	DN40	DN40	DN65	DN65	DN100	DN100	DN100
ANSI (inches)	2	2	3	3	4	4	4
F (inches)	DN40	DN40	2	2	2	2	2
G (mm)	38x1,6	38x1,6	51x1.5	63.5x1.6	76.1x1.6	104x2	104x2
H (mm)	148	148	154	157	169	169	169

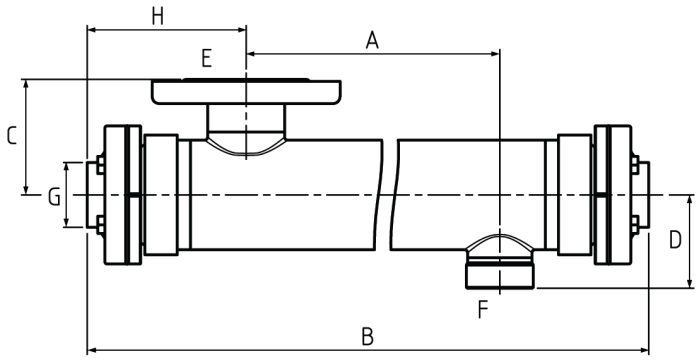
The measurements refer to the standard design.

Information requested for quotation

- Fluid to be heat treated
- Required flow rate
- Inlet and outlet temperatures for the processed fluid
- Medium (e.g. water, steam, glycol)
- Properties of the medium (temperature or steam pressure)
- Final customer country

Environment

The amount of energy consumed is depending on the duty the specific heat exchanger is performing. Utility consumption and heat recovery are optimised for each specific case. All Tetra Pak Tubular Heat Exchangers consist of parts that can be separated for recycling purposes.



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