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Heat transfer solutions for low to high fouling products

Contherm™ scraped-surface heat exchanger

Applications

The Contherm™ scraped-surface heat exchanger (SSHE) has found use within many different processes and applications for manufacturing food, chemicals, pharmaceuticals, cosmetics, health and beauty products, etc. It is particularly suited for processing viscous, heat sensitive, sticky or chunky (containing particulates) products that are to be pumped.

It can be used in a broad range of processing environments, including: aseptic, heating, slush-freezing, sterilization, cooling, pasteurization, crystallization and phase change.

Design

The standard design of Contherm includes:

- Standard execution is vertically mounted on a column. The column needs to be secured to either a wall or the ceiling.
- Rotor is driven by electrical motor installed on upper end of the unit.
- Rotor is placed on ball bearings. Mechanical seals at each end of Contherm prevent product leakage and external contamination.
- Rotating scraping blades are secured to pins welded to the rotor.
- A hydraulic lifting device provides an easy way to lower the rotor and blades for maintenance and inspection.
- Tangential inlet/outlet ports provide gentler handling of the product, resulting in better product integrity and quality, by allowing product to enter and exit cylinder in same direction as the turning rotor.
- It is designed to comply with the most stringent industry standards. USDA and 3A hygienic design certifications are available for special executions.
- Contherm is manufactured according to ASME and PED. Other pressure vessel codes are available on request.

The Contherm SSHE can operate with a large flexible range of media types, such as: steam, thermal oil, water, glycol, brine, Freon™ or ammonia and other liquified gas refrigerants.

Working principle

Product enters the cylinder through the lower product head and flows upwards through the cylinder. At the same time, the heating/cooling media travels in counter-current flow through the narrow annular channel between the heat transfer wall and the insulated jacket.



Contherm SSHE model 6x6

Rotating blades continuously remove product from the cylinder wall in order to ensure uniform transfer of heat between media and product. An optional coil in the annulus increases media velocity, adding to the heat transfer efficiency.

Product exits the cylinder through the upper tangential port. On start-up, air is completely purged from the Contherm. At the end of a processing run, the product can be drained or “chased-out” by water resulting in minimal product loss.

Scraper configuration, rotor diameter and rotor speed can be varied to suit the properties of the particular product flowing through the cylinder.

Numerous Contherm configurations are available. Trained, knowledgeable Alfa Laval staff are able to customize each Contherm unit by selecting the appropriate materials, features and options to meet each customer's exact requirements.

Flow Rate

The Contherm's maximum flow rate is application specific and determined by the temperature program, nature of the product, and type of duty.

Specifications:

Working Temperature:

Product side: -35°C to +170°C (-30°F to +338°F)
 Media side: -35°C to +170°C (-30°F to +338°F)

Maximum Working Pressure:

Product side: 20 bar (300 psig) and full vacuum
 Media side: 17 bar (250 psig)

Connection:

Product side:

51 mm / 2 inch DIN, Tri-clamp, SMS, other
 76 mm / 3 inch DIN, Tri-clamp, SMS, other

Media side:

51 mm / 2 inch Upper - NPT or flange
 37 mm / 1 1/2 inch Upper - NPT or flange

Materials

The heating surface is made in 316 L stainless steel, honed to a very high finish on the inner surface. The scraping blades are made of Alfalon® III, Nylon and Teflon material.

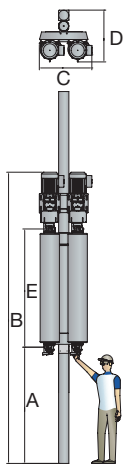
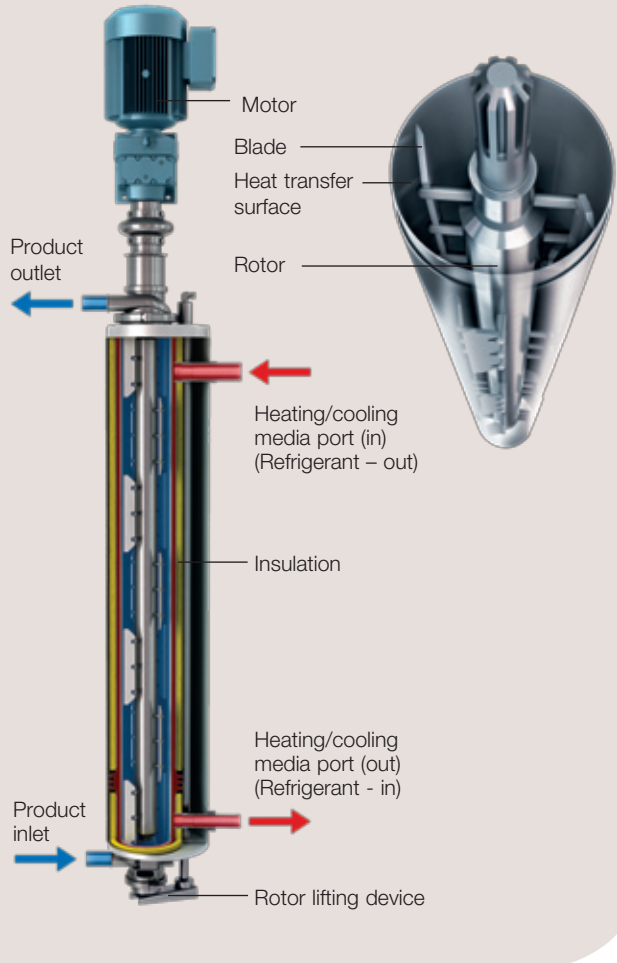
The seals are made of single carbon mechanical, carbon flushed / aseptic, hard face and hard face flushed / aseptic. Suitable materials will be selected for special applications.

Optional Features

The following optional design features are available:

- Alternative mounting configurations, including a horizontal option for use in facilities with limited ceiling height
- Control panel with automatic maintenance status feature to prevent product freezing if flow is interrupted
- Refrigeration (accumulator) or heating/cooling valve packages.
- Rotors in different sizes: 76 mm / 3 inch diameter, 102 mm / 4 inch diameter, 114 mm / 4.5 inch diameter, 127 mm / 5 inch diameter
- 27 barg product-side pressure rating is available

Contherm scraped-surface heat exchanger



Metric system		Technical information							Net weight	Floor space
Model	Heating surface m ²	A mm	B* mm	C mm	D mm	E mm	kg	m ²		
6x3	0.279	854	2502	864	933	717	140	0.33		
6x6	0.557	1387	3645	864	933	1326	234	0.33		
6x9	0.836	1997	4864	864	933	1936	274	0.33		
6x11	1.020	2355	5689	864	933	2205	306	0.33		

American system		Technical information							Net weight	Floor space
Model	Heating surface ft ²	A in	B* in	C in	D in	E in	lb	ft ²		
6x3	3.0	33.6	98.5	34.0	36.8	28.2	308	3.6		
6x6	6.0	54.6	143.5	34.0	36.8	52.2	515	3.6		
6x9	9.0	78.6	191.5	34.0	36.8	76.2	605	3.6		
6x11	10.5	92.7	224.0	34.0	36.8	86.8	675	3.6		

* The height may vary depending on the size of the motor

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