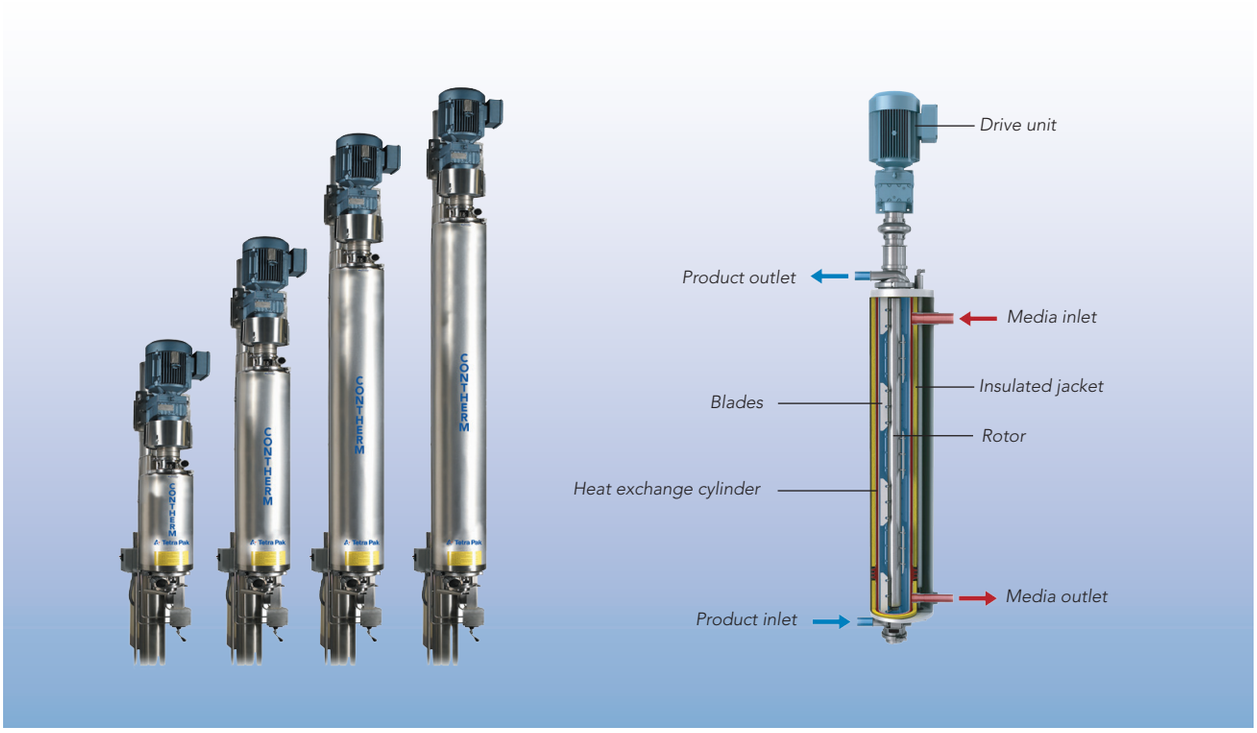
Contherm®

Scraped-surface heat exchanger



Application

The Contherm scraped-surface heat exchanger is particularly suited for continuous heating and cooling of viscous, sticky, heat-sensitive and particulate food products. It can operate with a wide range of media products.

Working principle

The product is pumped into the lower end of the heat exchanger cylinder. As the product flows through the cylinder, it is continuously agitated and removed from the cylinder wall by the scraping blades. The scraping action results in a surface free from fouling deposits and a uniform, high heat transfer rate.
The media flows in counter current direction in the annular space between the heat transfer cylinder and the insulated jacket. A spiral coil provides a higher heat transfer efficiency for steam and liquid media.
Rotor driving is achieved by an electric motor installed on the upper shaft end. Rotor speed and product flow can be varied to suit the application.
On start-up, air is completely purged from the product area. At the end of a processing run, the product can be purged by water resulting in minimal product loss.

Contherm scraped-surface heat exchangers can be connected in series for in line heating and cooling.

Standard design

The Contherm scraped-surface heat exchanger utilises a modular design for vertical mounting on a wall or column and includes:

- Scraped-surface heat exchanger cylinder
- Rotor driven by electric motor on upper shaft end of the unit
- Rotor placed on ball bearings and mechanical seals at each end
- Scraping blades secured by pins welded to the rotor
- Staggered blades to prevent channeling of product
- Hydraulic lifting device for easy lowering of rotor, for easy inspection and maintenance
- Tangential product inlet/outlet ports provide gentle treatment of the product
- The aseptic technology-based design complies with ASME, PED and 3A standards.

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Material

The heating surface is normally made of stainless steel, 1.4404 (AISI 316L), honed to a very high finish on the inner surface.
For special applications different types of chrome coatings are available for the heating surface. The scraping blades are available in stainless steel and different types of plastic materials including a metal detectable type. The blade material and configuration is selected based on the application.
Gaskets and O-rings are made of Viton, nitrile or Teflon. Suitable material will be selected for each application.
Single seals, flushed (aseptic) seals, or Huhnseals are available, with material selection depending on the application.

Technical data

Contherm models	Heating surface m^2 (ft^2)	Net weight (without motor) kg (lb)
6 x 3	0.28 (3.0)	140 (308)
6 x 6	0.56 (6.0)	232 (515)
6 x 9	0.84 (9.0)	274 (605)
6 x 11	1.0 (11)	309 (683)

The inner cylinder diameter is 152 mm (6 inch) in all models.

Working temperature

From -34°C (-38°F) to 170°C (338°F).

Maximum working pressure

Product side	20 bar (300 psig), optional 27 bar (400 psig)
Media side	17 bar (250 psig), optional 48 bar (700 psig)

Connections

Product side	51 mm (2 inch) or 76 mm (3 inch), SMS, DIN or clamp
Media side	upper 51 mm (2 inch), NPT or flange lower 37 mm (1,5 inch), NPT or flange

Capacity

The maximum flow rate is application specific and determined by the temperature program, the product properties and type of duty.

Environment

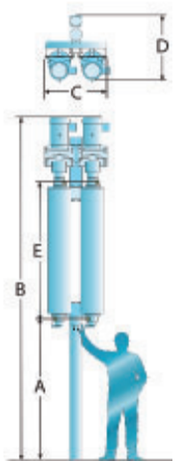
The amount of energy consumed is depending on the duty the specific heat exchanger is performing. Utility consumption is optimised for each specific case. To reduce heat losses, the heat exchange cylinder is insulated as a standard feature.
The Contherm heat exchangers are built in a modular design, which makes them easy to rebuild and adapt for new applications.
The Contherm heat exchangers consist of parts that can be separated for recycling purposes.

Dimensions

Measurements in mm (inch) with direct drive motor

Model	A	B	C	D	E	Footprint* m^2 (ft^2)
6 x 3	854 (33.6)	2 502 (98.5)	864 (34.0)	935 (36.8)	717 (28.2)	0.33 (3.6)
6 x 6	1 387 (54.6)	3 645 (143.5)	864 (34.0)	935 (36.8)	1 326 (52.2)	0.33 (3.6)
6 x 9	1 997 (78.6)	4 684 (191.5)	864 (34.0)	935 (36.8)	1 936 (76.2)	0.33 (3.6)
6 x 11	2 356 (92.7)	5 689 (224.0)	864 (34.0)	935 (36.8)	2 206 (86.8)	0.33 (3.6)

** for one single Contherm unit*



Optional equipment

- Drive motors of different types and different power configurations, also in explosion - proof design
- Nickel or chromed nickel cylinder or 1.4404 (AISI 316L) HIPEX stainless steel cylinder or cylinder of corrosion resistant alloy
- Rotor diameters; 76 mm (3 inch); 102 mm (4 inch); 114 mm (4,5 inch); 127 mm (5 inch)
- Specially designed low shear, particulate rotor, 51 mm (2 inch) diameter
- High torque spline rotor
- Water tempered rotor
- Horizontal mounting configurations
- Mounting columns (vertical/horizontal)
- Eccentric rotor

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