







Scraped surface heat exchanger

Why a Terlotherm scraped surface heat exchanger?

Many prepared foods and other products prevent optimal heat transfer because of their consistency. For example, food containing large particles, viscous, sticky and crystalline products can quickly block or foul certain types of heat exchangers. Scraped surface heat exchangers incorporate special design features which make them ideal for heating and cooling products that impair good heat transfer. As the product is pumped through the SSHE cylinder, even temperature distribution is ensured by a rotor and blade assembly, which continually and gently blends the product, while simultaneously removing it from the heat transfer surface.

The Terlotherm is a vertical scraped surface heat exchanger with two concentric heat exchange surfaces to provide optimum heat transfer. This design, together with other features, offers the following advantages::



- Vertical unit, which gives a large heat exchange surface area, and gives a small foot print so valuable production floor space area, is not required. Our largest machine gives more than eight times the surface area than conventional equipment.
- One mechanical seal. All other types of equipment have a minimum of two seals, and require a lot of time to replace the seals. The seal in the Terlotherm can be changed very quickly. No special hydraulic system is required either as in other conventional equipment.
- Simple inspection of the interior of the machine via the top lid, which can be opened without tools. There is no need to disturb seals or remove shafts.
- For maintenance purposes the equipment is easily accessible and simple to clean.
- All product contacting parts are of FDA approved material.
- The machine is designed in such a way that the heat exchange surfaces can easily be separated in case either surface needs to be refinished or replaced.

- The heat exchange surfaces are not provided with potentially dangerous materials such as chromium or other materials, but are of solid high quality stainless steel, thus avoiding the danger or contamination of the product.
- The Terlotherm operates utilizing low pressures and low rpm's, but still maintains the same tip speeds of the scraper blades as other units that run at much higher rpm's and pressures. This is due to our unique design of the double wall cylinder. This is a key advantage when you have very sensitive or complex products that can be easily damaged with too much pressure or too high rpm's.
- Due to the modular building design the heat exchange capacity can be increased by replacing the cylinders instead of the complete machine.
- Efficient heat transfer is achieved by continuous scraping or the entire heat exchange surface.
- The Terlotherm has been approved with USDA, U-Stamp and ASME codes.

Products and processes

Typical products processed by the Terlotherm:

Sauces & condiments:

- Mayonnaise
- Ketchup
- Starch paste
- **BBQ** sauce
- Mustard
- Alfredo sauce
- Cranberry sauce
- Marinara sauce
- Gravies
- Cheese sauce
- Tartar sauce
- Salad dressing
- Chili
- Hummus
- Salsa
- Tapenade
- Olive paste

Confectionary:

- Caramel
- Chocolate
 - Compounds
- Wafer cream
- Fondant

- Jelly
- Fudge
- Marshmallow
- Waffle batter
- lcing
- Syrup
- Crème patisserie

- Dairy:

- MPC

- Aseptic fruit
- Fruit preps
- Marmalade
- Chutney
- Apple sauce
- Pie filling
- Smoothie

Meat products:

- Taco filling
- MDM
- Pet food

Personal care:

- Ointments
- Lotions
- Gels
- Vaseline
- Waxes

General:

- Peanut butter
- Potato mash
- Egg







Wax, emulsion cooling crystallization line





- Yoghurt
- Quark
- Dairy creamer
- Ice cream mix
- Cream cheese

Fruit:

The Terlotherm can handle particles up to 1 inch.



Terlotherm[®] advantages and applications

Advantages

- Scrapers can easily be replaced without tools
- Can be CIP cleaned and SIP sterilized
- Product area inspection without removing seal
- Lid can be opened with quick clamp system
- Large heat exchange area with small footprint
- Tangential inlet
- Acceleration and deceleration area
- No damage to product
- Maintenance-friendly; only one seal and one drive
- Exchangeable cylinders

Applications

- Heating
- Aseptic cooling
- Deep-cooling
- Crystallization
- Tempering
- Sterilization
- Pasteurization
- Polymerization
- Gelling



Terlotherm[®] Laboratorium skid

- R&D purposes
- Small batch sizes
- 50-100 L per/hour
- Inline heating and cooling
- Optional modular product holding section for variable time temperature combination
- Data login system for storing all necessary test parameters



The scraper

The scraper blades are manufactured of a high quality X-ray and metal detectable synthetic material, which is tasteless, non-toxic and contains no undesirable reinforcing material such as glass fibers, etc. The chemical resistance is very high, were as the water absorption is extremely low. Bacteriologically this synthetic material is inert.





Terlotherm model	Heat exchange surface area m2	Annular product space mm	Total height mm	Footprint m2	Number of scrapers	Scraper peripher- al velocity m/s	Product inlet NW	Product outlet NW	Medium inlet in- ner cylinder inch	Medium inlet out- er cylinder inch	Medium outlet inner cylinder inch	Medium outlet outer cylinder inch	Maximum pressure product area barg	Maximum pressure medium area barg	Cooling medium flow rate m3/hr
∆ Lab	0.3	50	855	0.5	16	0,5-3,0	25	25	1/2	1/2	1/2	1/2	5	4	2
∆ 50	0.5	50	1345	1.0	8	0,5-3,0	65	65	1	1.5	1	1.5	10	6	8
∆ 100	1.0	50	1675	1.0	16	0,5-3,0	65	65	1	1.5	1	1.5	10	6	8
∆ 150	1.5	50	1985	1.0	24	0,5-3,0	65	65	1	1.5	1	1.5	10	6	15
∆ 200	2.0	50	2305	1.0	32	0,5-3,0	65	65	1	1.5	1	1.5	10	6	15
∆ 450	4.5	50	2475	1.4	48	0,5-3,0	80	80	1.5	2	1.5	2	10	6	25
∆ 700	7.0	50	3115	1.4	72	0,5-3,0	80	80	2	3	2	3	10	6	45



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