

Terlotherm[®] Delta series

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,

an even temperature distribution is ensured by a rotor and blade assembly, which continuously 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 cylinders 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 but covers a small footprint saving valuable production floor space area. Our largest machine saves more than 7 times the surface area than conventional equipment.
- One mechanical seal construction. 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 as it is with other conventional equipment.
- Simple inspection of the interior of the machine via the top lid, which can be opened without special tools. There is no need to disturb the seal or pull the shaft while replacing the scrapers.
- For maintenance purposes the equipment is easily accessible and simple to clean.
- Both the inner and outer cylinder can be dismantled for refurbishment or replacement.
- All product contacting parts are FDA approved material.
- 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 a low rpm, but still maintains the same tip speeds of the scraper blades as other units that run at much higher rpm and pressures. This is due to our unique design of the double wall cylinder. This is a key advantage for very sensitive or complex products that can be easily damaged with too much pressure or too high rpm.
- Due to the modular building design the heat exchange capacity can be increased by exchanging only the cylinders for larger ones instead of the complete machine.
- Efficient heat transfer is achieved by continuous scraping of the entire heat exchange surface.
- The Terlotherm® has been approved with USDA, U-Stamp, PED, ASME codes and the Chinese Pressure Vessel Directive.
- High food safety with the availability of X-ray and metal detectable scrapers and seals.



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



DAIRY:

- /// Pudding
- /// WPC
- /// MPC
- /// Yoghurt
- /// Quark
- /// Dairy creamer
- /// Ice cream mix
- /// Cream cheese



PERSONAL CARE:

- /// Ointments
- /// Lotions
- /// Gels
- /// Vaseline
- /// Waxes



CONFECTIONARY:

- /// Caramel
- /// Chocolate
- /// Compounds
- /// Wafer cream
- /// Fondant
- /// Jelly
- /// Fudge
- /// Marshmallow
- /// Waffle batter
- /// Icing
- /// Syrup
- /// Crème patisserie



FRUIT:

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



MEAT PRODUCTS:

- /// Taco filling
- /// MDM
- /// Pet food

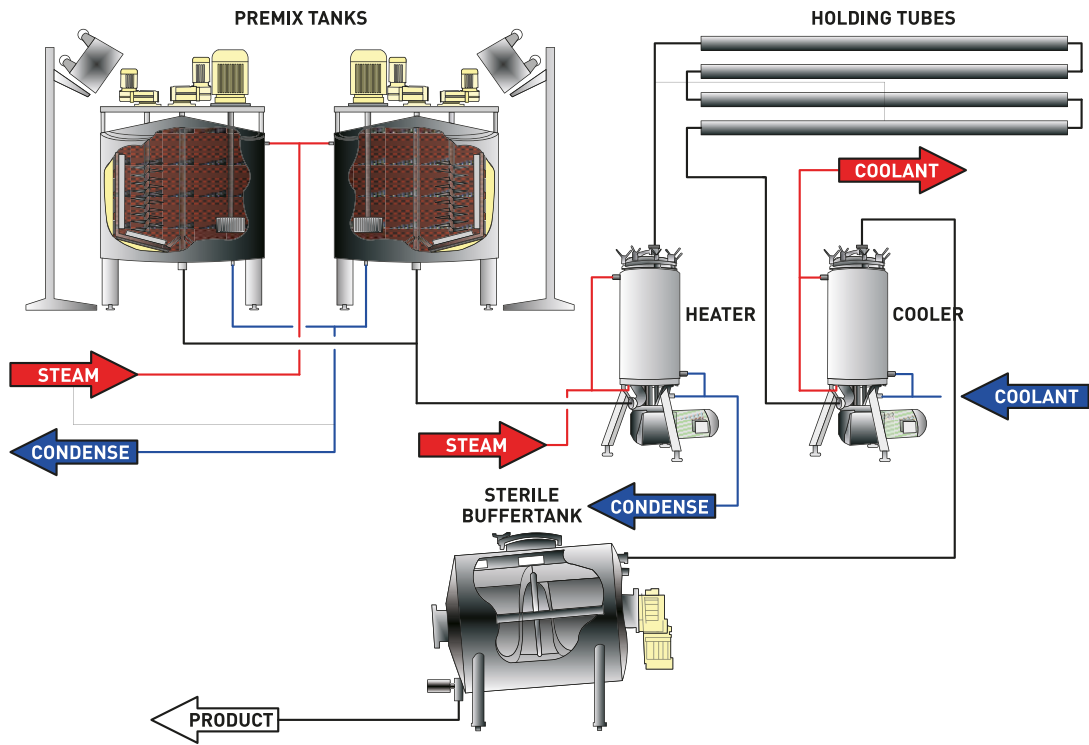


GENERAL:

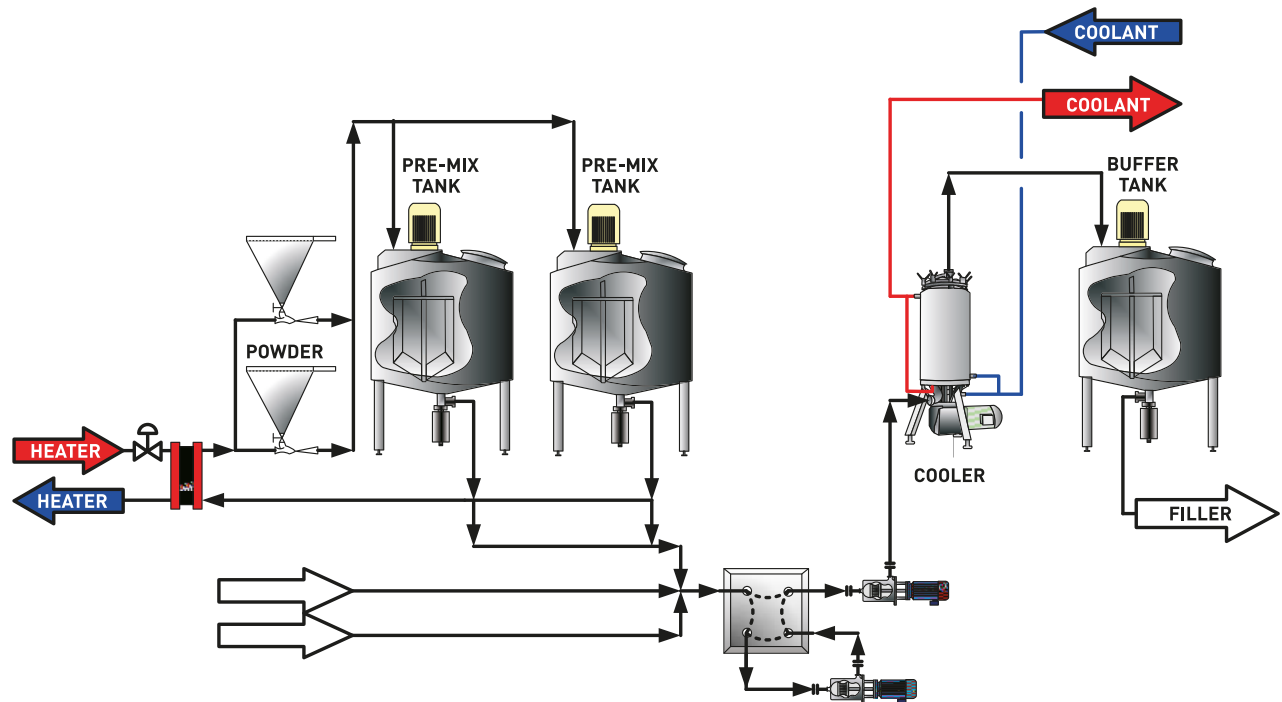
- /// Peanut butter
- /// Potato mash
- /// Egg



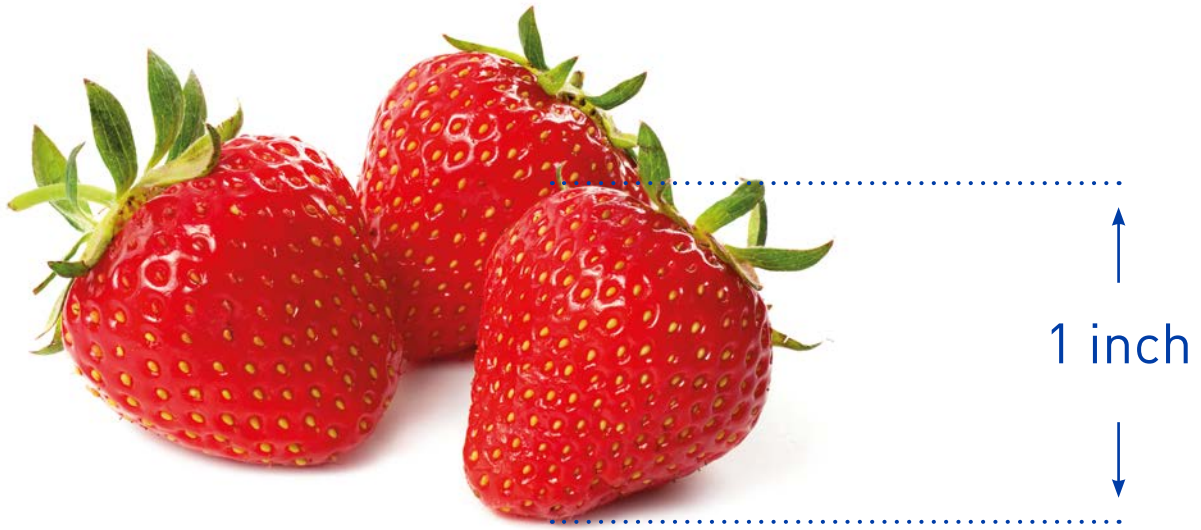
CONTINUOUS HTST PASTEURIZATION HEATING AND COOLING LINE



WAX, EMULSION COOLING CRYSTALLIZATION LINE



The Terlotherm[®] can handle particles up to 1 inch.



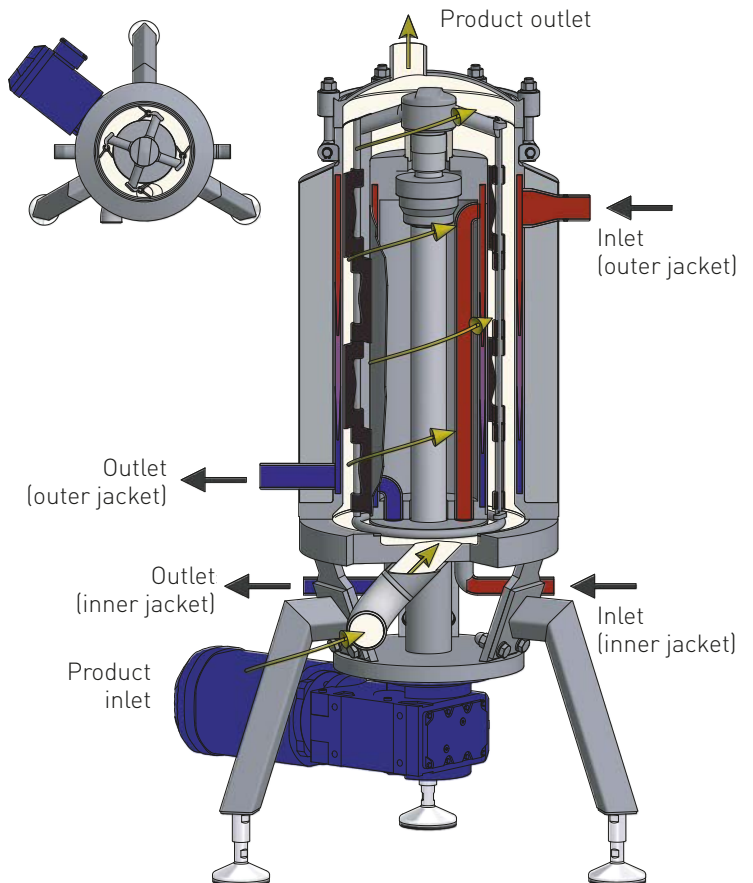
Terlotherm[®] advantages and applications

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
- /// Metal detectable scrapers and seals available

APPLICATIONS

- /// Heating
- /// Aseptic cooling
- /// Deep-cooling
- /// Crystallization
- /// Sterilization
- /// Pasteurization
- /// Gelling



Terlotherm® modules and system integration

An increasing amount of customers are preferring the Terlotherm® as a turn key module or system above using it as only as a component. With our process knowledge and manufacturing capabilities Terlet can design such a turn key solution in a great variety of configurations. From a simple stand alone machine for

heating or cooling with local automation, up to a complex pasteurization/holding/cooling system controlled via a central automation system in the factory. For these, and other solutions, Terlet is your reliable partner.

Terlotherm® Laboratorium skid

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



Terlotherm® scrapers & seals

The scraper blades and the seals can be supplied with a high quality X-ray and metal detectable 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 m ²	Annular product space mm	Total height mm	Footprint m ²	Number of scrapers	Scraper peripheral velocity m/s	Product inlet NW	Product outlet NW	Medium inlet inner cylinder inch	Medium inlet outer cylinder inch	Medium outlet inner cylinder inch	Medium outlet outer cylinder inch	Maximum pressure product area barg	Maximum pressure medium area barg
Delta Lab	0.3	30	925	0.5	16	0.5-3.0	25	25	½	½	½	½	10	4
Delta 50	0.5	50	1250	1.0	8	0.5-3.0	65	65	1	1 ½	1	1 ½	10	6
Delta 100	1.0	50	1567	1.0	16	0.5-3.0	65	65	1	1 ½	1	1 ½	10	6
Delta 150	1.5	50	2057	1.0	24	0.5-3.0	65	65	1	1 ½	1	1 ½	10	6
Delta 200	2.0	50	2379	1.0	32	0.5-3.0	65	65	1	1 ½	1	1 ½	10	6
Delta 450	4.5	50	2536	1.4	48	0.5-3.0	80	80	1 ½	2	1 ½	2	10/15	6
Delta 700	7.0	50	3205	1.4	84	0.5-3.0	80	80	2	3	2	3	10	6

Delta 50

Delta 100

Delta 150

Delta 200

Delta 450

Delta 700

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