



Tubular Heat Exchangers

Sterideal® Ohmic	Sterideal® TS (Tube-in-Shell)	Sterideal® QT (Quad Tube Design)	Sterideal® DT (Dimple Tube)
			
			
Sterideal® Coil SteriTwin-Coil™		Sterideal® DR (Direct Regeneration)	

JBT tubular heat exchangers

General Description

There is no “universal” heat exchanger. To properly select the appropriate configuration and dimension it is important to understand product characteristics and process parameters. Optimum dimensioning ensures the appropriate mixing of the treated product, with subsequent uniform temperature distribution and treatment ... all along the process.

JBT tubular heat exchangers are available in multiple configurations which include variable product hold and process controls to assure critical temperatures and hold times are satisfied. All follow a similar construction format with a single tube or number of smaller tubes enclosed within an outer shell.

The means of exchange can be hot water, cold water or glycol.

Product Features

- Manufactured in various construction materials, from 316L to special alloys
- Different tube diameters are available depending on the design specifications (capacity, speed, thermal cycle, system pressure, etc.)



Typical Sterideal® TS, OT, DT, DR Heat Exchangers equipment

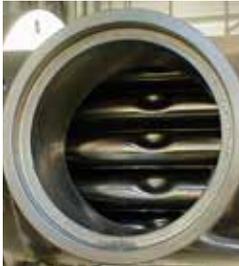
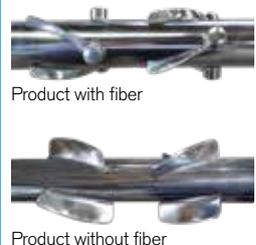
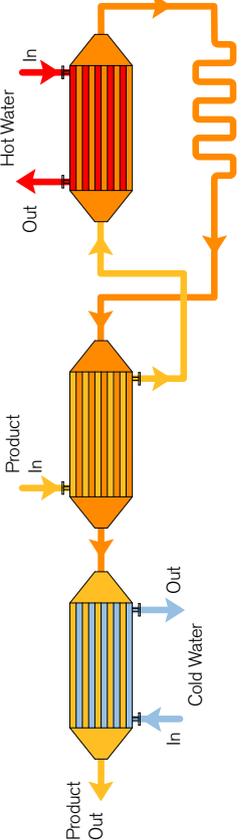
- No moving parts, only static mixing
- PLC Control software written by JBT. The software, designed with process control touchscreen for operator interface, includes a process control program for the integrated unit - sterilizer and CIP
- 3-way automatic flow diversion valve is utilized to prevent non-sterile product from reaching the sterile packaging equipment. The flow diversion device is designed so that it can be sterilized and operated reliably.

Solutions for processors

- Maximum product bacteriological safety by selecting appropriate heating parameters. Abundant control points are present
- Able to remain in aseptic condition in the event of a power outage (the only requirement is to maintain the steam pressure at the steam barrier)
- CIP, sterilization and production cycles are fully automatic and controlled by recipe management system
- Easy to operate and efficiently cleaned
- Capable of working at high temperatures and high pressures (up to 150 bar) for low acid applications
- Work well for high viscosity products
- Totally pre-assembled and pressure coded
- Ability to easily disassemble and inspect product tubes. Easy maintenance thanks to the small number of gaskets in the product circuit.
- Robust construction and built-in thermal expansion protection. The use of expansion joints to absorb thermal expansion of the pipes, during the sterilization and working phase, minimizes risk of fatigue breaking of the tubes.

Sterideal® Ohmic	
Type	
Product	<p>JBT Ohmic heating of foodstuffs is the application of high voltage to a product flowing inside an aseptic sterilizer.</p> <p>The liquid food reacts as an electric resistor and generates heat by the Joule effect. The higher the voltage and the food electrical conductivity, the higher and faster the delta temperature achieved.</p> <p>The major advantage of ohmic heating is obtained in dice processing as the center of the dice is heated at the same velocity as the liquid carrier, thereby preventing parts of the product from overheating.</p> <p>Excellent for all kind of products:</p> <ul style="list-style-type: none"> ▪ Liquid, semi liquid, concentrated and high viscosity products ▪ Containing fibers, small cells and featuring high viscosity such as purees ▪ Thermo sensitive products ▪ Fruit preparations and fruit jam with dices ▪ Soup and sauces ▪ Ideal for large size particles, 50-70 mm  <p>Fruit Jam with Dices</p>

Suitable configurations and type

Sterideal® TS (Tube-in-Shell)	Sterideal® QT (Quad Tube Design)	Sterideal® DT (Dimple Tube)	Sterideal® Coil SteriTwin-Coil™	Sterideal® DR (Direct Regeneration)
	 <p>Product with fiber</p> <p>Product without fiber</p>			
<p>Tube-in-shell heat exchangers consist of several smaller diameter dimple tubes aligned in parallel within a larger diameter outer shell or manifold. This design maximizes the heat transfer surface area in a given volumetric space.</p> <ul style="list-style-type: none"> Low viscosity products  <p>Orange Juice</p>	<p>Heat transfer effectively occurs from both sides of the product. Scientifically placed fins inside the annular product space act as a static mixer to ensure uniform and effective heat exchange, even at low production speeds.</p> <ul style="list-style-type: none"> High viscosity products Concentrates  <p>Fluid trajectory analysis</p>  <p>Orange Pulp @ 90% density</p>  <p>Orange Pulp @ 90% density</p>  <p>Tomato Paste</p>	<p>Patented by JBT, dimple tube heat exchangers utilize a unique internal tube design that incorporates smooth interruptions on the internal surface to gently agitate the product with minimal abrasion and shearing. This type of Heat Exchanger offers: enhanced drainage, stable temperature control, prolonged operation times, enhanced heat transfer and easy tube inspection. Dimple Tube Heat Exchangers are efficient in heating and cooling. The turbulating design facilitates excellent heat transfer with lower product velocity and reduced pressure drop.</p> <ul style="list-style-type: none"> Low viscosity products Dices/Particulates (diced fruit and vegetables, mushroom pieces, etc.)  <p>Whole Corn Soup (Particle Size 12 mm)</p>  <p>Peach Dices</p>  <p>Apple Dices</p>	<p>Expands the capacity of conventional linear heat exchangers by adding the Dean effect which boosts the thermal exchange per unit of surface.</p> <p>The typical spiral shape allows minimum footprint and excellent plant configuration.</p>  <p>Apple Puree</p>	<p>By avoiding the need of an intermediate water circuit, it allows to achieve a high regeneration efficiency.</p> <p>The hot sterile product at the outlet of the holding tube preheats directly the product entering the sterilizer. A specially designed heat exchanger is used for this purpose.</p> <ul style="list-style-type: none"> Low viscosity products High Regeneration Efficiency. 

COUNT ON JBT TO HELP PROTECT YOUR INVESTMENT

JBT's greatest value in PProCARE® services comes from preventing unexpected costs through smart, purposeful, and timely maintenance based on unmatched knowledge and expertise. PProCARE service packages are offered as a maintenance agreement in various service levels, depending on your production and cost management requirements.



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