EQUIPMENT · HEAT EXCHANGERS

BLENTECH HEAT EXCHANGER SOLUTIONS

Heating and cooling engineered around your product



Heat exchanger performance depends on more than temperature. Product viscosity, particulates, fouling, pressure drop, sanitation, utilities, and available space all affect the right solution.

Blentech designs, sizes, integrates, and automates sanitary heat exchanger systems around those conditions. Our capabilities include helical coil, shell-and-tube, scraped-surface, and other technologies selected around the application.

HELICAL COIL HEAT EXCHANGERS

EFFICIENT HEAT TRANSFER. NO MOVING PARTS IN THE EXCHANGER.

Product flows through sanitary tubing coiled inside a cylindrical shell while heating or cooling media flows around the coil. The design provides substantial heat-transfer area in a compact footprint.

Tube diameter, coil geometry, flow rate, and utilities are engineered around the product, required duty, pressure drop, and installation constraints.

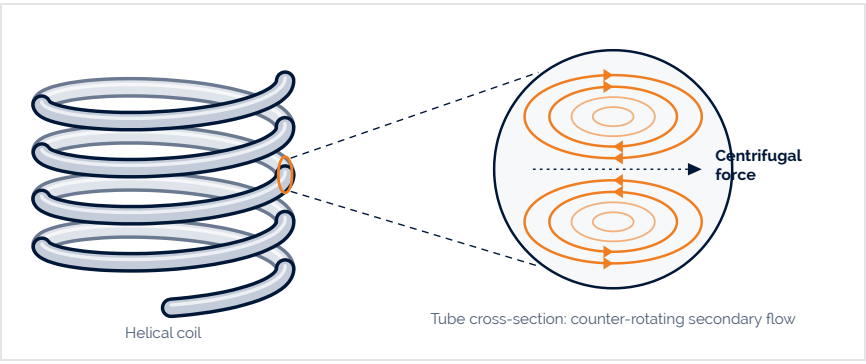
APPLICATIONS

- Continuous heating and cooling
- Aseptic processing and sterilizable systems
- Syrups, sauces, fruit products, dairy, and beverages
- Viscous products and products containing particulates
- Replacement or modernization of existing heat exchangers

ENGINEERED WITH CFD

Flow through curved tubing creates secondary circulation known as the Dean vortex effect, improving mixing across the tube and heat transfer at the wall.

Blentech uses computational fluid dynamics (CFD) to evaluate velocity, pressure drop, thermal performance, and secondary flow when engineering these systems—not simply catalog sizing.



Dean vortex: secondary flow in a helical coil

LOWER MAINTENANCE. LOWER LIFECYCLE COST.

For applications that do not require active scraping, a helical coil eliminates the scraper blades, rotating shaft, product seals, and drive components found in a scraped-surface heat exchanger.

Fewer wear parts mean less routine maintenance, fewer replacement parts, and less production downtime.

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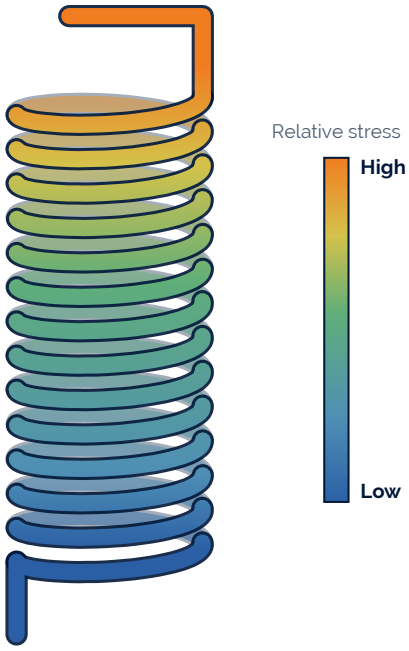
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SANITARY CONSTRUCTION

BUILT FOR CLEANING AND LONG SERVICE LIFE

Blentech uses 316/316L sanitary stainless tubing, purged orbital welding, and application-specific product-contact finishes to support CIP operation.

Heating, cooling, and sterilization create repeated thermal expansion and contraction. Blentech uses mechanical analysis, including FEA where appropriate, to evaluate coil supports, connections, and thermal stresses.



Thermal stress map

Finite element analysis of a helical coil

PROVEN APPLICATION



Blentech recently redesigned a sanitary helical coil cooling system for a major food processor using CFD, thermal analysis, and FEA before fabrication.

17%

improvement in cooling efficiency

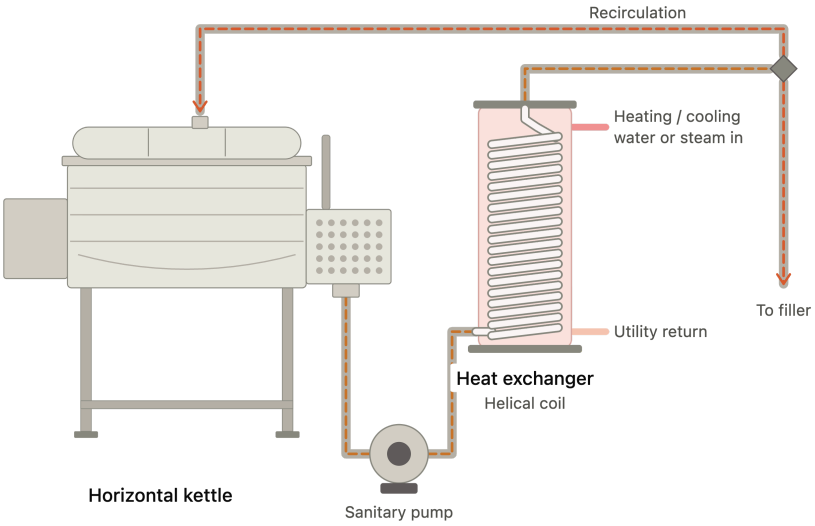
The redesigned system delivered a 17% improvement in cooling efficiency, reduced backpressure, maintained production throughput, and eliminated recurring coil repair events.

SYSTEM INTEGRATION + AUTOMATION

MORE THAN A HEAT EXCHANGER

Blentech can engineer the complete thermal system around the exchanger, including:

- Heat-transfer sizing and process calculations
- Pumps, valves, piping, and recirculation loops
- Heating and cooling utility integration
- CIP and sterilization sequences
- Temperature, pressure, and flow instrumentation
- PLC/HMI controls and recipe automation
- Commissioning and performance support



Horizontal kettle, sanitary pump, and helical coil heat exchanger in a recirculation loop

OTHER HEAT EXCHANGER TECHNOLOGIES

SHELL AND TUBE

A robust option for suitable sanitary continuous heating and cooling applications.

SCRAPED SURFACE

For products that rapidly foul heat-transfer surfaces or require continuous surface renewal, Blentech can size and integrate scraped-surface technology from qualified partners.

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