



THERMALINE

I N N O V A T I V E H E A T T R A N S F E R S O L U T I O N S

Plate Heat Exchangers
Shell & Tube Heat Exchangers
Hot Water Sets
Corrugated Tube Heat Exchangers
Testing & Service

Our Mission

To Soundly Exceed the Expectations of our Customers, Employees, Vendors and Competitors.

For over a quarter of a century Thermaline has stood behind our Mission Statement. This powerful mission is evident in every heat exchanger we manufacture and the support you receive. With a mindset to view everything through the customers eyes first and years of real industry experience, we are just as committed as you are to take on today's challenges of stringent consumer safety and energy consciousness.

Programs

What is Value?

Thermaline understands your time is valuable! In today's global marketplace it is imperative to create value beyond tangible goods. One of our strongest core values is our mindset: **Common sense first – view everything through the eyes of our customers.** Not only is this evident in every heat exchanger, but also in our supporting programs.

Rapid Deployment

We offer a full line of plate and shell & tube heat exchangers that ship in one week or less at no extra cost.

Tactical Alliance Program (TAP)

A new way to market – an alliance between manufacturer and distributor to ensure the customer receives unprecedented service. Use Thermaline's online engineering and quoting tools or work directly with the factory engineers for expedient proposals and engineering specifications. When the time comes to purchase, you choose the distributor. You get real-time factory direct communication with the additional value of your preferred distributor.

Cross Contamination Testing (CCT)

Plate and tubular heat exchanger testing for internal cracks and defects. World's first test system that can be operated by your trained plant personnel or a third party certified tester.

Maintenance Program

Exchange plate packs, rebuild services, PM services and field services.

RAPID DEPLOYMENT
FROM **THERMALINE**

Thermaline Plates: Manufactured in the USA

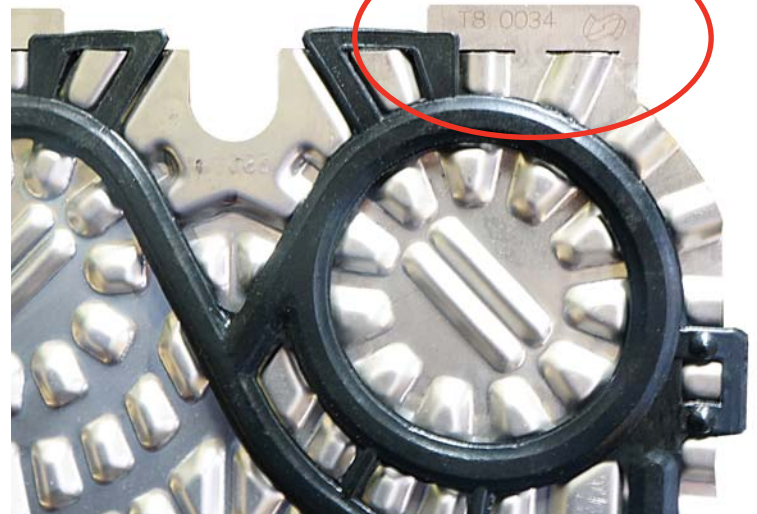
World's First Smart Identification System (SIS)

Even the most hygienic of designs cannot safeguard against human error. Until now, there wasn't a way to ensure your plate heat exchanger was assembled properly. One wrong move can cost more than just a financial burden; it may cause a recall destroying your brand. Thermaline's patent pending Smart Identification System (SIS) laser etches vital plate information on an external tab that is visible at a glance even when the unit is assembled.

Other Plate and Gasket Features

- Deep channels for gentle processing of food products and cleanability
- Shallow channels for efficient utility and industrial designs
- Open channels with minimal contact points for small particulates and fibers
- Mix-Proof Double Wall plates for cross contamination protection
- Various plate and gasket materials compatible with your process
- Clip on gaskets for ease of maintenance

Smart Identification Code etched onto external tab. (Patent Pending)



Sanitary Plate Heat Exchangers

Dairy | Juices | Condiments | Wine | Beer

Achieving the balance between energy efficiency, optimal performance, and dependability is a complicated equation that is easily solved with Thermaline's years of industry experience and the understanding of your process needs.

Stainless Steel Frame

- Highly polished for complete cleanability
- Rugged design for years of service
- Solid heads no cladding to harbor bacteria
- Multiple mounting options
- Customizable connections

Sanitary Carbon Steel Frames

- Rugged high temp powder coating
- Sanitary wetted surfaces and customizable connections
- Stainless steel tie bolts

Open Centerframe Design (OCD) for Cleanliness

- Completely cleanable - no enclosed boxes to harbor bacteria
- Leak detection and sanitization portals
- Economical design makes it easy to adapt to new processes



Industrial Plate Heat Exchangers

- Manufactured in accordance with ASME standards
- Heavy duty epoxy coated frames
- Connections, gaskets, and plates available in a variety of styles and materials to match your process



Mix Proof Double Wall Plates

Thermaline's mix proof double wall plates prevent cross contamination of your low viscosity fluids. Two plates are paired together to form one plate with a safety micro air gap in between the plates. If either of the plates fail from corrosion or cracks the process fluids will not mix, rather the fluid against the failed plate will be directed through the micro air gap and to the outside of the heat exchanger where it becomes visible.

- Standard 0.4mm plates for exceptional service life
- Micro air gap maximizes heat transfer efficiency
- Clip on adhesive-less gaskets
- Pharmaceutical, Bio-Tech, Personal Care, Potable Water, Food, Bio Pharma, Beverage Processing.

**Excellent choice for low viscosity processing.*



Automated Plate Heat Exchangers

The Power of Innovation Provides an Incalculable ROI

Features:

- Single automated heat exchanger
- Dual automated heat exchanger
- Modular Design: Convert single into dual
- 3A Design

Applications Include:

- Multiple process lines
- Critical redundant processes
- Products requiring manual cleaning or frequent inspections
- Dual pasteurizers/Dual HTST



TT frame can be configured with multiple sections and HTST /UHT applications.

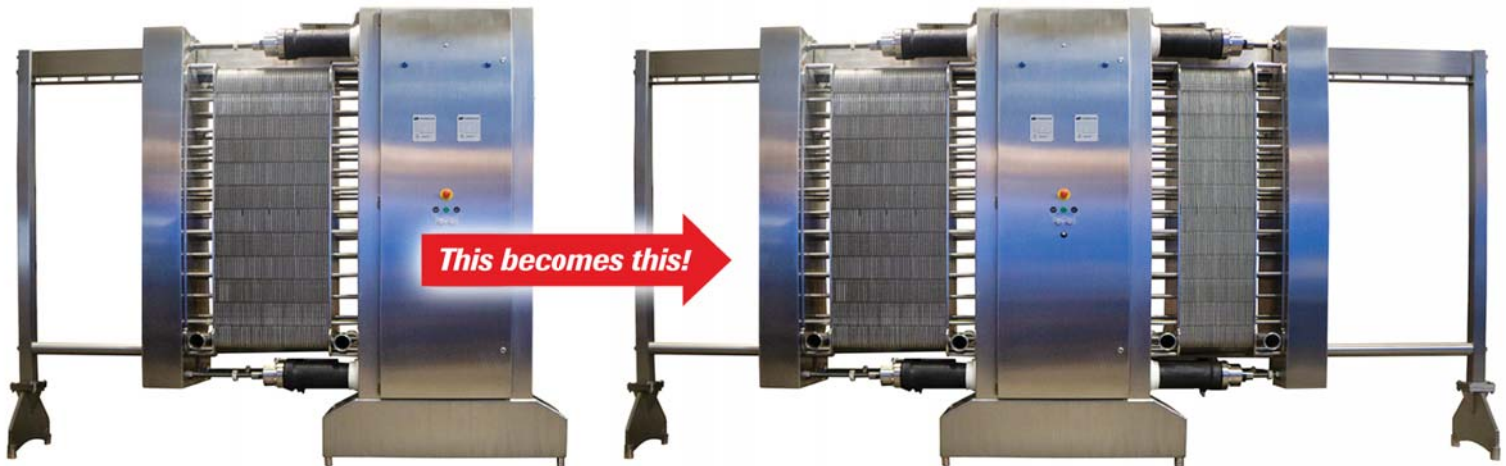


Lock Solid

The Thermaline Automated Heat Exchanger utilizes the smooth operation of hydraulics to open and close the unit. Once the unit is closed, engage the patented twist lock system to mechanically hold the unit closed indefinitely.

TagTeam Automated Plate Heat Exchanger

The patented TagTeam is two independent heat exchangers in one automated frame.



Savings Include:

- No labor claims from the strenuous task of assembling and disassembling
- No lost time during a production run to make repairs
- Effortless labor to open and close the unit for maintenance and inspection
- Cannot damage plates from over-compression
- Plate capacity can be easily expanded
- Years of uninterrupted dependable service

Shell & Tube Heat Exchangers

Thermaline stainless steel Shell & Tube heat exchangers are manufactured in accordance with ASME and TEMA standards. Standard with a mechanical solid seal backed with a self energized o-ring ensuring years of uninterrupted service.

Options:

- 304, 316, Duplex, AL6XN and other materials
- Single or multi pass
- Single and double tube sheet
- Insulation – Stainless Steel/PVC/Blanket
- High purity surface finishes

HYGX

Standard Shell & Tube designed for utility-type applications where the process water is not in the same circuit as food products. Closed loop and instant hot water applications.

- Inner tubes - 2B finish and laser welded seams
- Tube to tube sheet connection- rolled and expanded into the sealing groove
- Connections and distribution area 32 RA polish

HYGA

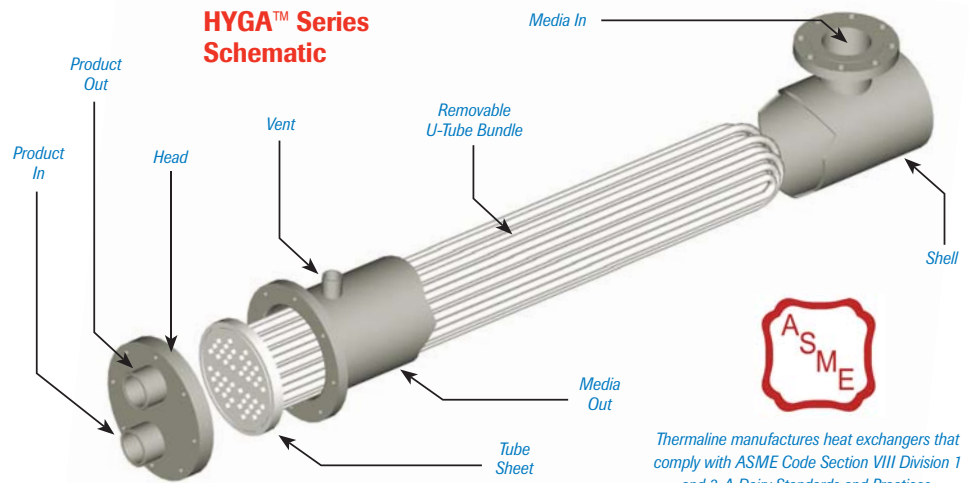
Sanitary Shell & Tube meeting 3-A Sanitary standard 12-07. Can be used to process food products, personal care products, and CIP circuits that come in direct contact with processing circuits.

- Seamless inner tubes with 32 RA ID finish
- Tube to tube sheet connection - rolled and expanded into the sealing groove
- Seal welded tube to tube sheet face
- Connections and distribution area 32 RA polish

BIOX

Pharmaceutical grade Shell & Tube manufactured in accordance with ASME/BPE for bioprocessing, pharmaceutical, and personal-care products industries, as well as other applications with high levels of sanitary requirements.

- High purity inner tube surface finish
- Tube to tube sheet connection - rolled and expanded (hydro-swaged) into the sealing groove
- Precision machine welded tube-to-tube sheet face
- High purity connections and distribution area



Thermaline manufactures heat exchangers that comply with ASME Code Section VIII Division 1 and 3-A Dairy Standards and Practices.

Hot Water Sets

Close approach temperatures, precision control, and dependability all come standard on every Thermaline hot water set. Each hot water set is designed around your process, closely matching the steam characteristics with the thermal demand for optimal performance, but still providing the power needed for startups and high demands.

Closed Loop Applications

- HTST/UHT Loop water
- Utility water
- Jacketed tanks

Continuous Duty

- Clean-In-Place (CIP)
- Batch heating
- Hose stations
- Instant hot water

Features

- Thermaline HYGX, HYGA, and BIOX Shell & Tube heat exchanger
- Stainless steel frame with adjustable ball feet or mounting tabs
- Stainless steel or carbon steel steam components
- ASME Steam and relief components

Options

- Process water pump (stainless steel or painted motor) piped to the Shell & Tube with port for RTD
- Control panel stainless steel enclosure with precision loop controller
- Condensate return - electric or pressure motive
- Stainless steel or Carbon steel expansion tank (when applicable)



Expansion Tanks

Thermaline offers a full range of all stainless steel expansion tanks which are used on closed loop systems to displace expanding fluids and limit the pressure in heating systems. Thermaline expansion tanks are made of 304 or 316 stainless steel and built in accordance to ASME standards. Custom and standard sizes available.

Floating Series Corrugated Tubular Heat Exchangers

Floating

The innovative design allows the tubes to freely expand and contract independently which diminishes material fatigue and failure. Thermaline's Floating Series completely eliminates failure-prone expansion bellows and rigid welds on all models.

Operational Simplicity

The product flow and heating/cooling media flow are separated in concentric lengths of sanitary tubing. The unit has no moving parts, is easy to clean, easy to inspect, and easy to maintain. Tube ends, with their sanitary clamp design, can be easily removed for QC inspections and maintenance.

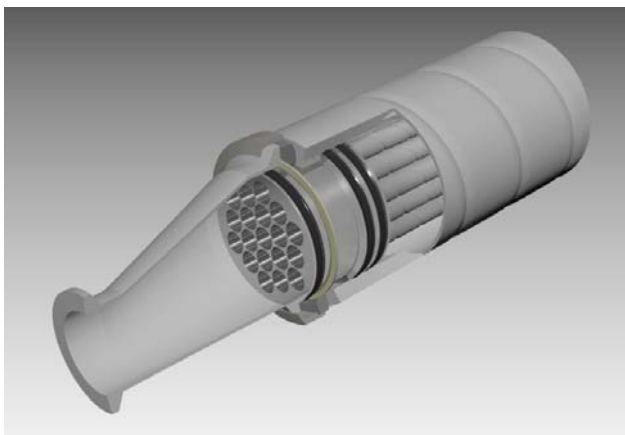


Go Green

Tubes can be arranged in either direct or indirect regeneration. Direct product regeneration can yield more than 80% in energy savings. Indirect product regeneration can recover energy from thermal waste streams in other areas of your facility, reducing thermal pollution and increasing energy savings.

Corrugation

The heat exchanger surface is shaped into turbulence-inducing, alternating parallel grooves and ridges to increase heat transfer efficiency. Inducing turbulent flow results in less total surface area required to achieve the desired thermal results. Turbulent flow promotes thorough mixing of the product and even thermal disbursement without compromising product integrity.



Safe

The strategically-positioned elastomers eliminate the possibility of product intermixing. If a leak were to develop from an elastomer failure, the fluid would be vented to the atmosphere so it can be quickly identified and repaired. The Floating Series eliminates blind, internally-positioned elastomers that can lead to cross contamination.



DuoFloat

Sanitary corrugated floating double-tube heat exchanger. Simplistic by design, two concentric tubes of varying size are positioned one inside the other. Excels at processing fluids of moderate viscosity with medium to large particulates.



TriFloat

Sanitary corrugated floating triple-tube heat exchanger. Three concentric tubes of varying size are positioned so the media flows inside and outside of a product zone. Ideal for higher viscosity fluids with medium to small particulates and fluids with large viscosity changes.



MultiFloat

Sanitary corrugated floating multi-tube heat exchanger. Multiple product tubes within a common media tube. Ultimate solution for thin fluid processing with small particulates and fibers.



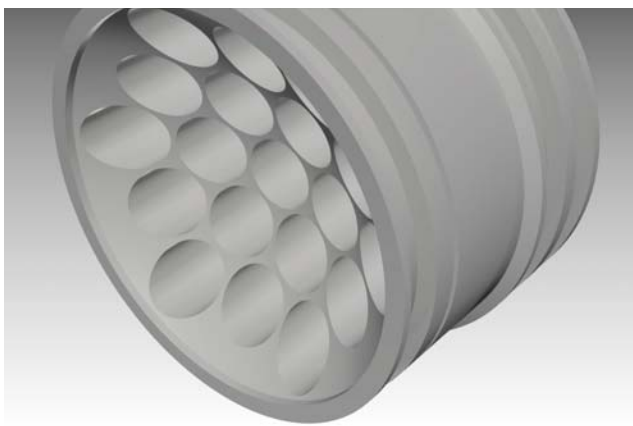
Versatility

Adding the DuoFloat inline mixer to your double-tube heat exchanger enables you to tune your processing needs to a variety of products. When processing fluids with large particulates, remove the DuoFloat inline mixer to maintain product integrity and then easily reinstall the mixers to ensure thorough heat transfer on your other viscous products.



MultiSafe

When product integrity is an absolute necessity, Thermaline offers a sanitary corrugated floating multi-tube heat exchanger with additional safety features. The product tube face is separated from the media tube face, eliminating the possibility of product cross contamination from tube-to-tube sheet failures.



ConClean

Thermaline's innovative concave tube sheet design smoothly guides fluids and particulates into each individual tube alleviating pressures and potential buildup.

During cleaning cycles, the ConClean design creates a vortex that further enhances the cleaning process ensuring nothing is left behind and all surfaces are clean.



All Welded

For aggressive applications, Thermaline offers double-tubes, triple-tubes, and multi-tubes in an all-welded design with expansion bellows.

Are you FSMA Compliant? Cross Contamination Testing (CCT) Program

Food plant safety has always been your number one priority and now the newly enacted Food Safety Modernization Act (FSMA) follows your conviction with a focus on preventive measures. One of the most critical components in your process is the heat exchanger, which is also most prone to problematic sources of contamination. So why are your test intervals so long? In the past, dye testing was used as a preventive measure to identify internal defects which is costly, time consuming, and forces extended critical test intervals. As you steer towards compliance with the new FSMA regulations, do as thousands of other processors have done and include the Thermaline CCT in your critical preventive measures plan.

The Patented CCT version 4.0 complies with 3A, FDA, USDA and FSMA accepted frequency of testing and documentation recommendations. A dye test is a method used to find a defect if one exists, but using it as a preventive measure leaves the inconclusive interpretation of the results up to the technician and their ability to successfully scan the vast amounts of plate surface area for a microscopic defect. The CCT 4.0 quickly identifies a problem in the assembled heat exchanger; if no problem exists there is no need to open the unit and the equipment can be immediately put back into service. Invest in your commitment to food plant safety by including CCT 4.0 in your FSMA preventive measures program.

Program Benefits

Testing that fits your FSMA plan, schedule, and budget includes reports, documentation, and secure cloud-based results retention.

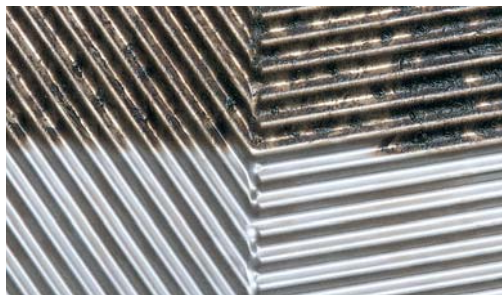
- Sign up for the Thermaline maintenance plan and the CCT 4.0 will ship to you on the prearranged dates. Plan members receive discounts on rental, parts, and services.
- Third party testing. Hire a factory authorized technician to perform the test(s).
- Single use testing

Safeguard your Process from Bacteria!



Heat Exchanger Service

- Full plate and tubular heat exchanger service
- Chemical cleaning, dye testing, and re-gasketing
- All makes, models, and manufacturers
- Field service and repair

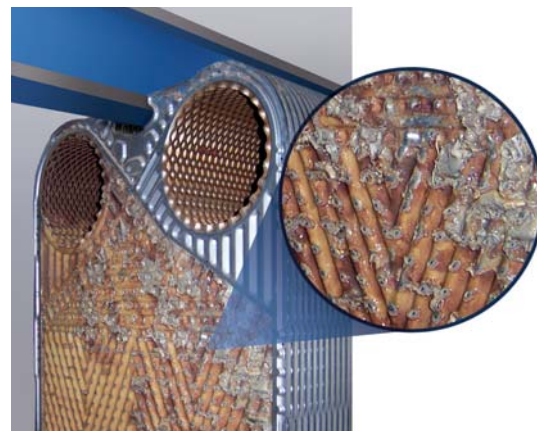


Before and after cleaning.



Specializing in restoring your system to "like-new" condition.

An example of plate fouling that can waste energy and slow production.



THERMALINE

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