



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

Reconditioning Services

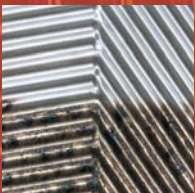
Tube Heat Exchangers

Plate Heat Exchangers

Leak Detection
& Cleaning

In-Shop & Onsite

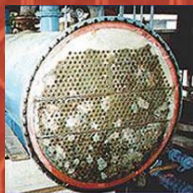
Cleaning



Re-Gasketing



Onsite Repair



In-Shop Repair



Leak Detection





INNOVATIVE HEAT TRANSFER SOLUTIONS

Heat exchangers are essential to many critical operations. Due to their difficulty in maintenance, they are often neglected. Their propensity for fouling significantly increases the risk of unplanned shutdown and catastrophic failure. In addition to complete failure, the time leading up to the failure can cost you thousands of dollars in wasted energy consumption. Protect your investment and stop wasting money. Inspection and upkeep is the only way to protect your equipment and reduce operating cost. Thermaline offers preventive maintenance, on-site services and complete rebuild services to ensure that your heat exchanger is operating at peak efficiency.

In-shop Services PHE:

- Plate pack refurbishment or replacement
- Re-gasketing
- Comprehensive plate cleaning services
- NDT Dye testing for cracks and defects
- Frame refurbishment
- Performance testing
- Entire unit refurbishment (sandblasting, repainting, assembly and hydro test of unit)

Onsite Services:

- Plate pack installation
- Pressure washing
- Re-gasketing

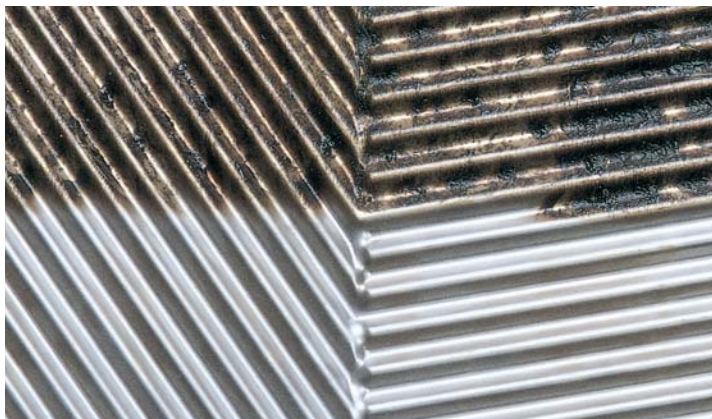
Customer Support Services:

- **Parts and Service Specialists** - available to assist with operational and maintenance training as well as answer general questions
- **Technical Specialists** - available to assist with design, testing, development, and implementation of an effective preventive maintenance program

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



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



Before and after cleaning.

Internal Leak (Cross Contamination) Detection Service:

Cross contamination occurs when a crack or pinhole develops, allowing fluids on side 1 to pass through the plate into the other side and mix with the fluids on side 2. Because a heat exchanger typically does not operate with equal pressure on both sides, the side with the higher pressure will push fluid through the hole into the side with the lower pressure. The result is product in your utility circuit, or worse yet - utility media in your product. Thermaline provides several new, all encompassing, on-site tests that improve test speed and accuracy of any possible cross-contamination issues.

Leak Detection (Integrity Testing)

These tests are recommended annually or bi-annually as part of your preventive maintenance program.

1. Pneumatic leak-down test (General integrity test to sense a problem*)
 2. Helium test (Ultra sensitive general integrity test*)
- *General integrity test will identify a problem but will not pinpoint its location*

Further testing: Tests 3 and 4 are used to locate the problem.

3. Flooded NDT test. Circulate a bio-degradable fluorescent dye through one side of the unit followed by a flush. Unit is opened and each plate is viewed with a UV light to locate the problem.
4. Misted NDT test works similar to flooded tests and is typically used on larger units consuming less dye.



In-shop servicing

Clean in Place (CIP)

CIP is used to clean biological, calcium or other foulants from plates without disassembling the unit.

- Circulate cleaning solutions to remove foulants
- Scheduled preventive maintenance CIP

Tubular Heat Exchanger Services

Thermaline also offers tubular specific heat exchanger services that include:

- Vacuum testing
- Tube sheet re-facing
- Tube plugging
- Pressurized integrity testing
- Mechanical & CIP cleaning



Servicing for Tube Heat Exchangers

Gaskets

Thermaline offers a wide range of gaskets and materials to fit most major makes and models of plate heat exchangers.

Materials:

- Nitrile
- EPDM
- TEFC
- Viton

Manufacturers:

- APV
- Alfa Laval
- Tranter
- ITT
- Sondex
- GEA
- SWEP
- Paul Mueller
- API Schmid Bretton
- And many more

Our competitors may use inferior gaskets subject to drying out and cracking, leading to early failure.

Thermaline uses only top-of-the-line OEM-spec gaskets to ensure long-life and high-performance, leading to fewer incidences of failure and repair.



Additional Thermaline Products

Thermaline Sanitary Plate Heat Exchangers

Thermaline offers a comprehensive plate heat exchanger line that will accommodate today's most demanding processing requirements. Thermaclip plates range from fractional surface area plates for micro flow rates to plates with excess of 6 ft² and 6" ports for high volume production. With multiple plate patterns, corrugations, draw depths, and materials, we can optimize each unit to operate at peak efficiency, lowering the cost of ownership, but more importantly providing long-term energy savings.

- 3-A and FDA compliant
- Adhesiveless clip gasket system
- Multi-section capable
- Tie-bolt and automated frames

Hot Water Sets

- Full range of models from 25 gpm to 750 gpm
- Turns steam into clean hot water for product or process heating
- Full controls package available or integrate with your process controls



Real World Testing Facilities

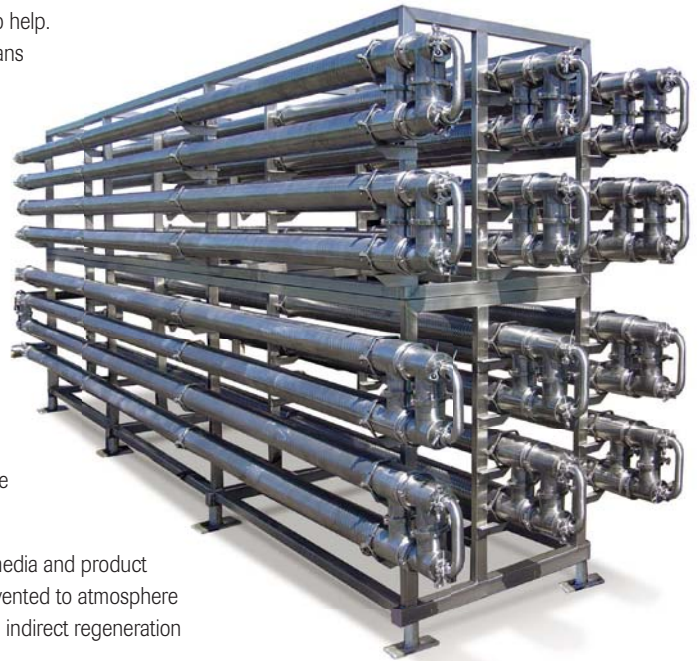
Application of our products to our customer's specific needs often requires practical testing using real world parameters. Our experienced staff of application engineers and their extensive testing facilities stand ready to help. Test process concepts by means of a thorough theoretical study, using computer analysis and in-depth knowledge of process technologies.



Thermaline Floating Series Corrugated Tubular Heat Exchangers

Thermaline offers a complete line of tubular heat exchangers, corrugated to maximize heat transfer efficiency. Our Floating Series boasts an innovative floating tube design to minimize material fatigue and eliminate cross-contamination issues.

- Meet or exceed 3-A tubular heat exchanger design requirements
- Duofloat Sanitary corrugated floating double-tube heat exchanger
- Trifloat Sanitary corrugated floating triple-tube heat exchanger
- Multifloat Sanitary corrugated floating multi-tube heat exchanger
- Possible media and product leaks are vented to atmosphere
- Direct and indirect regeneration



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