

SHAPE UP PRIME SURFACE PERFORMANCE

Product Literature
PLATECOIL®



PLATECOIL®
PRIME SURFACE HE



Engineering Shapes PLATECOIL® Efficiency

PLATECOIL® Prime Surface Heat Exchangers combine flexibility and functionality to deliver more efficient, economical and uniform heating and cooling to any application.

Backed by ISO 9001-certified design and manufacturing processes, these highly versatile HEs adhere to the highest standards for design, manufacture and testing in the industry. And with success stories spanning 60-plus years, PLATECOIL versatility finds its way into new applications and industries each year.

Tranter is the prime surface engineering specialist. Our designers, engineers and tool and die specialists apply expertise to both one-off, special fabrications and high-volume engineered subsystems. After all, Tranter is known as the most customer-focused plate

Better Thermal Control Than:

- Pipecoil
- Dimple sheet
- Half pipe
- Gridcoil



Anywhere you use pipecoil, PLATECOIL® units will save space and fuel.

PLATECOIL can be furnished as clamp-on jackets and pre-engineered baffles/mixer components for fabricating jacketed reactors or upgrading existing vessels quickly and easily.



heat exchanger manufacturer on the market. No matter your market, application or process, if inefficient heat transfer is costing you time, money and energy, it's time to reshape your future with a PLATECOIL solution.

The PLATECOIL Advantage

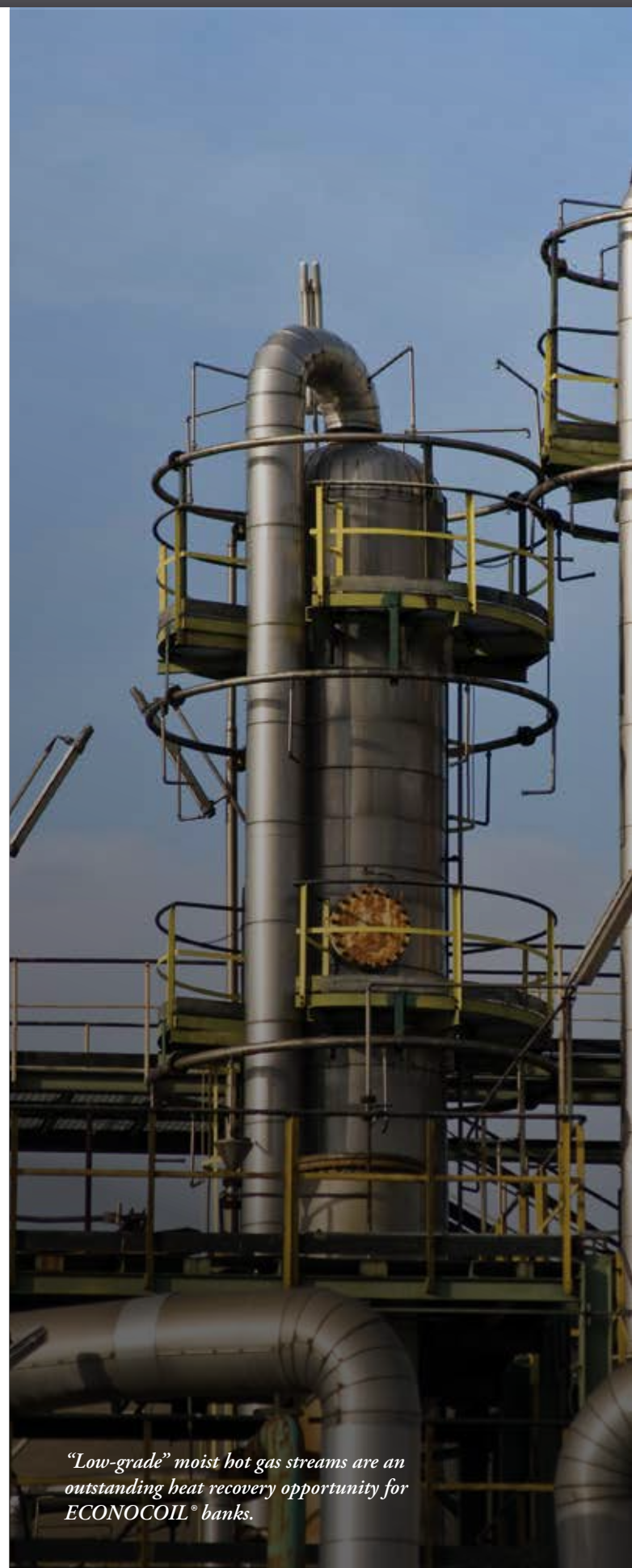
Essentially two die-formed sheets welded together, PLATECOIL panels comprise a series of passages through which a heating or cooling media flows. Highly uniform heating or cooling enables PLATECOIL panels and banks to improve efficiency and energy economy. Additionally, easy access to panels and robust cleaning surfaces reduce maintenance burdens.

Processors worldwide have used PLATECOIL to:

- Eliminate sparging for reduced water and steam consumption
- Capture waste energy from moist, wet flue gases at temperatures as low as 67°C (150°F)
- Recycle low-grade heat energy from drains
- Improve economic performance in existing tanks and vessels using clamp-on retrofits

Wide-Ranging PLATECOIL Applications

- Jacketed tanks and vessels
- Clamp-on upgrades
- Immersion heaters and coolers
- Heat recovery banks
- Suction heaters
- Bayonet heaters
- Cryogenic shrouds
- Drum warmers
- Pipe coolers
- Freeze-dry condenser banks
- Shipboard heaters and coolers
- Cascade coolers
- Refrigeration coolers
- Storage tank heaters
- Shelves
- Fluidized beds
- Gas cylinder heaters
- Sanitary/hygienic processing



"Low-grade" moist hot gas streams are an outstanding heat recovery opportunity for ECONOCOIL® banks.



Shaping The Future Of Direct Heat Transfer

Consider all the factors—flow rate, flow balance, heat transfer coefficient, durability—PLATECOIL is engineered and crafted for faster start-ups, constant temperatures, better control and longer service life. Specify PLATECOIL, then sit back and relax, thanks to a high built-in safety factor of 5:1.

Configure PLATECOIL as banks...you'll benefit from lower engineering, fabricating and maintenance costs. In tanks, PLATECOIL banks give you twice the surface area in a given space, at half the weight as equivalent pipe coil. PLATECOIL banks' rigid design requires fewer supports, making replacement easier.

PLATECOIL panels' available Quick Change Hangers make them fast and easy to handle during installation and cleaning. There are no immersed threaded joints to seize. With available full annealing, you benefit from extra corrosion resistance. Cleaning is much simpler, because entire units are removable without dumping the solution.

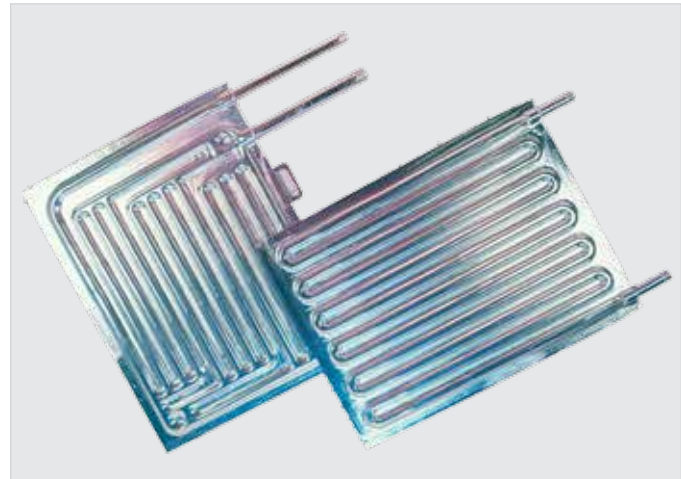
Or, configure PLATECOIL as unit fabrications, and you'll enjoy what we call "IPF"—Infinite PLATECOIL Flexibility. Among our shapes are tangent bends, pancakes, dished heads, cones and bends around curves...all with precision and dimensional stability unequaled by dimple sheet or pipe fabrications.

Low-Maintenance Finishes

- 2B finish (except for weld marks)
- Electropolished
- Mechanical polished
- Passivated
- Paint



Tangent bends in a single-embossed panel...try that with dimple sheet.



Two families of PLATECOIL circuitry: Multi-Zone and Serpentine.

PLATECOIL® Performance Specifications

Max. Pressure Rating, Non-ASME, barg (psig) ^a	
Double-Embossed (12-Ga., all materials)	
Internal	28 (400)
External	69 (1000)
Single-Embossed Carbon Steel ^b	
Internal	18.2 (265)
Single-Embossed 304, 304L, 316, 316L, Monel ^b	
Internal	20.6 (300)
Heat Transfer Rates (Typical), W/m ² • °C (Btu/hr • ft ² • °F)	
Steam to Water Solutions (Multi-Zone styles)	
Still	993 (175)
Agitated	1220 (215)
Hot Water to Watery Solutions (Serpentine styles)	
Still	482 (85)
Agitated	823 (145)
Max. Temperature Rating, °C (°F) ^c	454 (850)

^a Ratings offered as a general guide only. Certain combinations of physical and fluid properties may affect individual product specifications. Contact the factory with your specific application data.

^b 12-Ga. embossed plate and 12-Ga. minimum companion plate.



Die-forming results in a welded panel that can stand up to difficult conditions.

PLATECOIL Materials And Fluid Compatibilities

- Carbon Steel, 316L SS
- SA-240, 302, 304, 304L, 316
- Monel, Nickel, Inconel, Alloy 825, AL-6XN, 254SMO
- Alloy 20, Hastelloys B-2, C-276 and G, Titanium, Others
- Liquids, two-phase media, gases
- Ammonia, Freon, glycol, water, high- and low-pressure steam, hot oil, emulsions

The Right Circuitry for Your Application

Three styles of Multi-Zone and two styles of Serpentine flow configurations ensure that you get the right combination of flow rate and heat transfer rate. With more than 300 sizes, widths ranging from 305 mm to 1090 mm (12 in. to 43 in.) and lengths spanning 585 mm to 3630 mm (23 in. to 143 in.), no job is too big or too small for PLATECOIL to handle. Where there's a need for high internal flow rates, low pressure drop or rugged use, large-pass, heavy-gauge PLATECOIL units fill the bill.

Exclusive Multi-Zone Circuitry

Tranter specially designs Multi-Zone panels with zoned headers for outstanding performance with steam. Their FREE-FLO action avoids efficiency-robbing condensate "blocking" commonly

encountered in pipecoils or straight headered units. The flow pattern provides reserve capacity to compensate for intermittent overloads during start-ups, distributing steam virtually instantaneously to all levels of the plate. Under load swings, Multi-Zone PLATECOIL attains desired operating temperatures extremely rapidly, with minimum variation.

Fast-Responding Serpentine Circuitry

PLATECOIL Serpentine circuitry offers outstanding performance with liquid heating or cooling media. Serpentine panels promote high internal flow velocities for high heat transfer rates. These units are frequently specified for use with cold water, hot water, hot oil and refrigerants.

PLATECOIL Vs. Pipe Coil

- Weighs 50–70% less
- Twice the surface area in a given space
- Superior efficiency—a 22-in. x 143-in. or 36-in. x 95-in. Style 70D PLATECOIL panel equals 100 ft of 2-in. Sch 40 pipe
- Minimizes damage to tank coatings during installation
- Significantly less labor for installation

PLATECOIL® Connections And Gauges

Connections, NPT in.	3/4–2
Standard Gauge, mm (in.) ^a	
16	1.5 (0.0625)
14	2.0 (0.0781)
12	3.0 (0.1094)

^a Thicker gauges are available. Contact the factory for details.



Typical ECONOCOIL Applications

- Sulfate chrome plating solutions
- Chromic acid, 10% boiling
- Nickel plating solutions (except electroless nickel with fluorides)
- Inhibited sulfuric acid
- Inhibited hydrochloric acid
- Hypochlorites
- Seawater or salt brine
- Chlorinated hydrocarbons

ECONOCOIL Specifications

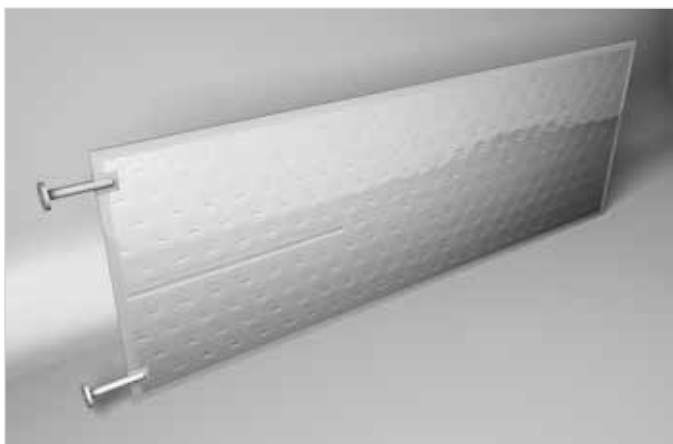
PERFORMANCE	
Working Pressure, Non-ASME, barg (psig)	4.8 (70)
Working Temperature, °C (°F)	177 (350)
Heat Transfer Rates (Typical), W/m ² • °C (Btu/hr • ft ² • °F)	
Steam to Water Solutions	
Still	993 (175)
Agitated ^a	1135 (200)
Hot Water to Watery Solutions	
Still	340 (60)
Agitated ^a	567 (100)
CONNECTIONS	
Standard Connections	Plain end titanium tubing. (other fittings available)
MATERIALS	
Standard Material	Titanium SB-265
Standard Gauge, mm (in.)	0.6 (0.0236)

^aSpecial bracing may be required.

ECONOCOIL® Panels for Special Needs

ECONOCOIL® hydraulically expanded panels are a special PLATECOIL variant available in an assortment of single-embossed or double-embossed styles and sizes in serpentine or parallel passes. Titanium construction provides long service life in liquid-to-liquid or steam-to-liquid heat transfer applications where highly corrosive environments exist. These panels resist attack by chlorine, chlorides and mineral acids.

High turbulence results in low scaling/fouling tendency on external and internal surfaces. Titanium ECONOCOIL panels maintain better heat transfer performance than units constructed from heavy-gauge, low-corrosion-resistance material. Their light-gauge construction allows maximum thermal conductivity.



ECONOCOIL panels made with titanium resist corrosive attack. Multi-pass circuitry is available.

Manufacturing for Quality, Testing for Integrity

With Tranter's strict, ISO 9001-certified quality standards, PLATECOIL structural integrity and durability are assured. Highly experienced personnel carry out all welding on modern equipment. Finished panels can be ASME Code-stamped. Stainless steel units can be annealed or stress relieved to extend service life.

Before shipping, all units receive an air-underwater leak test, which is more sensitive than hydrostatic testing at the same pressure. All ASME Code-stamped units receive a hydrostatic test, while panels manufactured for refrigeration applications receive a helium leak test. Panels for cryogenic service are subjected to a mass spectrometer test.



Shape
One ~~Size~~ Does **NOT** Fit All...

Idea Notebook

PLATECOIL panels are highly refined, engineered products that meet specific needs. Their exclusive, die-formed construction makes them lighter and easier to fabricate than pipecoil, plus their efficiency means a smaller footprint. In carbon steel, PLATECOIL panels can truly be bent or curved in any way, shape or form.



Immersion Banks

PLATECOIL banks make open tank heating and cooling of liquids more efficient than with pipe coil. Their planar shape induces a “chimney effect” for natural convection circulation and improved heating uniformity. Countercurrent flow circuits maximize heat transfer, while wide interspaces and open turns effectively pass solids or fibers. PLATECOIL panels can efficiently recover heat from dirty wastewater, reducing thermal pollution.



Vessels and Reactors

Though compact and light in weight, PLATECOIL panels can attain surprisingly high jacket operating pressure ratings. And because they deliver higher flow velocities than other technologies, heat transfer is improved, fouling reduced. Vessel sides can be easily designed with two or more zones to efficiently satisfy diverse process requirements. Also, panels can be configured as internal baffles or mixers with heat exchanger surfaces for reduced cycle time. Heavy gauge materials and special reinforcing features effectively withstand agitation forces.



Heat Recovery Banks

PLATECOIL heat recovery banks in wet gas and liquid streams cut industry fuel bills significantly. At the same time, they knock out troublesome vapor plumes and reduce thermal load on effluent plants. Wet flue gas streams as low as 66°C (150°F) are a candidate for big savings from PLATECOIL heating banks. Corrosive gases are not a problem, thanks to special ECONOCOIL hydraulically expanded titanium sheet construction.



Clamp-On Vessel Upgrades

Specially configured curved PLATECOIL panels are an economical means of converting existing unjacketed vessels to heated reactors, or of upgrading the thermal capacity of existing reactors. Processors modifying their lines often procure a low cost plain tank and add efficient PLATECOIL jacketing at the jobsite. Standard units are available in seven widths and twelve lengths, or in customized variations.



Bayonet Heaters

PLATECOIL bayonet heaters are an energy-efficient, water-saving alternative to steam sparging for heating process vessels. Available in a range of sizes, they provide a large amount of efficient primary heating surface in a single unit. They can also be used to maintain desired temperatures in bulk storage tanks.



Cryogenic Shrouds

PLATECOIL panels are often incorporated into large and small test chambers, surfaces for helium cryopumping and bell jar covers. Tranter's "cryogenic edge" uses a unique treatment for pressure containment and to facilitate sensitive, required mass spectrometer leak testing.



Rotary and Fluidized Bed Dryers

PLATECOIL panels can be fabricated as shells or banks for direct contact or convection drying of solid materials such as biomass, feedstuffs or food byproducts, confections and many other solid materials. Their outstanding heat transfer rates, combined with use of heated baffles and paddles, improve drying efficiency compared to other technologies.



Heavy Wall Vessels and Platens

Single-embossed units can be furnished highly flat on one side, with no weld marks or discolorations, as heavy vessel walls or direct-contact platens. They can be MIG spot-welded or continuously welded to ASME Code requirements. Embossings can be provided on heads or internal wall sections using MIG welding.



Water Bath Vaporizers, Lyophilizers and Freeze Dryers

PLATECOIL can be configured as heated shelves within vacuum chambers, cabinets or ovens. Or, they can be fabricated as refrigerated surfaces in vacuum chambers to promote sublimation. Their heat transfer rates are highly controllable for precision processing. Their die-formed construction provides long life and trouble-free operation.



Fluidized Bed Coolers

Cooling, drying or heating of solids is accomplished by PLATECOIL fluidized bed heat exchangers. Solid products such as molten confections are passed between PLATECOIL units in a vertically-installed bank, which employs water for cooling.



Pipe Cooling or Pump Inlet Cooling

Pipe sections, chutes and inlet housings can be fabricated from or jacketed with PLATECOIL to cool liquids or gases. In this way, PLATECOIL can protect process equipment, rapidly halt reactions or stop flashing and phase changes.



Sulfur Recovery

Flue sections, chutes and housings in gasification processes can be fabricated from or jacketed with steam-heated ECONOCOIL to prevent condensation and solidification of sulfur before quenching. In this way, ECONOCOIL reduces maintenance burdens and improves throughput.



Reshape Your Future With PLATECOIL

Discover how Tranter's world-class prime surface heat exchangers can optimize your direct heat transfer processes. Just complete and submit our rapid response information request form on-line at www.tranter.com. We'll contact you immediately about your specific needs. Or request a copy of the PLATECOIL Shapes Book, containing photos and illustrations of existing applications and potential configurations that could meet your needs. We can also supply you with our PLATECOIL Data Manual that contains performance and configuration details.

Any way you look at it, PLATECOIL Prime Surface Heat Exchangers will bring new and better solutions to your direct heat transfer processes.



The PLATECOIL Shapes Book and PLATECOIL Data Manual are available upon request.

Need Two-Channel or Indirect Heating?

Tranter has you covered here, too. Look at our SUPERCHANGER® Plate & Frame units, our SUPERMAX® Shell & Plate, or our Spiral Heat Exchanger and MAXCHANGER® Welded Plate Heat Exchangers. Wherever you have heat to transfer, Tranter can do it more efficiently through plates.

Tell Us About Your Needs:
www.tranter.com



Plate technology for space-efficient processing efficiency. From left: Spiral Heat Exchanger, MAXCHANGER® Welded Plate, SUPERCHANGER® Plate & Frame, PLATECOIL® Prime Surface and SUPERMAX® Shell & Plate.



At the forefront of heat exchanger
technology for more than 80 years

Tranter top quality, high-performance, proprietary products are on the job in demanding industrial and commercial installations around the world. Backed by our comprehensive experience and worldwide presence, Tranter offers you exceptional system performance, applications assistance and local service. Tranter is close to its customers, with subsidiary companies, agents, distributors and representatives located worldwide. Contact us for a qualified discussion of your needs.



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