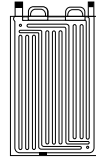
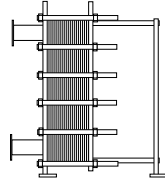


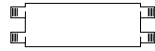
PLATECOIL[®]
PRIME SURFACE
HEAT EXCHANGERS



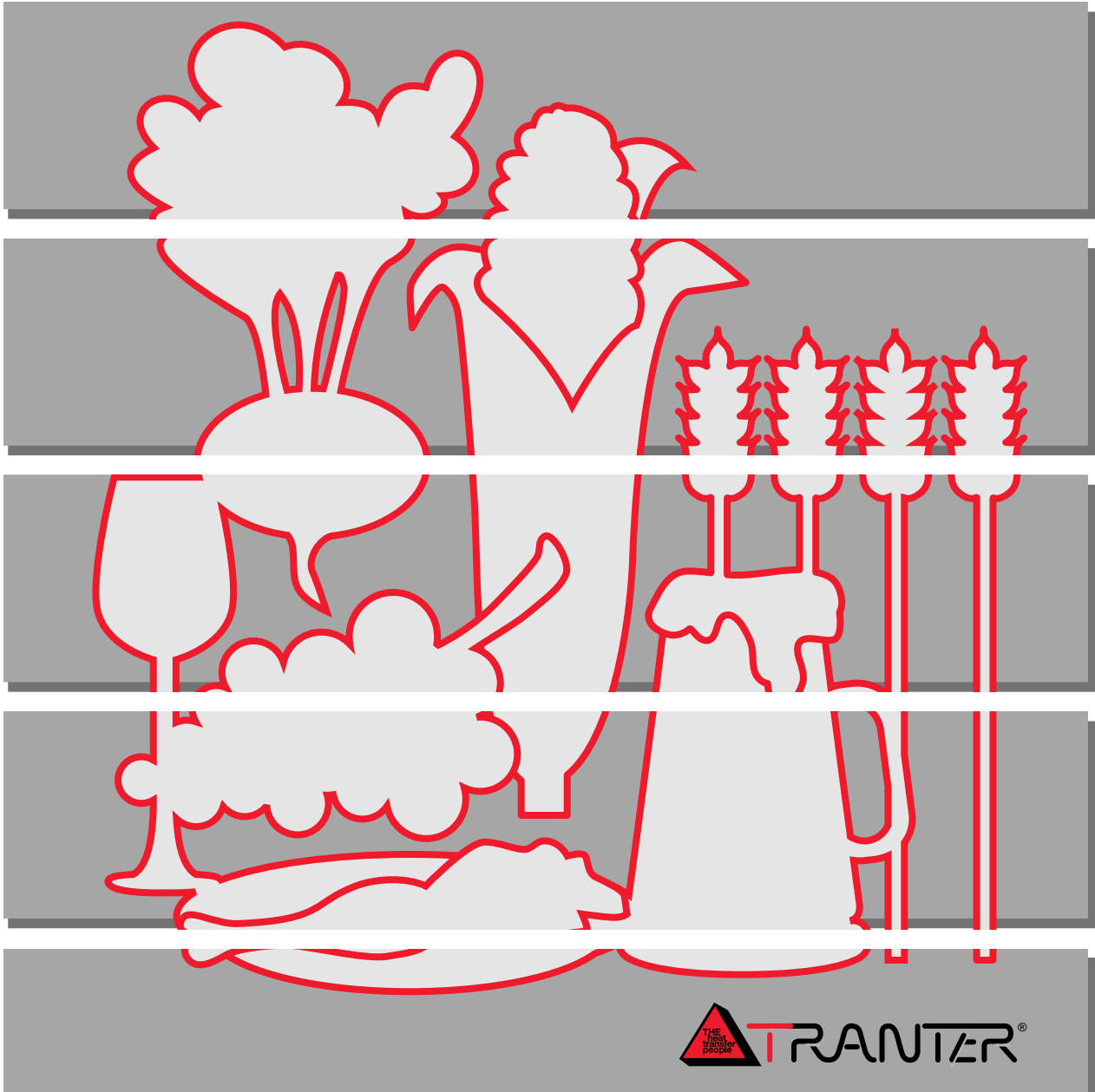
SUPERCHANGER[®]
PLATE & FRAME
HEAT EXCHANGERS



MAXCHANGER[®]
ALL-WELDED PLATE
HEAT EXCHANGERS



FOR THE FOOD AND BEVERAGE INDUSTRY



TRANTER PHE, INC. BRINGS EFFICIENCY AND RELIABILITY TO THE FOOD AND BEVERAGE INDUSTRY

Excellent efficiency and flexibility...optimum heat transfer... minimal maintenance...these are critical needs today in the food and beverage industry. Tranter PHE provides these benefits and more, with PLATECOIL, SUPERCHANGER and MAXCHANGER heat exchangers that are standards of the industry.



PLATECOIL® PRIME SURFACE HEAT EXCHANGERS

A multitude of design configurations and over 300 different sizes make PLATECOIL units ideally suited for a variety of applications in the food and beverage industry. They offer versatility in providing the heating and/or cooling required for various applications in the industry.

PLATECOIL units are perhaps best known as immersion-type, in-tank or as clamp-on heaters for maintaining product temperatures in tanks. Their use goes far beyond these applications, however, and includes designs for custom-engineered processing equipment.

PLATECOIL units can be fabricated from most weldable metals including carbon steel, stainless steel, titanium, Monel, nickel and various special corrosion-resistant alloys. A variety of surface finishes are available to minimize fouling and reduce maintenance.

SUPERCHANGER® PLATE & FRAME HEAT EXCHANGERS

Plate and frame heat exchangers provide a more efficient and cost effective means of heat transfer than old, traditional shell-and-tube exchangers. This is particularly true in the food and beverage industry.

SUPERCHANGER plate and frame units are the best choice because they give you: (1) higher "U" values typically 3 to 5 times greater than shell-and-tube; (2) a unique turbulent flow design resulting in lower fouling; (3) closer temperature approach capability of less than 2°F, compared to the typical 10°F or higher with shell-and-tube; (4) space savings of 50% to 90% over shell-and-tube; (5) expandability and easy servicing, and (6) quick delivery, since they are made in the U.S.

SUPERCHANGER units can also be provided with a Three A stamp sanitary stainless steel frame and fittings.

Tranter PHE, Inc. is ISO 9001 certified, and SUPERCHANGER frames can be ASME Code stamped up to a designed pressure of 400 psig.



MAXCHANGER® ALL-WELDED PLATE HEAT EXCHANGERS

Where space is at a premium, or gasket limitations prevent the use of a SUPERCHANGER unit, the compact all-welded MAXCHANGER unit may be the best solution for many food and beverage applications.



NOTE: THE FOLLOWING DIAGRAMS ARE PURPOSELY BRIEF: NO ATTEMPT HAS BEEN MADE TO SHOW ALL THE VALVES, PUMPS, CONTROLS, ETC., THAT MAY BE REQUIRED. IN MOST SYSTEMS, ALL PIPING ACTUALLY IS FROM THE SUPERCHANGER FIXED FRAME. THIS FACILITATES OPENING THE UNITS, WHEN REQUIRED, WITHOUT DISASSEMBLING PIPING.

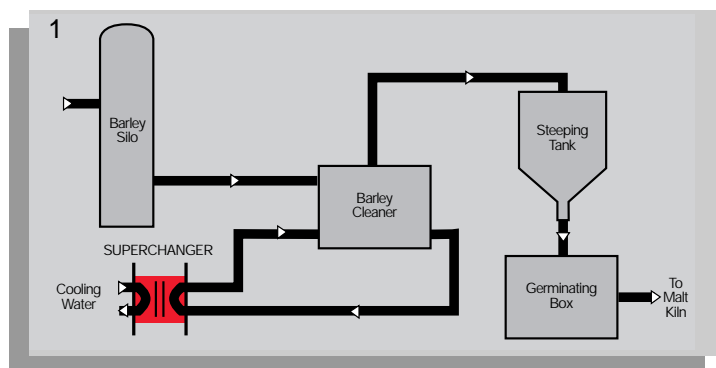
TYPICAL FOOD AND BEVERAGE INDUSTRY APPLICATIONS

SUPERCHANGER® UNITS



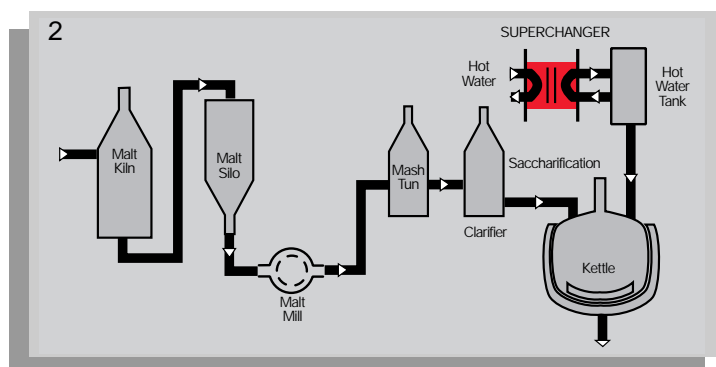
WATER COOLER FOR BARLEY CLEANER

SUPERCHANGER plate and frame heat exchangers are exceptionally suited for applications in the brewing industry, from beginning to end of the entire process. They are especially effective as a water cooler for the initial cleaning of barley to begin the brewing process.



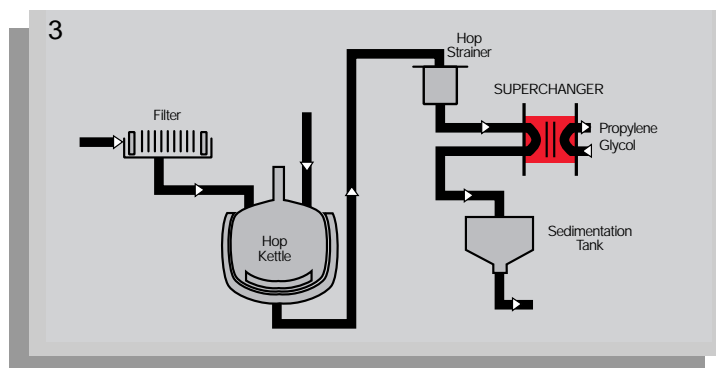
HEATING WATER FOR MALT SACCHARIFICATION

Mash from the mash tun enters a clarifier which screens out empty grain husks prior to sugar extraction. Mash is then sent to an initial cooking kettle. Hot water, heated by a SUPERCHANGER unit, is sprayed down on the kettle contents to desired temperature prior to adding hops and bringing to a full boil.



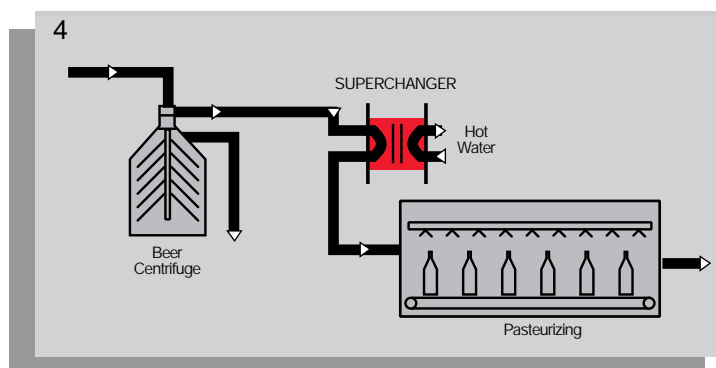
FIRST STAGE WORT COOLER

Once protein and spent hops are removed by a whirlpool vessel or strainer, the clear wort is cooled from 60°F to 35°F by a SUPERCHANGER unit using propylene glycol.



EXCHANGER FOR BEER PASTEURIZING

Prior to packaging, most mass-market beers are pasteurized for sanitation and extension of shelf life. A SUPERCHANGER unit is effective in heating beers from the centrifuge to the point that any bacteria in them is killed prior to bottling.



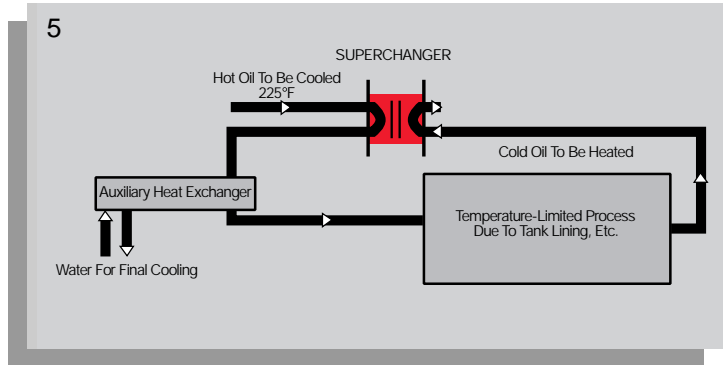
TYPICAL FOOD AND BEVERAGE INDUSTRY APPLICATIONS



SUPERCHANGER® UNITS

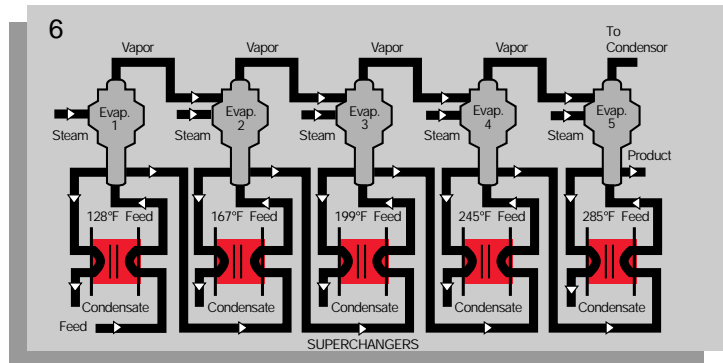
HEAT RECOVERY IN CORN AND SOYBEAN OIL PROCESSING

This is a very common application for SUPERCHANGER units. A hot stream of vegetable oil that requires cooling is used to heat a cold stream that must be heated. The process is very efficient in that the heat removed is reused. SUPERCHANGER units are also regularly used for heat recovery purposes to preheat water or other liquids with a hot waste stream.



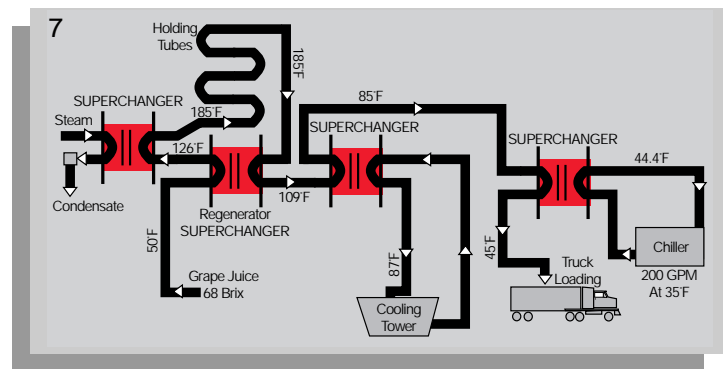
EXCHANGE OF HEAT FROM EVAPORATORS TO INCOMING BRINE

A quintuple effect evaporation process for plants that produce sodium chloride uses five SUPERCHANGER units in series with evaporators to exchange heat from evaporator condensate to incoming brine. Palladium-stabilized titanium plates would typically be utilized in the heat exchanger.



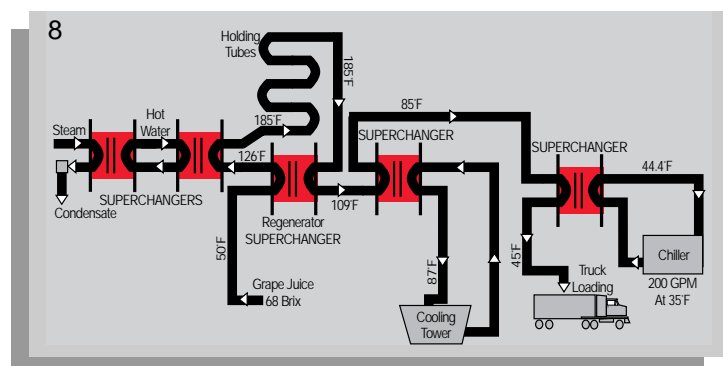
STEAM HEATING GRAPE CONCENTRATE FOR PASTEURIZATION

Major wineries utilize a SUPERCHANGER unit for steam heating high viscosity grape concentrate to 185°F prior to entering pasteurization holding tubes, eliminating the cost of a hot water heating set. Instead of traditional 3-in-1 heat exchangers for additional duties in pasteurization, chilling and packaging, Tranter recommends separate SUPERCHANGER units for each duty. This provides optimized plate fit sizing; reduced exchanger cost; reduced maintenance cost; and greater flexibility for future expansion.



HOT WATER PASTEURIZATION WITH SUPERCHANGER CHILLING

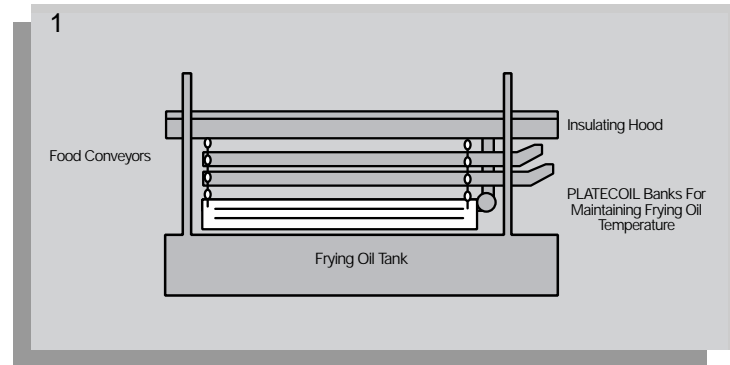
Some wineries use an additional SUPERCHANGER unit to provide hot water to heat grape concentrate before pasteurization, to decrease likelihood of burning the concentrate. Utilization of three other SUPERCHANGER units is the same as the steam heating application above. The regenerator SUPERCHANGER unit is used to save energy (steam/hot water and electricity for refrigeration) by using the hot juice to preheat the incoming cold juice.



PLATECOIL® UNITS

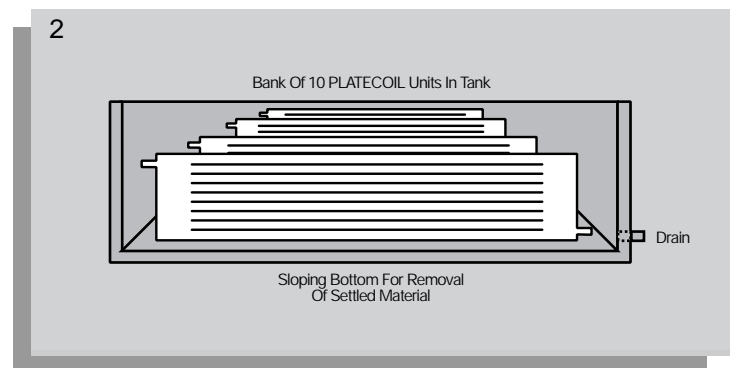
VERTICAL FIN EXCHANGERS IN THERMAL FLUID INDIRECT FRYERS

Electropolished PLATECOIL units utilized in indirect fryers bring a four-fold benefit: finished product consistency, greater safety and worker comfort, faster and easier equipment cleaning, and improved oil yield. Thermal fluid heated to 490°F outside the building is pumped through the PLATECOIL units while they are immersed in the fryer tank, then is returned to the outside at 400°F, keeping the fryer area typically 20° cooler.



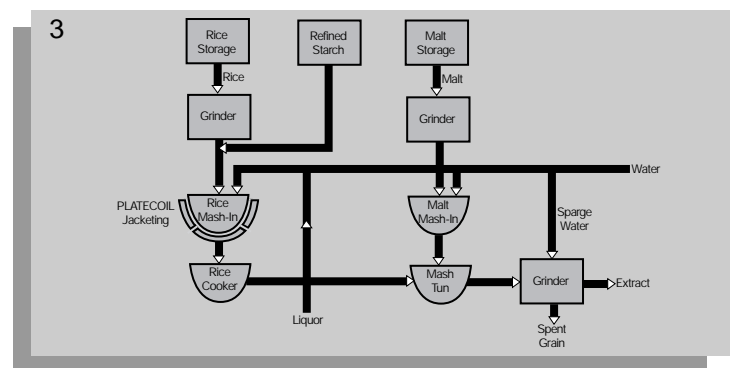
BANKED IN TANKS FOR HEATING SUGAR SOLUTIONS

Annealed and passivated stainless steel PLATECOIL units use low pressure steam to heat unrefined cane sugar solutions from about 60°F to 180°F for whitening and cleaning purposes. As the sugar is heated, bacteria and light impurities come to the top and are skimmed off. The reduced viscosity allows heavy impurities to settle out to the bottom where they are drained off.



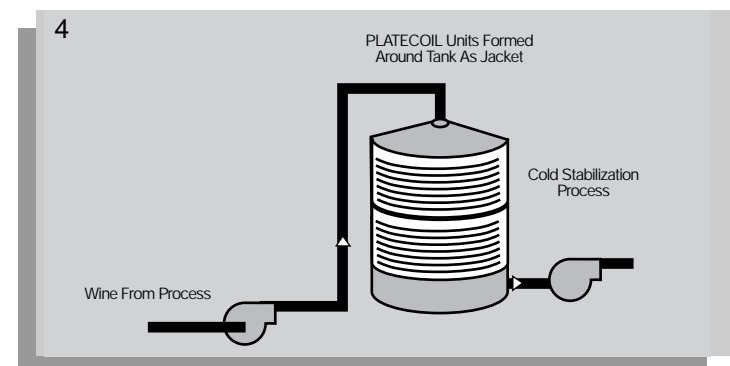
INTEGRAL JACKETS FOR RICE MASH-IN VESSELS

The bottom head and four feet of side wall on rice mash-in kettles are equipped with PLATECOIL jacketing. The jackets use 50 psi steam to heat kettle contents to the desired temperature in less than 11 minutes. The rice mash-in is cooked and then added to the malt before filtering and brewing.



COLD STABILIZATION FOR LOWERING WINE TEMPERATURE

Cold stabilization is a clarification technique involving lowering wine temperature to 32°F. The cold temperature encourages the tartrates and other insoluble solids to precipitate, rendering the wine clear. In head-to-head, comparative tests of tank jacket types, PLATECOIL jackets on a 19,000-gallon vessel containing white wine were able to accomplish the desired cool down in 25% less time than a dimple jacket vessel. In addition, the PLATECOIL jackets were able to handle 2.7 times more flow of propylene glycol coolant and still yield a lower pressure drop than the dimple jacket design.



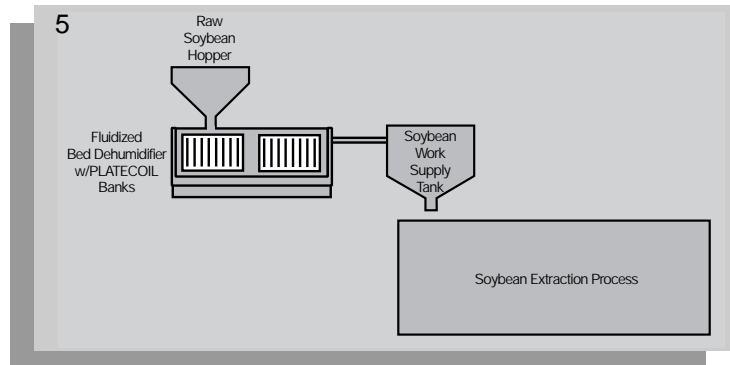
TYPICAL FOOD AND BEVERAGE INDUSTRY APPLICATIONS



PLATECOIL® UNITS

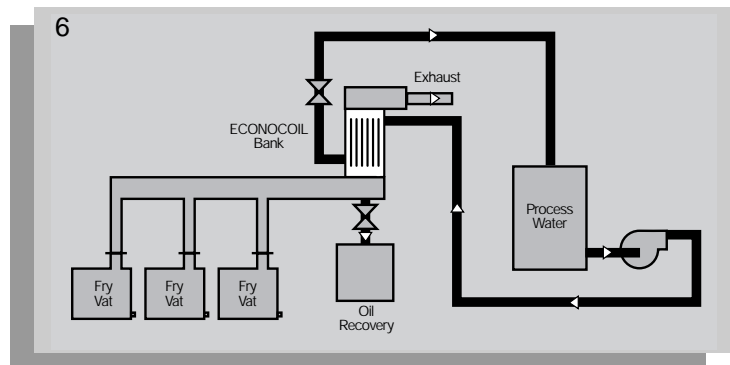
FLUIDIZED BED DEHUMIDIFIER FOR SOYBEAN DRYING

Reduced energy consumption and increased solvent recovery result from the latest developments in continuous solvent extraction of oilseed processing. Fluidized bed dehumidifiers with PLATECOIL banks, used in conjunction with extractors, are improving extraction performance, particularly in soybean drying operations. This equipment combination can also be used on cottonseed, wheat germ, corn germ, sunflower, rapeseed, canola, crambe, flax, safflower, copra and coffee.



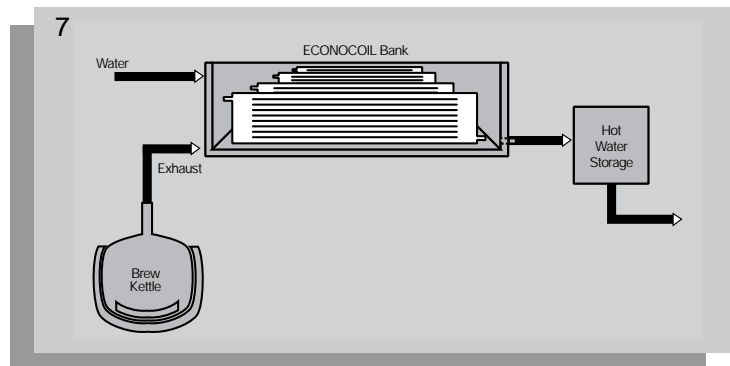
HEAT RECOVERY BANK IN POTATO AND CORN CHIP FRYING VATS

A stainless steel ECONOCOIL® heat recovery bank is utilized to recover the heat from potato and corn chip frying vats, for use in heating incoming process water to the plant. The exhaust air that is laden with hot oil from the frying vats is ducted to the ECONOCOIL bank and passes through it. Process water is pumped through the inside of the bank, and heat from the oil laden air is transferred to the water. As an added benefit, the bank condenses the oil in the hot air stream, and it is recycled back to the frying vats.



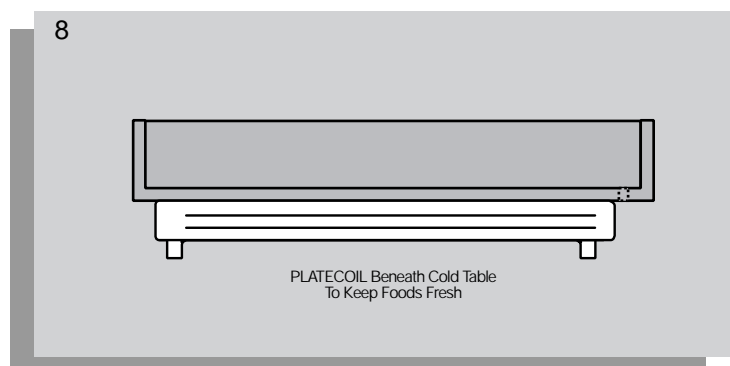
ECONOCOIL® BANKS FOR BREW KETTLE HEAT RECOVERY

During the brewing cycle, hot moist air is generated and exhausted to the vent system. Special Style 60D ECONOCOIL heat recovery banks are used to capture most of the Btu content of this "waste" stream while pre-heating incoming plant water from 65°F to 155°F. Elimination of the steam plume aids the "good neighbor" environmental issue, as well.



SNOPAN® UNITS FOR APPETIZING COLD FOOD DISPLAYS

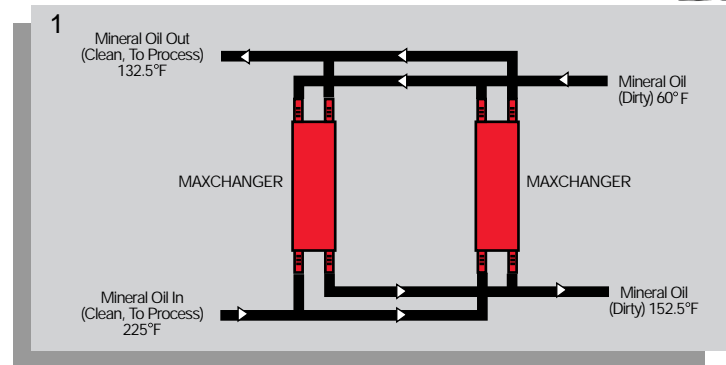
SNOPAN units are recessed mounted for cold food display on appetizing and appealing snow-white frost versus flake ice, which melts, turns blue and becomes slimy. Designed for display space savings, units are made with coved corners and provided with a recessed drain hole, as well as suction and discharge connections for the cooling medium. Flow channels are arranged for even frosting and maximum efficiency.



MAXCHANGER® UNITS

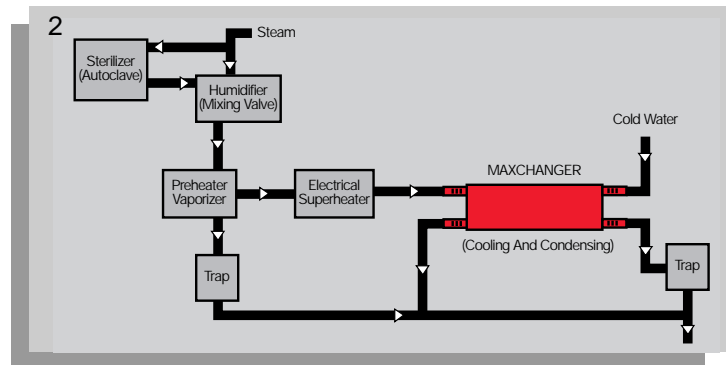
MINERAL OIL COOLING IN FOOD PROCESSING PLANTS

The use of multiple heat exchangers in the purification process is difficult service for shell and tube units due to the close approaches and very low thermal conductivity, or for gasketed plate and frame units, due to tight closure and FDA approval for the gaskets. Two small MAX-CHANGER units, operating in parallel, provide excellent heat transfer. There is no probability of leakage due to gasket failure. Units are lower in cost than other heat exchangers. Maintenance costs are considerably reduced because the units are constructed of 316L stainless steel, with no moving parts or gaskets to wear out.



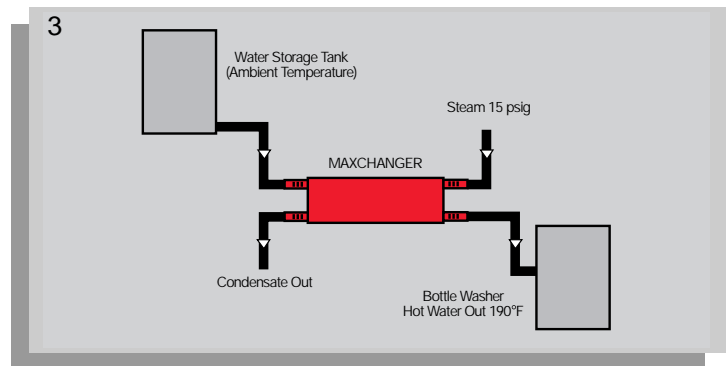
SUPERHEATED STERILIZATION IN FOOD PROCESSING PLANTS

Exhaust steam and condensate from sterilizers in food processing facilities require superheated sterilization, followed by re-condensing and subcooling prior to final waste discharge. The quick response of a MAX-CHANGER unit, coupled with higher temperature imparted by the superheater, reduces required residence time, and subsequently reduces overall cycle time.



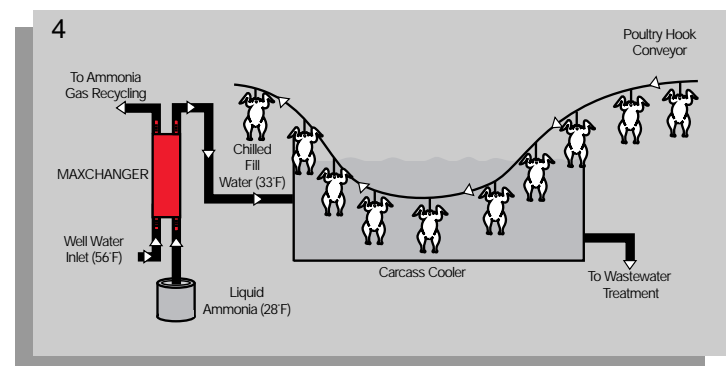
INSTANTANEOUS HOT WATER HEATING FOR FOOD SERVICE FACILITIES

The high efficiency and relatively low cost of MAX-CHANGER units make them the heat exchangers of choice to provide instant hot water at 190°F for dish washing. The quick response, high performance and virtually maintenance-free operation of the all-welded units lead to other applications in food service facilities, such as being used to heat water in a closed loop which, in turn, circulates through a finned tube coil used for space heating.



CARCASS COOLING IN POULTRY PROCESSING PLANTS

After defeathering, birds are conveyed to a carcass cooler where ice-cold water (33°F) rinses off debris and firms up meat. The cooler is continuously filled with fresh well water, which enters a MAXCHANGER at 56°F and is chilled to 33°F using liquid ammonia. The ammonia enters the cold side of the MAXCHANGER at 28°F and exits into an elaborate recycling system. The cooler is continuously drained and refilled to maintain tank temperature, and to assure water is kept clean. This chilled-water fill system was designed by Tranter's expert representative and was approved by the U.S. Food and Drug Administration (USFDA) prior to installation.



WHY TRANTER PHE, INC. FOR YOUR FOOD AND BEVERAGE APPLICATION?

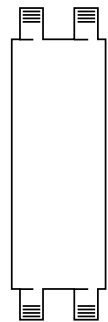
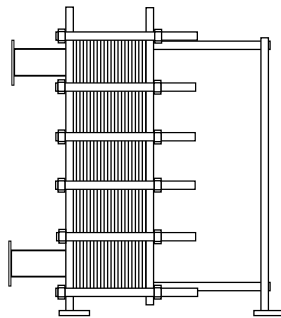
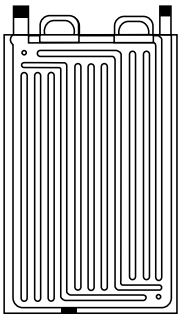
From a position of strength as an industry leader on the North American continent for over 65 years, Tranter PHE has introduced advanced manufacturing procedures into its U.S. plants, and has made a dramatic commitment to global expansion, diversification and leadership in plate-type heat exchanger technology.

A wholly-owned subsidiary of Tranter, inc. (Dover Corporation), Tranter PHE, Inc. strives to be the leader in markets it serves by applying a simple philosophy: perceiving the customer's real needs; providing better products and services than the competition; investing to maintain a competitive edge; and asking customers to pay a fair price for the extra value added. This philosophy reinforces our long-standing reputation as the most customer-oriented plate-type heat exchanger manufacturer.

WORLD-CLASS DESIGN AND MANUFACTURING

Our SUPERCHANGER®, PLATECOIL® and MAXCHANGER® products are computer designed and analyzed by technical specialists who generate a complete proposal providing optimum designs and alternatives.

To accommodate increasing demand for unique, one-of-a-kind, custom heat exchanger products, we employ full-time designers with an advanced, dedicated die shop, capable of producing and maintaining a wide variety of short run and high volume custom tooling.



All products are manufactured using state-of-the-art production technology, and assembled by the most knowledgeable, experienced craftsmen using the best equipment and fabrication techniques available.

Tranter PHE, Inc. is ISO 9001 certified, adhering to the highest standards in design, manufacture and testing of plate-type heat exchangers. Each unit is thoroughly tested in accordance with industry standards prior to shipment.

Customers with unique applications can count on our innovative R&D department to help them solve their heat transfer problems. We remain on the cutting edge of heat transfer technology.

WORLDWIDE TECHNICAL APPLICATIONS SUPPORT

We market our products through a worldwide representative organization that is second to none in technical heat transfer applications knowledge and support. We urge you to utilize this wealth of knowledge in helping you select the right heat exchanger for your application, obtaining optimum heat transfer efficiency from the selected unit, and saving you time and money on your heat transfer solution.

Tranter PHE, Inc. THE heat transfer people!

REPRESENTED BY:

For further information on PLATECOIL prime surface, SUPERCHANGER plate and frame and MAXCHANGER all-welded plate heat exchangers, contact:



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