Innovative Plate heat Exchanger product for HVAC Application
Outline/Agenda

- Brief introduction of Tranter
- Product Range
- Evaporator and Condensers
- GT series Plate
- New Features and benefits to industry
- HVAC projects in Qatar
Introduction

Tranter is a global manufacturer of gasketed and welded plate heat exchangers.

1932 Year founded

87 years young

Backed by more than 85 years of exclusive focus on heat transfer, Tranter has earned its reputation as “The Heat Transfer People”
General Information

- > 1,000 Employees Globally
- > 7000 units Capacity of manufacturing per year
- > 2,000,000 Heat Exchanger Plates delivered per year
- 35 Different sizes of heat exchanger plates, Representing the largest range of plates available in the market

Committed to give quality products to our customers
Manufacturing Facilities

Four Manufacturing Sites Globally **USA, Sweden, India & China**

- **Wichita Falls Texas, USA**
- **Vanersborg, Sweden**
- **Beijing, China**
- **Pune, India**

Global Coverage Manufacturing Facilities

4th HVAC Contracting Conference “Bridging the Gap Between Design, Construction and Facility Management”
Tranter Global Presence

Supporting Clients in 66 Countries with >150 Sales offices globally
Tranter adheres to the highest standards in designing, manufacturing, and testing of both Gasketed and all-welded plate heat exchangers.

ISO 9001

ISO 14000

OHSAS 18001
Group Certifications

- ASME U
- ABS
- BV
- NK
- SELO
- ISO
- KGS, Korea
- PED
- KR
- ASME R
Core Strength-MEA Customer

4th HVAC Contracting Conference “Bridging the Gap Between Design, Construction and Facility Management”
Core Strengths – Global Customer

aramco  ExxonMobil  Shell

enI  Total  Chevron  bp

MAERSK OIL  ENEOS  NIPPON OIL

WOODSIDE  BR  PETROBRAS

4th HVAC Contracting Conference “Bridging the Gap Between Design, Construction and Facility Management”
Industries & Applications

- CHEMICAL PROCESSING
- HYDROCARBON PROCESSING
- OIL & GAS PRODUCTION
- POWER GENERATION
- RENEWABLE ENERGY
- MARINE
- REFRIGERATION
- HVAC
- GENERAL INDUSTRY

4th HVAC Contracting Conference “Bridging the Gap Between Design, Construction and Facility Management”
Product Range
Plate Heat Exchanger Products

GPHE

Plate & Frame Heat Exchanger
SUPERCHANGER

Shell & Plate Heat Exchangers
SUPERMAX

Prime Surface Heat Exchangers
PLATECOIL

Mini-Welded Heat Exchangers
MAXCHANGER
Gasketed Plate Heat Exchanger

Features:

*Tranter offers a Cost-effective Compact Size solution of GPHE.*

Some of the industries served:

- HVAC
- Oil & Gas
- Petrochem
- Power
- Food
- Chemical plants

<table>
<thead>
<tr>
<th>Operating Range</th>
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<tbody>
<tr>
<td>Max Operating Pressure:</td>
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<tr>
<td>Operating Temperatures:</td>
</tr>
<tr>
<td>Flow Ranges:</td>
</tr>
<tr>
<td>Connections:</td>
</tr>
</tbody>
</table>
Product Range – SUPERCHANGER

35 Different sizes of heat exchanger plates

Smallest Model GC-12
HTA = 0.03 m²

largest range of plates available in the market

Largest Model GL-430
HTA = 4.63 m²
Welded Heat Exchanger Shell & Plate

Some of the Major Applications:
- Condenser/Evaporator
- TEG Glycol/Amine exchanger
- Veg Oil Heating

Some of the industries served:
- HVAC
- Oil & Gas
- Petrochemicals
- Power Generation
- Food Industry
- Chemical plants

Operating Range

<table>
<thead>
<tr>
<th>Operating Range</th>
<th>Values</th>
</tr>
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<tbody>
<tr>
<td>Max operating Pressure:</td>
<td>Vacuum to 1450 psi (100 bar)</td>
</tr>
<tr>
<td>Operating Temperatures:</td>
<td>-195° to 538°C</td>
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<tr>
<td>Connections</td>
<td>DN25-DN450</td>
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</tbody>
</table>
Standard Shell & Plate Product

- **Plates Connections Available:**
  - SPW-17: DN 25
  - SPW- 30: DN 50
  - DPW-30: DN 50
  - SPW- 40: DN 80
  - SPW- 50: DN 100
  - SPW- 75: DN 150
  - SPW- 100: DN 200

- **Available in 200mm through 1,000 mm Plate diameter**

- **Plate material:**
  SUPERMAX plate materials may be Type stainless steel 316L, titanium, Hastelloy C-276, SMO254 or other alloys.

- **Shells Materials:** may be fabricated of carbon steel, stainless steel types 304, 316, 316L or titanium.
Application of SUPERMAX - Refrigeration Market
Basic of Refrigeration Cycle

Cooling Towers

Condenser

Refrigerant Cycle

Centrifugal Chiller System

Evaporator

Chilled Water Loop

Air Handlers

Cooling Water Loop
Refrigeration Cycle - SUPERMAX®

Evaporator

Ammonia Receiver

SuperMax Heat Exchanger

Evaporator

100% Ammonia Vapor

Screw Compressor

Oil Separator

Oil Pump

Ammonia Vapor

Cold Oil

Hot Oil & Ammonia Vapor

Ammonia Liquid

Hot Oil (2 Pass)

Ammonia Liquid

Expansion Device

Ammonia Liquid

Condenser

York Frick Thermosiphon

Liquid-Overfeed Schematic
Evaporator & Condenser-SUPERMAX®

Accumulator

Natural Flooded Evaporator

Water Cooled oil Cooler

Oil Separator

Desuperheater

Water Cooled Condenser
GT Plate Series
Tranter has introduced the GT series of plate & frame heat exchangers:

- Available globally
- Offering a significant boost in heat exchanger Performance and unit integrity
- Includes models GT-155, GT-160 and GT-165
GT Series Plate

<table>
<thead>
<tr>
<th>Feature</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>HydroFit™</td>
<td>Variable draw depth to help distribute flow from port to heat transfer area</td>
</tr>
<tr>
<td>OmniFlex™</td>
<td>Flatter plates. No dead areas on plate. Results in better heat transfer</td>
</tr>
<tr>
<td>Halo™</td>
<td>Plate alignment feature common to ThermoFit™ plate range</td>
</tr>
</tbody>
</table>
Variable draw depth to help distribute flow from port to heat transfer area, HydroFit™ flow distribution allows for:

- better flow across plates
- more efficiency
- reduced fouling
Benefits of HydroFit™

\[ Q = U \cdot A \cdot LMTD \]

\[ U \sim (\Delta p)^{1/3} \]
Unique heat transfer area pattern provides:

- Higher heat transfer rate

- Better plate flatness because plates are more evenly strained during pressing

- Even fluid flow (no dead areas) caused by the “V” in the chevron

- Improved mechanical contacts
The overall heat transfer efficient is:

\[ \frac{1}{U} = \frac{1}{\alpha_H} + \frac{1}{\alpha_C} + \frac{d}{\lambda} \]

- \( d \) - the thickness of the heat transfer plate
- \( l \) - the thermal conductivity of the heat transfer plate material (W/m², °C)

Under favorable circumstances the heat transfer coefficient can be in the order of \(~ 8000\) W/m², °C.
Halo™

Halo Plate Alignment system accurately captures the plates and gaskets it comes in contact with:

- Plate-to-Plate nesting
- Optimal Plate Alignment
- Exceptional Strength
Overview of GT-155/160/165 Plates

Available Industrial Codes

- AHRI Standard 400 certified
- ASME Section VIII Division 1 with U-1 Stamp certification
- Canadian CRN
- EC Pressure Equipment Directive CE Mark
- China ML

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
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<tbody>
<tr>
<td>Port Diameter</td>
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</tr>
<tr>
<td>Draw Depth</td>
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<tr>
<td>Width</td>
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<td>mm</td>
<td>1853</td>
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<td></td>
<td>mm</td>
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<tr>
<td></td>
<td>mm</td>
<td>0.7</td>
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</tbody>
</table>
GPHE HVAC Projects in Qatar
Education City Stadium

Total 28 HX units
Client: Conspel Qatar WLL
Year: 2019
Lusail Rail Transit (LRT)

Total 14 HX units
Client: Mechatronics
Year: 2017/2018
Doha Oasis Mixed Used Development

Total 6 HX units
Client: Conspel Qatar WLL
Year: 2017
Marriott Marquis City Center Doha Hotel

Total 12 HX units
Client: Qatar Cool
Torch Tower

Total 16 HX units
Client: Midmac