Water Cooled Screw Chillers And Water/Water Heat Pumps
YOUR EXPECTATIONS IN ONE PRODUCT

Sustainability
Capacity
Efficiency
Versatility
Reliability
XStream™ chillers with near zero GWP refrigerants are part of the Ingersoll Rand EcoWise™ portfolio of products that are designed to lower their environmental impact with next-generation, low global warming potential (GWP) refrigerants and high-efficiency operation.
A UNIQUE PORTFOLIO FOR YOUR NEEDS
LARGEST CAPACITIES IN THE INDUSTRY

RTWF G

Cooling capacities: 12/7°C Entering/Leaving evaporator - 30/35°C Entering/Leaving Condenser

<table>
<thead>
<tr>
<th>Capacity (kW)</th>
<th>Model</th>
<th>Cooling Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>650</td>
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<tr>
<td>700</td>
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<tr>
<td>735</td>
<td>RTWF SE G</td>
<td>1190</td>
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<tr>
<td>750</td>
<td>RTWF HE G</td>
<td>1210</td>
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<tr>
<td>750</td>
<td>RTWF HSE G</td>
<td>1420</td>
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<tr>
<td>800</td>
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<tr>
<td>900</td>
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<td>1100</td>
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<tr>
<td>1200</td>
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<td>1300</td>
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<td>1400</td>
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<tr>
<td>1500</td>
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</tr>
</tbody>
</table>
RELIABILITY
VERSATILITY
EFFICIENCY
CAPACITY

ONE PLATFORM, FLEXIBLE DESIGN

First Cost
Best Value for Money
High Efficiency
Criteria

HSE
HE
SE

RTWF HSE G
Up to 5.1 EER
Up to 6.8 ESEER

RTWF HE G
Up to 5.2 EER
Up to 6.7 ESEER

RTWF SE G
Up to 4.9 EER
Up to 6.6 ESEER

Up to 4.9 EER
Up to 6.6 ESEER
UNIT DESIGN

1. Compressor
   - Direct drive, low speed
   - Load matching down to 15% of full load

2. Heat Exchangers
   - Cross Flow Serial Heat Exchangers design
   - Trane patented evaporator design
   - New condenser design
   - Designed to convert Trane compressor design into premium performance at all applications

3. Controls
   - Fastest controls of the industry
     - Safe VPF
     - No nuisance trips (Adaptive controls)
     - Temperature control within 0.3°C

4. Adaptive Frequency™ Drive
   - Industry leading Seasonal Efficiency
   - Eliminates inrush current
Benefits

- Less pump power for more system efficiency
  - 80% part load = 51% pump power
  - 60% part load = 22% pump power
  - 50% part load = 12.5% pump power

- Constant temperatures
  - Accurate stable controls

- Lower speed:
  - Lower pump wear
  - Less noise in piping and valves
  - Capacity increase of existing infrastructure
VARIABLE FLOW COMPATIBILITY

Evaporator
• Designed to manage VPF*

- Nom. Flow 100%
- Min. Flow 50%
- Max. Flow 150%

SmartFlow Control
• Algorithm designed to handle variations of 10% per minute
• Maintains water temperature within ±0.3°C
• Ability to deliver a signal to control variable speed pump

*Variable Primary Flow
Series counterflow configuration:
- Improves system efficiency
- Saves installation cost
  - Smaller diameter piping
  - Fewer pumps
  - Smaller pumps
- Great opportunity for Free Cooling on first Chiller (if appropriate)
- VPF operation further enhances system efficiency
### Example

<table>
<thead>
<tr>
<th></th>
<th>Parallel Piped Chillers</th>
<th>Series Series Configuration</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cooling Capacity</td>
<td>2018 kW</td>
<td>2055 kW</td>
<td>Enhanced efficiency</td>
</tr>
<tr>
<td>Chillers EER</td>
<td>100%</td>
<td>103%</td>
<td></td>
</tr>
<tr>
<td>Necessary Pump Power (Chillers only)</td>
<td>5.6 kW 4 pumps</td>
<td>6.2 kW 2 pumps</td>
<td>Lower installation Cost</td>
</tr>
<tr>
<td>Pipe run</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cooling Side : 1000 m</td>
<td></td>
<td>Reduced cost of piping</td>
</tr>
<tr>
<td></td>
<td>Rejection side: 1000 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe Diameter</td>
<td>Cooling Side : 10&quot;</td>
<td>Cooling Side : 8&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rejection side: 10&quot;</td>
<td>Rejection side: 8&quot;</td>
<td></td>
</tr>
<tr>
<td>Total System Pump Power</td>
<td>42 kW</td>
<td>31 kW</td>
<td>Reduced System Pump Power</td>
</tr>
</tbody>
</table>
**More than 30 years of experience**

- Designed, built and tested according to the highest demanding and rugged standards
- Proven track record
  - More than 300,000 compressors worldwide
  - Industry leading reliability: rate greater than 99.5%
- Stable operation with no surge
- Fewer moving parts
- Direct drive low speed
- Suction gas cooled
- No oil pump needed
- Resistance to liquid slugging
- Field serviceable
- Wider operating map in the industry
Trane Adaptive Control™

- Patented Industry leading algorithms
- Takes actions to prevent shutdown due to abnormal operating conditions:
  - Flow failure
  - Cooling tower or Dry cooler malfunction
  - Extreme operating conditions
- Clear visibility of operation through graphics:
  - Trend monitoring
  - Performance follow-up
  - Preventive maintenance anticipation
- More than 100 diagnostics made when a fault is detected
- Display indicates fault, time and date of diagnostic
  - Quick localization of problem
  - Faster action
- Allows problem fixing without shutting off
  - Downtime minimized
Extended testing

- Operation in extreme operating conditions leading to World Class reliability
  - Ambient Air: from -25°C to 55°C
  - Leaving Water: from -12°C to 85°C
- Pressure vessels resistance
- Electro-Magnetic compatibility (CE compliance)
- Finite element analysis for structure and components design resistance and robustness
- Acoustics and vibrations testing
CE compliance
- Pressure Equipment Directive (PED) 97/23/CE
- Machinery Directive (MD) 2006/42/CE
- Low Voltage Directive (LV) 2006/95/CE
- Electromagnetic Compatibility Directive (EMC) 2004/108/CE
- Electrical Machinery Safety Standard EN 60204-1
- Electromagnetic Emission and Immunity Standard EN 61800-3 category C3

Quality Insurance processes
- ISO9001
- ISO14001

3rd Party certifications
- Eurovent for units up to 1500 kW
- AHRI for units above 700 kW

Guaranteed performance of the investment
DESIGNED FOR MULTIPLE APPLICATIONS IN COOLING OR HEATING

- Office buildings
- Healthcare
- Data Centers
- Automotive Industry
- Pharmaceutical Industry
- Food and Beverage Industry
- Hospitality Industry
- District Cooling
- District Heating
Extended Heating

-12°C
+28°C
+85°C

Comfort Cooling and Heating
Data centers Cooling
District and conventional heating

Food & Beverage Industry Cooling

Legionella Bacteria Development

Instantaneous Elimination
90% Elimination in 2 minutes
90% Elimination in 2 hours
Optimum temperatures for bacteria growth
Bacteria alive but inactive

OPERATING TEMPERATURE RANGE

90% Elimination in 2 hours
90% Elimination in 2 minutes

Optimum temperatures for bacteria growth
Bacteria alive but inactive
HEAT PUMP OPERATION

- High leaving water temperature
  ➔ Up to 85°C

- High capacity water/water heat pump
  ➔ Up to 1.6 MW at 40/45°C*
  ➔ Up to 1.5 MW at 47/55°C*
  ➔ Up to 1.4 MW at 55/65°C*

- High COP**
  ➔ Up to 4.8 at 40/45°C*
  ➔ Up to 4.0 at 47/55°C*
  ➔ Up to 3.2 at 55/65°C*

- Dedicated and optimized compressor for heating applications

* Entering/Leaving evaporator: 10/7°C
** Net COP Calculated according to EN14511-2013 standard
• Compliant with Med Temp industrial process application minimum efficiency requirements (SEPR)
  - European regulation (EU) 2015/1095
  - Entry into force on 2016, July 1st
• Operation from 4 down to -12°C leaving water temp
• Dedicated compressor for efficiency and reliability
• Operation with various brines:
  - Ethylene Glycol
  - Propylene Glycol
  - Ethanol
- Value of standardized design, capable to meet special requirements
ICE STORAGE

Typical ice storage application

- Energy storage application
- Chiller builds ice when utility rates are lower, or when heating requirement overtakes cooling requirement
- Chiller smartly balances the contribution of ice melting and chiller operation to meet the cooling load with the best system efficiency
- Controls takes charge of:
  - controlling set points,
  - actuating chiller and or ice pump and other accessories
• Compatible with all Trane Building Management Systems and chiller plant controls
• Communication interfaces
  • BACnet™ IP
  • BACnet™ MSTP
  • ModBus™ RTU
  • LonTalk™ (LCI-C)
YOUR EXPECTATIONS IN ONE PRODUCT

- Capacity
- Efficiency
- Versatility
- Reliability
A UNIQUE PORTFOLIO FOR YOUR NEEDS

High Speed Centrif. Technology

Screw Technology

R134a

R1234ze

GVAF

GVWF

GVAF XPG

GVWF G

RTHD

RTWD

RTWF

RTHF

RTAF

RTWD G

RTWF G

RTHF G

RTAF G

New In 2018

New In 2018