Total Refrigeration Systems
Easy to Buy, Install and Operate
PowerPac™
A completely assembled Industrial Refrigeration Package

PowerPac Reduces the Need for Field Labor

Frick compressors, heat exchangers, evaporators, and condensers come in a compact package controlled by Frick Quantum HD controls and Frick “turnkey” software.

Frick PowerPac puts advanced heat exchanger technology to work, reducing refrigerant usage and maximizing operating efficiency. The system reduces the requirement for a Process Safety Management (PSM) program.

Get Frick Plus 3 Warranty coverage when installed by a factory-authorized Frick Factor start-up technician.
(Refer to publication 020.100-ADV1 for details.)

Frick PowerPac

- “Factory Built” controlled environment; site delivered ready to operate
- Simplified electrical hookups
- Less jobsite labor means lower cost
- Optimized design means fewer welds
- Process side uses pumped fluid (such as glycol or water)
- Multiple methods of freeze protection
- Plate and frame heat exchanger means less refrigerant charge

Conventional Site-assembled Chillers

- Multiple vendors mean project management and costs
- More welds equal more cost and time
- Environmental variation during construction
- Expensive on-site electrician for wiring connections
- Process side uses pumped ammonia
Packaged Ammonia Chiller Units

**PowerPac** units are engineered and manufactured to meet the exacting requirements of the industrial refrigeration market. All components have been designed and arranged to assure reliability, accessibility, and ease of service. Units are completely assembled with all interconnecting refrigerant piping and internal wiring. Optional features include:

- Dual Compressors
- Refrigerant High Pressure Receiver
- Multiple Evaporators
- Mounted VSD
- Hot Gas Bypass
- Dual Oil Filters
- Unit-Mounted Solid-State Starters (PowerPac 101 and larger)

More options available. Contact your Frick Factor for details.

**Compressor**

The Frick RXF or RWF II rotary screw compressor has been designed utilizing the latest technology to offer the most reliable and energy efficient unit currently available. Compressor casings are designed and tested in accordance with the requirements of ANSI/ASHRAE 15 safety code and are designed for 400 psig working pressure. The rotors are manufactured using the latest asymmetric profiles. The compressor incorporates a complete antifriction bearing design for reduced power consumption, improved efficiency, and reduced maintenance. The bearings provide an L10 life in excess of 100,000 hours at design conditions.

The RXF compressor incorporates a simple mechanism that adjusts the compressor volume ratio during operation to the most efficient of three possible volume ratios, depending on system requirements. The RWF II Compressor includes a patented method of varying the internal volume ratio to match the system pressure ratio. Either compressor reduces the power penalty associated with over/under compression.

**CAPACITY CONTROL:** Effective capacity control is achieved by use of a slide valve, which provides infinite adjustment from 100% down to 25% of full load for an RXF compressor and down to 10% of full load on an RWF II Compressor.

**Variable Speed Drive (VSD)**

Optional Frick VSD provides fast, precise motor speed control to rapidly changing loads while greatly reducing compressor mechanical wear. Vyper gradually increases motor speed during start-ups which reduces the mechanical and electrical strain from starting inrush. The NEMA 4 rated cabinet provides protection for internal electronics while the Quantum HD control panel provides a user-friendly interface for ease of operation.

**Motor**

A factory mounted flange motor is close-coupled to the compressor. The compressor/motor assembly requires no field coupling alignment. Standard motors are open drip proof (ODP) and have class H insulation and 1.15 service factor.

**Capacity Chart/Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>PAC 50</th>
<th>PAC 58</th>
<th>PAC 68</th>
<th>PAC 85</th>
<th>PAC 101</th>
<th>PAC 134</th>
<th>PAC 177</th>
<th>PAC 222</th>
<th>PAC 270</th>
<th>PAC 316</th>
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</thead>
<tbody>
<tr>
<td>Cooling Capacity (tons)</td>
<td>145</td>
<td>166</td>
<td>200</td>
<td>252</td>
<td>304</td>
<td>388</td>
<td>521</td>
<td>657</td>
<td>812</td>
<td>933</td>
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<tr>
<td>Cooling Capacity (gpm)</td>
<td>347</td>
<td>398</td>
<td>479</td>
<td>604</td>
<td>728</td>
<td>929</td>
<td>1249</td>
<td>1574</td>
<td>1946</td>
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<td>Power (bhp)</td>
<td>130</td>
<td>146</td>
<td>174</td>
<td>217</td>
<td>265</td>
<td>325</td>
<td>421</td>
<td>531</td>
<td>654</td>
<td>755</td>
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<td>Condenser Water (gpm)</td>
<td>413</td>
<td>473</td>
<td>568</td>
<td>715</td>
<td>863</td>
<td>1095</td>
<td>1464</td>
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<tr>
<td>Approximate Dimensions</td>
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<td>205 x 101 x 100</td>
<td>205 x 107 x 107</td>
<td>205 x 107 x 107</td>
<td>225 x 132 x 107</td>
<td>237 x 132 x 107</td>
<td>287 x 151 x 107</td>
<td>290 x 152 x 107</td>
<td>300 x 155 x 107</td>
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<tr>
<td>Approximate Weight (lb)</td>
<td>18,000</td>
<td>20,000</td>
<td>22,000</td>
<td>24,000</td>
<td>26,000</td>
<td>30,000</td>
<td>35,000</td>
<td>40,000</td>
<td>50,000</td>
<td>60,000</td>
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</table>

*Cooling water from 50°F to 40°F with ammonia evaporating at 35°F; ammonia condensing at 95°F*
PowerPac Integration

Quantum™ HD Controller

The Quantum HD Control Panel incorporates hardware features & technology proven in millions of applications.

The high-speed, PC-based processor provides speed and processing capability far surpassing competitive microprocessor offerings. The 15” High Definition Touch Display offers a high contrast, crisp clear display of compressor information and status with a superior viewing angle.

Additional Input/Output can be easily installed in the field. This provides flexibility for future engine room upgrades and changes. No longer will you be constrained by the manufacturer’s limited I/O capability.

Three field-selectable serial communication ports allow you to choose from a combination of RS-422, RS-485, or RS-232 port configurations for external communications. Ethernet port allows Ethernet and Internet communications.

Evaporator/Condenser

Semiwelded plate heat exchangers that have plates constructed of AISI 304 or 316 stainless steel or titanium. Gaskets are a two-piece construction for excellent compatibility with refrigerant and cooling media. Design working pressure is either 300 or 400 psig. The plate heat exchangers can be disassembled for easy cleaning and capacity modification.

Oil Recovery System

The lubricating oil leaving the compressor unit is automatically recovered from the evaporator and returned to the compressor unit. Oil maintenance is required only at regularly scheduled service intervals.

The PowerPac chiller comes complete with the previously described components. The package is dried and pressurized with a nitrogen charge. The initial charge of lubricating oil is provided and shipped loose with the package. Insulation for the vessels and heat exchangers, and charging the package with refrigerant, should be provided by others at the jobsite.
Packaged Ammonia Heat Pumps

SmartPac packaged ammonia heat pumps capture the heat from your ammonia refrigeration system that is normally rejected to the atmosphere. SmartPac then transforms this valuable resource into hot water that can then be utilized throughout your industrial facility.

SmartPac enables you to make more efficient use of your ammonia refrigeration system. With advanced heat exchanger technology, operating efficiency increases and refrigerant charge is reduced.

Easy to Install; Easy to Own

Frick screw compressors, heat exchangers, pressure vessels and controls all come together in a compact package ready to install. And when installed by a Frick Factor, get a 3-year warranty.

The bottom line. Lower utility bills and a reduced carbon footprint. No worries. Start saving $$$ now.
Packaged Ammonia Heat Pump

SmartPac heat pumps are designed and manufactured to meet the high quality standards of the industrial refrigeration industry. SmartPac is designed to be reliable and accessible. All components are fully assembled, wired and tested on a single base, ready to install.

Compressor

Frick rotary screw compressors are designed to be the most energy efficient and reliable compressors available on the market today. From antifriction roller bearings to onboard computer controls, Frick compressors utilize the latest technology in both mechanical and electrical design.

Heat Exchanger

Frick state-of-the-art plate heat exchanger technology for increased efficiency and reduced refrigerant charge. Semi-welded stainless steel or titanium ensures reliability for many years of service.

Vessels

ASME and National Board certified Frick pressure vessels are engineered to exacting standards for safe, reliable operation. Quality and cleanliness, Frick pressure vessels are the best choice for any industrial refrigeration system.

Controls

The Frick Quantum HD control center is the most advanced and versatile industrial controller available. Easy to use and reliable, the Quantum HD is on the job 24/7 to ensure your equipment is operating safely and efficiently.

SmartPac Applications

- Beef
- Poultry
- Dairy
- Brewery
- Prepared Foods
- Ice Rinks
- District Heating
A smart, environmentally friendly way to upgrade your facility and reduce your carbon footprint!

### SmartPac Heat Pump Specifications / Capacity Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Water&lt;sup&gt;1&lt;/sup&gt; (gpm)</th>
<th>Heat Source&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Heating Capacity (kBtu/Hr)</th>
<th>COP</th>
<th>Power Consumption (BHP)</th>
<th>Motor Size (HP)</th>
<th>Shipping Weight (lb)</th>
<th>Approximate Dimensions</th>
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<td>SmartPac 36</td>
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<td>200</td>
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<td></td>
<td>82</td>
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<td>184</td>
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<td>SmartPac 60</td>
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<tr>
<td></td>
<td>140</td>
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<td>SmartPac 119</td>
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</table>

**NOTES:**
1. Water Flow is based on incoming water at 60°F and hot water leaving at 140°F.
2. Heat source is the saturated high pressure vapor of an ammonia refrigeration system. Typically this would be in the 75°F to 95°F range.
Single Source Industrial Refrigeration Solutions!

Heat Exchangers  Packaged Equipment  Hygienic Air Units
Vessels  Controls
Evaporators  Compressors  Condensers