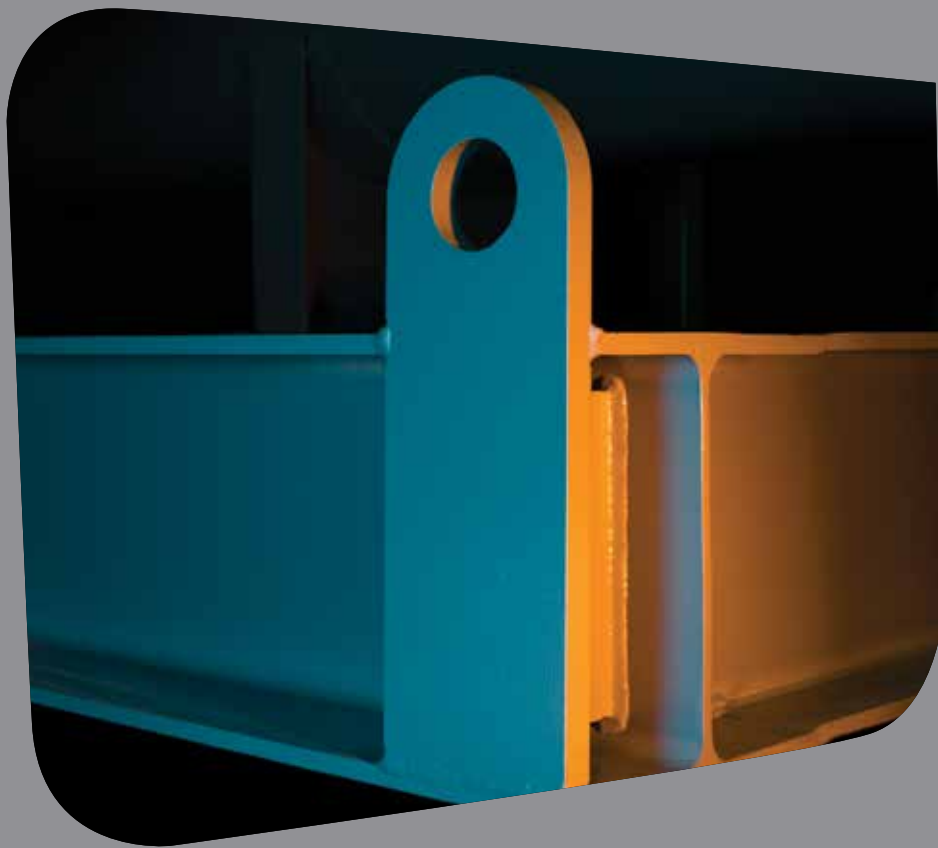


PACKAGED EQUIPMENT

Total Refrigeration Systems

Easy to Buy, Install and Operate



Frick[®]
INDUSTRIAL REFRIGERATION

PowerPac™

A completely assembled Industrial Refrigeration Package

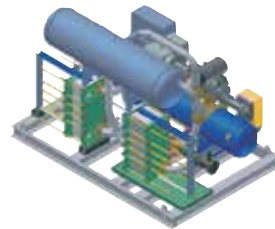
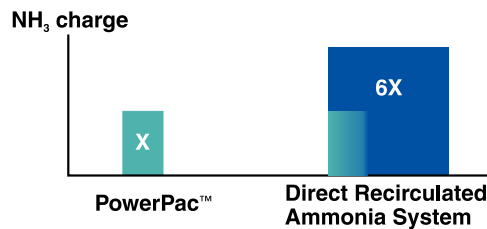
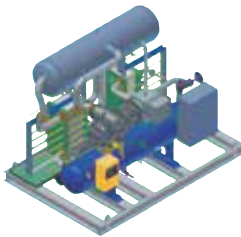
PowerPac Reduces the Need for Field Labor

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

VS.

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*

Model	PAC 50	PAC 58	PAC 68	PAC 85	PAC 101	PAC 134	PAC 177	PAC 222	PAC 270	PAC 316
Cooling Capacity (tons)	145	166	200	252	304	388	521	657	812	933
Cooling Capacity (gpm)	347	398	479	604	728	929	1249	1574	1946	2235
Power (bhp)	130	146	174	217	265	325	421	531	654	755
Condenser Water (gpm)	413	473	568	715	863	1095	1464	1846	2281	2621
Approximate Dimensions										
L x W x H (Inches)	205 x 101 x 95	205 x 101 x 100	205 x 101 x 100	205 x 107 x 107	205 x 107 x 107	225 x 132 x 141	237 x 132 x 143	287 x 151 x 143	290 x 152 x 190	300 x 155 x 190
Approximate Weight (lb)	18,000	20,000	22,000	24,000	26,000	30,000	35,000	40,000	50,000	60,000

*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.





SmartPac™

A complete packaged solution that reduces water heating costs in your ammonia refrigeration facility

Packaged Ammonia Heat Pumps

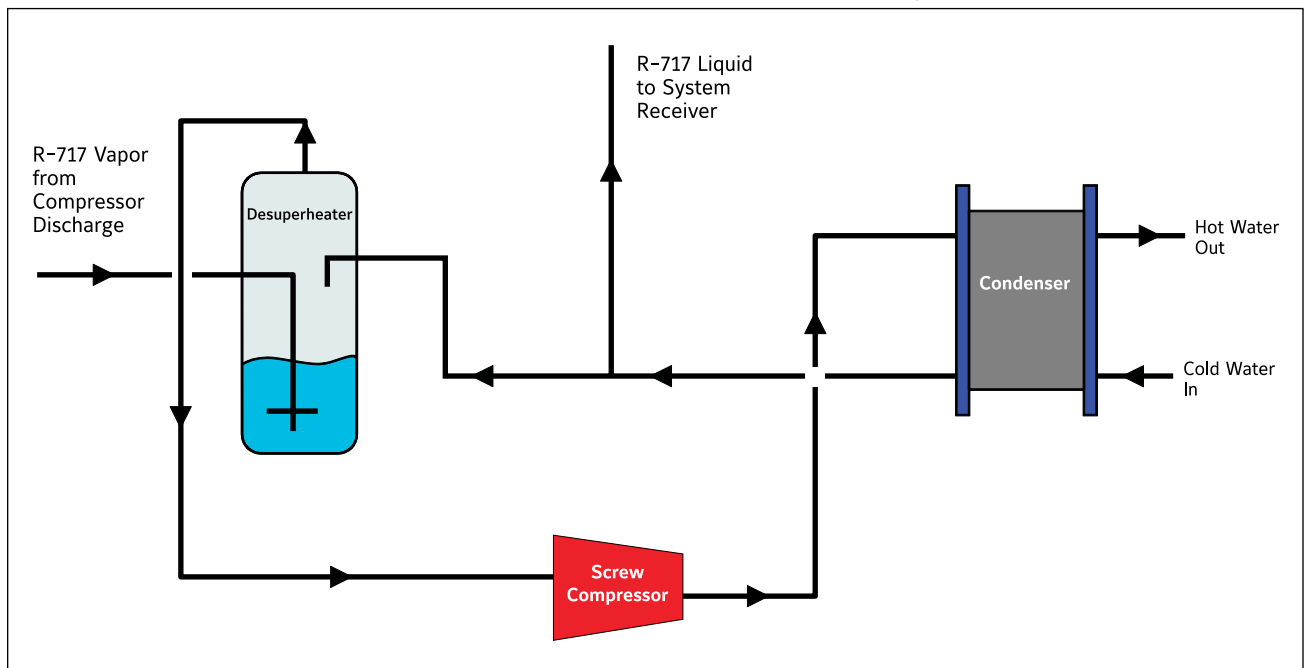
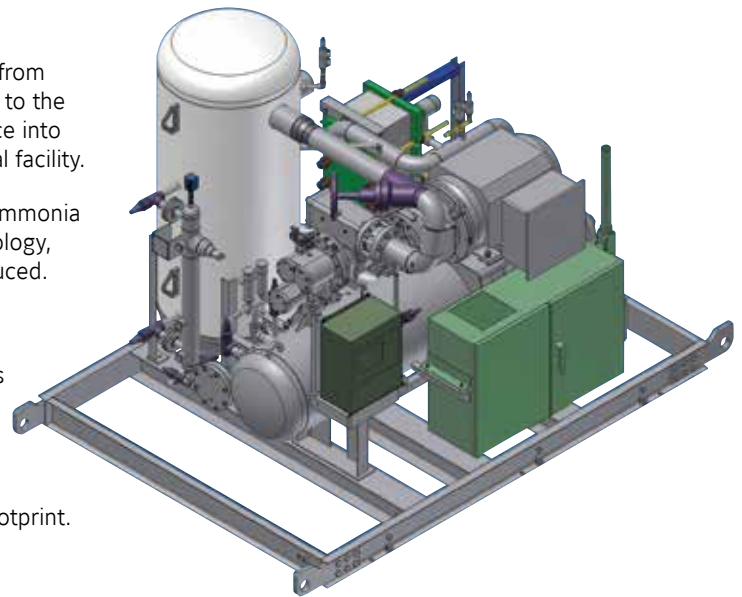
SmartPac packaged ammonia heat pumps capture the heat from your ammonia refrigeration system that is normally rejected to the atmosphere. SmartPac then transforms this valuable resource into hot water that can then be utilized throughout your industrial facility.

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.



SmartPac Heat Pump



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

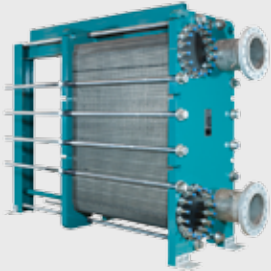
Model	Water ⁽¹⁾ (gpm)	Heat Source ⁽²⁾ Winter/ Summer	Heating Capacity (kBtu/Hr)	COP	Power Consumption (BHP)	Motor Size (HP)	Shipping Weight (lb)	Approximate Dimensions		
								L (in)	W (in)	H (in)
SmartPac 36	59	Winter	2,339	5.3	194	200	18,000	144	100	120
	82	Summer	3,250	7.3	184					
SmartPac 42	70	Winter	2,772	5.3	226	237	22,000	156	110	120
	97	Summer	3,847	7.3	215					
SmartPac 60	101	Winter	4,014	5.3	327	350	26,000	172	120	120
	140	Summer	5,555	7.3	310					
SmartPac 100	175	Winter	6,947	5.8	502	500	32,000	186	132	144
	242	Summer	9,605	8.0	481					
SmartPac 119	207	Winter	8,195	5.8	592	625	38,000	200	144	144
	285	Summer	11,297	8.0	568					

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



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