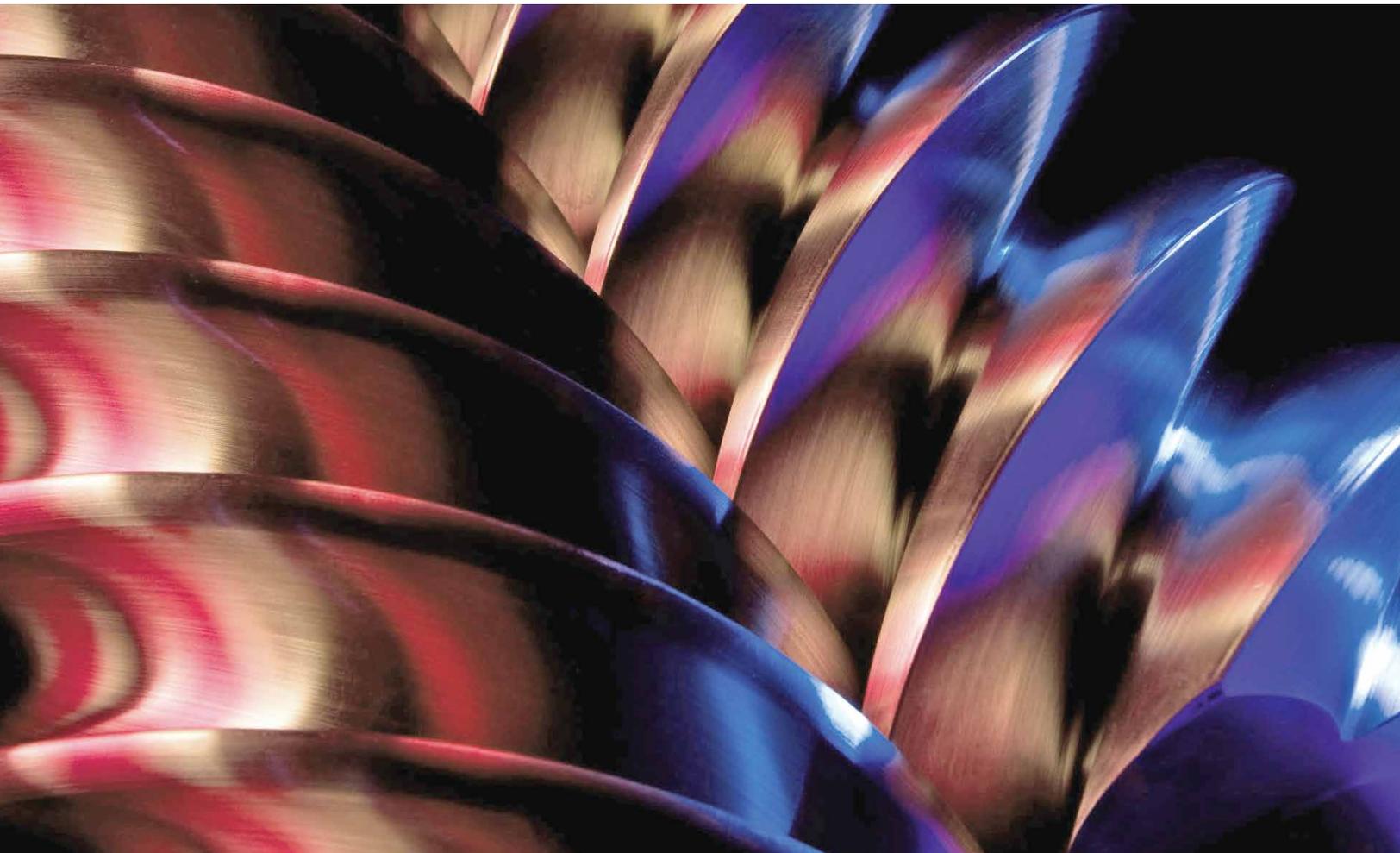




Rotary screw compressor packages



These packages are designed for industrial refrigeration.

The power behind **your mission**



FRICK Screw Compressors – reliable, innovative technology

FRICK Screw Compressors help you get the most out of your industrial refrigeration system

When it comes to industrial refrigeration, FRICK Screw Compressors offer an ideal blend of efficiency, long-lasting reliability, ease of service, and expertise.

FRICK Screw Compressors are continually evolving, top-tier technology capable of delivering the industry's lowest lifecycle cost.

FRICK Screw Compressors deliver the most progressive features needed for your application. That's because FRICK has more than 40 years of experience in screw compressor development and packaging.

In that time, FRICK has produced more than 150,000 Screw Compressors, and we have designed, engineered and assembled over 50,000 Screw Compressor packages in our Waynesboro, PA, facility.

All that expertise, plus low: maintenance, noise, vibration, and total cost of ownership make FRICK compressors the preferred technology you need.



RWF II 177
Compressor Package
with Mounted Solid-State Starter



Engineered for excellence, performance and reliability

Proven firsts

Groundbreaking FRICK innovations, refined over decades of real-world use, have been brought together to create the best in screw compressor package design and optimization. It's everything we've learned to date, and then some.

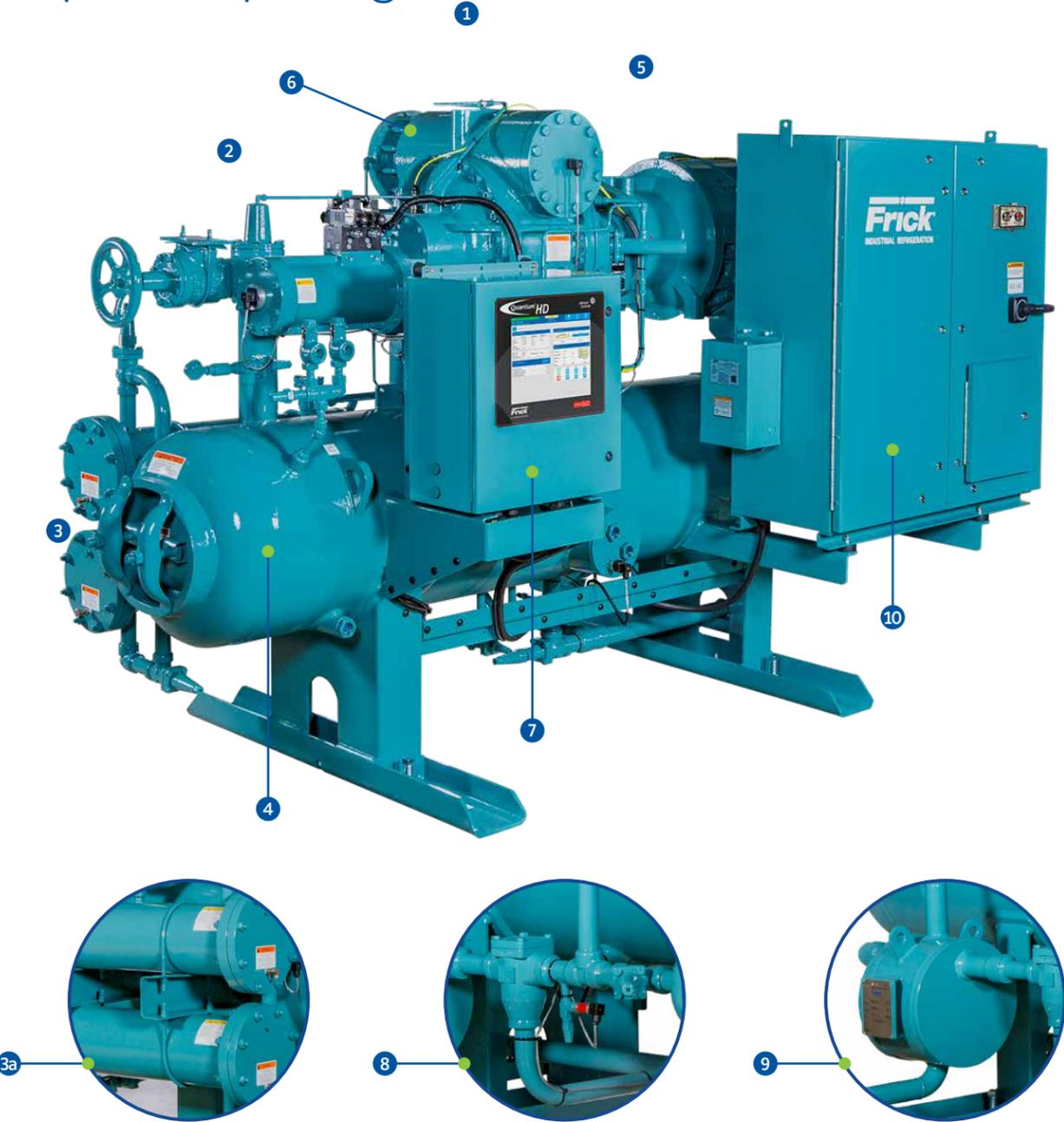
That innovation led to industry first design choices and features like the use of:

- Anti-friction bearings
- Infinitely variable volume ratio control
- Cold-start valve
- Infinitely variable capacity reduction
- Powermizer for ideal Vi control with the use of economizer
- Flanged motor mounting
- Superior, efficient oil cleaning and management
- Efficient, quiet and reliable motor design
- Quantum HD Unity control panel
- Streamlined package for peak safety, longevity, and reliability
- Package mounting of starters and variable speed drives
- EZ-CAL High Pressure Cut-out

Advanced FRICK Screw Compressors package design:

- Engineered and manufactured to meet industrial refrigeration requirements
- Designed to assure reliability, accessibility and ease of service
- Rotor designs that provide the strongest, most efficient operation for their applications
- Compact package allows reduced engine room size and lower construction costs
- High stage, swing and booster applications for all common refrigerants

The world's best industrial refrigeration compressor package



1 Compressor

- Anti-friction bearings**
- High reliability; reduced horsepower and predictive maintenance
 - Allows 5:1 turndown ratio (720 rpm min.)

- Variable volume ratio control**
- Maximum efficiency at all application conditions

- Infinitely variable capacity reduction**
- Precisely matched load requirements

- 2 Cold-start valve**
- Provides a quick start at any condition, and oil pressure without the need for a pump

- 3 SuperFilter II**
- Efficient oil cleaning down to 5 microns – longer bearing life

- 3a Dual oil filters (optional)**
- Ensures uninterrupted operation during service of the primary filter
 - Isolation valves included

- 4 Super Coalescer**
- Significantly reduces condensing pressures for maximum energy efficiency

- 5 Flange-mounted motors**
- No need for coupling alignment

- Smart Series motors**
- NEMA premium efficient, low noise motors with corrosion protection features and RTDs standard for efficient, quiet, and reliable operation.
 - VSD motors rated and constructed for 5:1 turndown ratio (720 rpm min.)

- 6 PhD Plus vibration protection**
- PhD Plus vibration monitoring helps stop interruptions before they start by detecting developing degradation and alarming before those situations become catastrophic.

- 7 Quantum HD Unity Controller**
- User friendly interface
 - Time proven control technology
 - Industrial grade hardware
 - Providing worry free operation

- 8 Smart, leak-free packaging**
- Internal oil passages and pre-bent pipe results in a reduction of fittings and welds, thus there is less leak potential

- 9 External oil cooling**
- Capacity and power penalties eliminated thanks to the latest technology in plate heat exchanger design
 - Plate and shell heat exchangers are constructed according to ASME Section VII, Div. 1
 - Fully welded plate heat exchangers are UL certified.

- 10 Mounted starters (optional)**
- Factory mounted, superior motor overload protection
 - Less mounting space, and reduced installation costs

- Reliability with confidence**
- Proven in thousands of installations

- Easy to service**
- All critical components are easily accessible

- Variable Speed Drive (optional)**
- Changes capacity by varying motor speed
 - Package-mounted version available

Lower total cost of ownership

While evaluating productivity improvements, it's important to take a close look at overall life cycle cost.

Innovative design

Here's where reliable, advanced, energy-saving FRICK technologies such as anti-friction bearings reduce operating costs significantly.

These bearings offer higher efficiency, less maintenance and, unlike conventional bearings, do not require an oil pump on the package. Furthermore, they are so dependable in extreme conditions they are used in commercial jet aircraft.

Industrial strength

Lower maintenance, operation and repair costs mean FRICK screw compressors provide increased productivity and efficiency, resulting in lower total ownership cost – giving you peace of mind while saving time, energy and money.

Just one savings example

Frictional losses are greater in sleeve bearings than in roller bearings. Using roller bearings will, on average, consume 3% less horsepower.

Example: Screw compressor with a 300 hp motor

300 hp x 3% = 9 hp

Anti-friction roller bearings save 9 hp over sleeve bearings.

At 10¢ per kW, a 9 hp efficiency could provide a **cost savings of approximately \$6,000 per year!**



FRICK technology delivers total cost savings

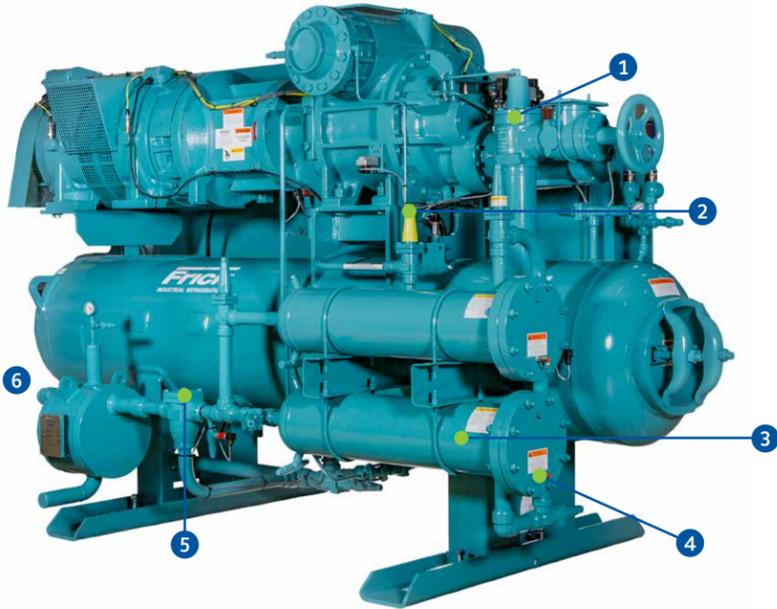
- Anti-friction bearings
- Super Coalescer
- Cold-start valve
- Variable volume ratio control
- External oil cooling
- Premium efficient motors

FRICK Screw Compressor packages components layout

FRICK Screw Compressor packages are designed and fabricated from the best components and materials. Special care is taken to arrange the components for maximum reliability and ease of service.



- 1 Discharge stop valve
- 2 Slide control valves
- 3 Compressor
- 4 Motor
- 5 Starter
- 6 Sight glasses
- 7 Quantum HD Unity Controller
- 8 Manway
- 9 Relief valves and manifold



- 1 Cold-start valve
- 2 Oil injection valve
- 3 Oil filter
- 4 Oil filter sample valve
- 5 Oil temperature control valve
- 6 Oil cooling heat exchanger

Our screw compressor packages, models and specifications

RWF II (591-6,402 CFM)



RWF II 316 Compressor Package

SuperSpeed packages – increased capacity

The six FRICK RWF II SuperSpeed (SS) Packages are specifically designed for use at 4,200 rpm with a variable speed drive (VSD). When a VSD is required in a cold storage application, these models increase the capacity per base model size. All components on the compressor package are designed for higher speeds.

RXF (72-596 CFM)



RXF 24 Compressor Package

RWF II Specifications ¹					
High Stage		R-717		R-507	
Model	CFM	TR	BHP	TR	BHP
100	591	212	238	203	267
119 SS ²	691	249	280	235	315
134	788	283	317	274	359
159 SS ²	921	333	375	318	425
177	1,040	380	414	355	463
209 SS ²	1,216	443	484	406	543
222	1,310	480	522	459	588
264 SS ²	1,531	559	611	530	692
270	1,618	593	644	562	721
316	1,864	681	742	639	833
375 SS ²	2,179	782	870	720	976
399	2,347	857	936	806	1,059
472 SS ²	2,744	984	1,098	908	1,243
480	2,824	1,027	1,124	950	1,262
546	3,209	1,167	1,278	1,059	1,438
496	2,920	1,053	1,180	973	1,343
676	3,981	1,422	1,610	1,256	1,846
856	5,068	1,807	2,054	1,582	2,503
1080 ³	6,402	618	678	745	963

1. Based on 20°F suction, 95°F condensing, 10°F liquid subcooling with 10°F superheat
2. SS - SuperSpeed models nominal @ 4,150 rpm. All other models nominal @ 3,550 rpm
3. Booster only @ -40°F suction, 10°F intermediate, no superheat

RXF Specifications ¹					
		R-717		R-507	
Model	CFM	TR	BHP	TR	BHP
12	71.5	25.3	30.3	20	35
15	89.2	31.6	37.9	27	44
19	110.5	39.1	46.9	35	54
24	144.1	51	61.1	43	71
30	180	63.7	76.3	57	88
39	223	78.9	94.5	72	110
50	292	103.6	124	94	144
58	341	120.9	143.3	113	166
68	403	142.7	169.3	134	193
85	499	176.8	209.6	169	240
101	596	211.4	250.7	201	292

1. Based on 20°F suction, 95°F condensing, 10°F liquid subcooling with 10°F superheat

High pressure screw (HPS) compressors

The FRICK HPS rotary twin screw compressor series is designed to operate at higher pressures (1,100psi - 273mm, 725psi - 157mm), which makes them a perfect fit for special applications, including CO₂ refrigeration and ammonia heat pumps.



HPS Specifications ¹					
				R-744 CO ₂ ¹	
Package model	Screw model and size (mm)	Driver speed (rpm)	Displacement - ft ³ /min (m ³ /hr)	Capacity - TR	Power - BHP
36	1510 (157)	3550	208 (354)	187	223
42	1510 (157)	4150	243 (413)	221	260
166	2709 (273)	3550	974 (1,655)	918	844
221	2709 (273)	3550	1,298 (2,206)	1,225	1,125

1. Based on -30°F suction, 20°F condensing, with 10°F superheat

Semi-hermetic screw (RSH) compressors

The FRICK Semi-Hermetic Rotary Screw package is designed for use as a low-stage CO₂ compressor or a high-stage ammonia compressor. This package incorporates a motor and screw compressor combined into a single housing strictly driven by VSD and controlled by a Quantum HD Unity Controller.



RSH-A-43 Ammonia ²				
Ratings: refrigeration duty/input power (TR/kW)				
7200 RPM				
CT °F	ET °F			
	0	10	20	30
80	63/73	82/76	104/80	123/83
95	59/87	75/90	98/94	115/99
110	53/103	70/108	91/112	109/117
3600 RPM				
CT °F	ET °F			
	0	10	20	30
80	29/37	38/38	48/40	60/42
95	27/44	35/46	46/48	54/51
110	24/54	32/57	42/58	51/60
1800 RPM				
CT °F	ET °F			
	0	10	20	30
80	12/19	17/20	20/21	24/23
95	11/23	15/24	19/25	23/27
110	10/23	13/31	17/31	21/33

2. Based on 5°F superheat (not contributing) and no subcooling. Power is at the output of the VFD.

RSH-C-43 CO ₂ Low-Stage Duty ³					
Ratings: refrigeration duty/input power (TR/kW)					
		ET °F			
		-10	-2	-30	-40
CT °F	5	375/103	309/125	251/141	198/154
	10	363/123	296/143	241/157	190/171
	15	350/142	284/160	231/174	181/188
	20	337/162	272/178	220/190	173/205

3. Based on 10°F superheat (not contributing), no subcooling and 7,200RPM. Power is at the output of the VFD.



FRICK – committed to cold for more than 100 years

Quantum HD Unity Controller

Simply the easiest-to-use, yet most powerful controller available today. Access any control, calibration or configuration value using on-screen touch control. With a large, high-definition display, navigation and reading of the operating values and control settings is easy.

Features and benefits

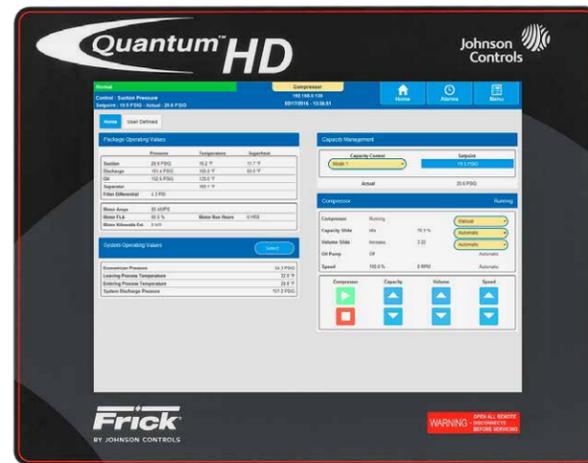
- High-definition, 15" easy-to-read display
- Logical/intuitive navigation – no control set point is more than three touches away; most are within two
- 3-level pin-number user management access control
- On-screen calibrations and built-in diagnostic functions
- Heavy-duty industrial processor provides peace-of-mind performance
- Real-time and historical data trending
- Ethernet-based for high-speed data
- Industry standard serial communication protocols: FRICK ASCII; Allen-Bradley® DF1 Serial; Modbus ASCII; Modbus RTU
- Ethernet: Modbus TCP and Allen-Bradley® Ethernet IP (web accessible) with up to eight proportional/integral control loops
- Service reminders

Unity control access

View any equipment that has a Unity controller from any other Unity controller on the same network. From a compressor panel, you can now view your AcuAir unit, condenser, vessel, evaporator, engine room or even another compressor Quantum HD Unity control panel (offers redundancy).

Smart connectivity

Getting connected to your Quantum HD Unity Controller is easy. The patented web-based remote access feature of the Quantum HD Unity can provide access from any networked computer in your facility.



Compressor package specific features

- Four user-defined capacity control modes for a wide application range
- Sequence up to 3 temperature levels with up to 8 compressors per level
- Capacity load profiling
- Smart compressor package safeties for trouble-free operation
- Optional PhD Plus vibration monitoring
- Motor temperature monitoring (stator and bearings)
- Retransmitting analog outputs
- Reciprocating compressor control



We deliver innovative products that help the world run smoothly, smartly, simply and safely.

FRICK is the leader in industrial refrigeration.

We provide world-class refrigeration technology that is reliably cold through our unrivaled expertise, developed and honed over nearly a century and a half. We relentlessly pursue and achieve superior-quality products so you can confidently focus on your core businesses.

We offer a full line of equipment for food and beverage applications, including rotary screw compressor packages, condensers, evaporators, heat exchangers, hygienic air handlers, controls, vessels and replacement parts for these products. And we work with an elite set of sales and installation partners – our FRICK Factors – whose dedication to your absolute satisfaction contributes to our successful products, processes and services.

Specify FRICK solutions. Find the FRICK Factors nearest you at www.johnsoncontrols.com/FRICKfactors



FRICK – committed to cold for over 100 years

World-class solutions

FRICK creates exceptional customer experiences with our best-in-class solutions.

Reliably cold

FRICK is synonymous with refrigeration – we have generations of experience building refrigeration solutions.

Unrivaled expertise

FRICK offers quality that is unrivaled in the industry.

About Johnson Controls:

At Johnson Controls (NYSE:JCI), we transform the environments where people live, work, learn and play. As the global leader in smart, healthy and sustainable buildings, our mission is to reimagine the performance of buildings to serve people, places and the planet.

Building on a proud history of nearly 140 years of innovation, we deliver the blueprint of the future for industries such as healthcare, schools, data centers, airports, stadiums, manufacturing and beyond through OpenBlue, our comprehensive digital offering.

Today, with a global team of 100,000 experts in more than 150 countries, Johnson Controls offers the world's largest portfolio of building technology and software as well as service solutions from some of the most trusted names in the industry.

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The power behind **your mission**

