

# Committed to cold.

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SINGLE SOURCE INDUSTRIAL REFRIGERATION SOLUTIONS

**Frick**<sup>®</sup>  
INDUSTRIAL REFRIGERATION



Johnson  
Controls

# Unrivalled expertise.

## Our Values

- Integrity
- Customer Satisfaction
- Innovation
- Sustainability

The FRICK® brand is produced by Johnson Controls, a global diversified technology and industrial leader maintaining global industrial refrigeration focused operations, and serving customers in over 150 countries.



As part of Johnson Controls, FRICK has access to the technical and financial resources of a Fortune 100 company. This allows us to share knowledge among our various sales and service organizations around the world.

Our global team creates quality products, services and solutions to optimize energy and operational efficiencies.

FRICK areas of specialization include:

- Industrial refrigeration systems in the preparation and storage of food and beverages
- Central chilling
- Pharmaceutical
- Marine based processing and storage systems

# A reputation for making reliable products.

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

## State-of the-Art Technology

FRICK leads the industrial refrigeration industry with cutting edge controls technology that allows for seamless system integration. Our product innovations continue to be a major focus as we strive to bring tomorrow's products to the marketplace today.

## Engineering Excellence

FRICK engineers have provided reliable products for over 150 years. Our engineers continually refine existing products, adding features and incorporating the newest technologies. This constant evolution of products ensures that FRICK will deliver customer satisfaction by providing the most technologically advanced equipment in the industry.

As we make changes to improve the performance of current products, our engineers ensure that these improvements can be applied to previous installations. This allows continual upgrades to existing equipment and enables you to keep your FRICK equipment current.

## Quality, Satisfaction and Reliability

The industrial refrigeration industry places high demands on the equipment it uses. Today's equipment must be easy to maintain and meet high standards for quality, reliability and energy efficiency. Unit designs must be both robust and easily installed.

FRICK products accomplish all of these goals. High quality materials, innovative design and modern manufacturing methods add up to a product that is unmatched in overall quality.

## Environmentally Green

Facility owners and operators are focused on energy efficiency now more than ever. Energy efficiency investments must provide a reasonable payback. With our many years of experience in the industrial refrigeration industry, we provide varied and innovative energy efficiency solutions for your system.

## Specify FRICK Solutions

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. Find the FRICK Factors nearest you at [www.frickcold.com](http://www.frickcold.com).



# Innovation that works for you.

FRICK is the world's leading supplier of industrial refrigeration and compression equipment to the food and beverage industry. Coolware™ provides an easy and powerful way to select that equipment.

## Industries Using FRICK Equipment

- Bakery
- Beverage
- Convenience food
- Food processing plants
- Food storage and warehouse
- Fruits and vegetables
- Ice
- Poultry – chicken and turkey
- Recreation – ice rinks
- Red meat – beef, pork and lamb
- Seafood and fish

## Coolware – Easy and Powerful

Coolware selection software enables the user to select the best system components for a refrigeration system. Coolware allows products to be selected, priced and placed directly into an order document, assuring that the correct equipment is ordered.

It also provides flexibility in selection considerations to model a total system that is green, sustainable and efficient. Coolware is the most sophisticated and complete software found in industrial refrigeration today.



# World-class solutions.

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FRICK, the leader in industrial refrigeration, is the only manufacturer to offer a full line of equipment for food and beverage applications. We have compressor packages, complete packaged systems, low charge central systems, pressure vessels, hygienic air units, evaporators, condensers, heat exchangers and controls.

## Compressor Packages

FRICK compressors help you get the most out of your industrial refrigeration system. Our rotary screw compressors feature advanced technology and inherent reliability. With dependability proven in thousands of installations, FRICK compressor packages operate with the most energy efficiency possible.

## Packaged Equipment

FRICK PowerPac™ units reduce the need for field labor. FRICK compressors, heat exchangers, evaporators and condensers come in a compact package controlled by Quantum™ HD controls, the FRICK "turnkey" software solution.

## Low Charge Central System

The unique FRICK Low Charge Central System (LCCS) enhances the operational efficiency and reliability of a central refrigeration system with controlled precision from our packaged remote distributed condensing units. This configuration results in an extremely low total system ammonia charge of approximately 1.5-3 lbm/TR. The complete FRICK low charge solution comes with compressors, evaporators, condensers and controls.

## Pressure Vessels

FRICK custom vessels are designed and manufactured to meet the exact specifications of your refrigeration facility. We make accumulators, intercoolers, economizers, surge drums, receivers, oil pots, oil separators, horizontal and vertical recirculator vessels, and vertical and horizontal remote evaporator packages.

## Hygienic Air Units

AcuAir® systems are precision engineered and painstakingly built to the high sanitary standards needed

for food processing. AcuAir units provide temperature, pressure and humidity control. This delivers clean, sanitary air to the environment by managing condensation, removing contaminants and limiting air migration. An array of options allow you to customize the unit to meet your every need.

## Evaporators

FRICK evaporators have precision-fit fan blades resulting in quieter operation. They are lighter because of low-weight, high-strength stainless steel tubing with aluminum fins. Hinged fan panels, drain pans and fans on davits allow units to be opened and cleaned. Also, FRICK evaporators can be supplied with variable frequency drive control for each motor.

## Condensers

FRICK condensers deliver a lifetime of cost savings, beginning with easier installation and easy access to components for reduced maintenance hours and costs. If you're looking for cooling technology that will stand the test of time and even work in remote locations with degraded water quality, it's time to discover the advantages of FRICK evaporative condensers.

## Heat Exchangers

Our plate heat exchangers are in successful operation in a variety of applications for food and beverage markets and are widely accepted in the industrial refrigeration market.

## Controls

The Quantum HD is as close as you can get to a programmable logic controller (PLC), at a fraction of the cost. Our controls solution engineers have designed and commissioned custom-engineered control systems worldwide, and provide a single operating program that towers over other controllers in our industry.

# Compressor Packages

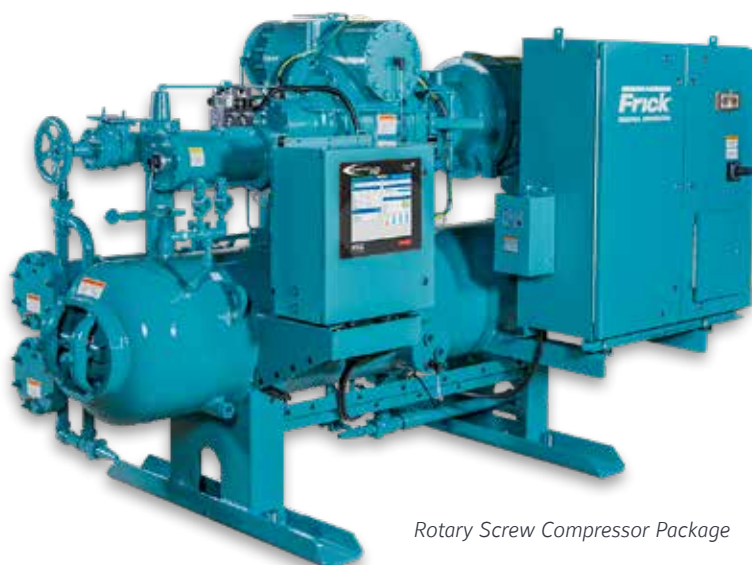


## RWF II and RXF Rotary Screw Compressor Packages

- Infinite and step volume control for maximum efficiency
- Infinite capacity control to match changing loads
- Variable speed drives ensure that your compressor operates at the most energy efficient level, dramatically reducing operating costs
- Smart Series™ motors are NEMA premium efficient, low noise and standard on FRICK compressor packages
- Flange mounting eliminates troublesome field alignment between low-noise motor and compressor
- Factory-mounted starter simplifies electrical installation
- Cold-start valve provides oil pressure without the need for a pump
- Fewer threads, less fittings and welded connections ensure precise and tightly sealed units
- Oil cooling options
  - EZ-Cool™ Liquid Injection uses a motorized expansion valve controlled by Quantum HD for optimum discharge temperature control
- or**
- Thermosyphon oil cooling uses a plate and shell vessel to cool the oil avoiding compressor capacity losses or power penalties

QUIET, RELIABLE  
AND EFFICIENT.

FRICK Rotary Screw Compressor Packages lead the food and beverage industry with the most innovative and broadest product range available for industrial applications.

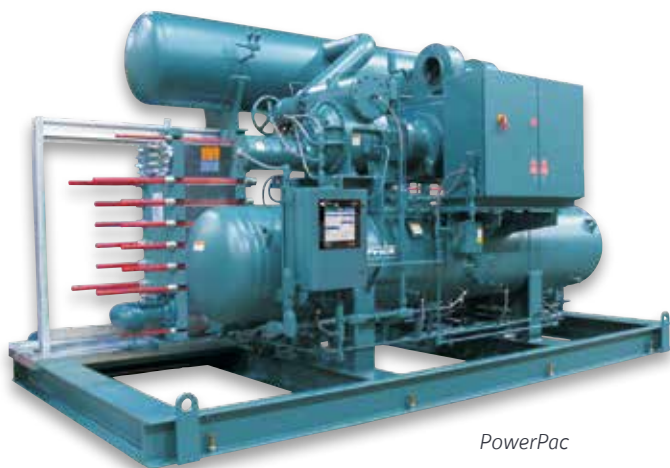


*Rotary Screw Compressor Package*

# Packaged Equipment



Easy to install and easy to own



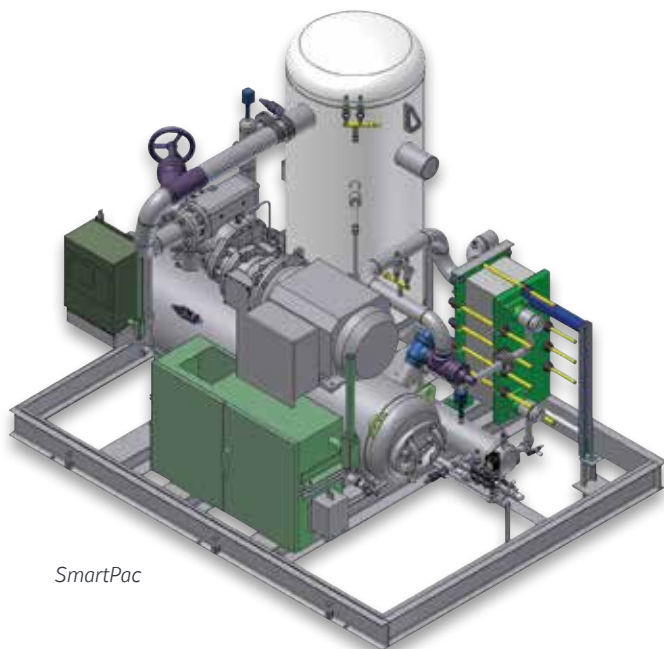
PowerPac

## PowerPac™

PowerPac reduces the need for field labor by combining compressors, heat exchangers, evaporators, and condensers in a compact package.

Putting advanced heat exchanger technology to work, refrigerant usage is reduced, maximizing operating efficiency. PowerPac also reduces the requirement for a process safety management (PSM) program.

- Less job site labor means lower cost
- Optimized design means fewer welds
- Factory built in controlled environment; site-delivered ready to operate
- Simplified electrical hookups
- Process side uses pumped glycol
- Freeze protection from 3-directional expansion
- Plate and frame heat exchanger means less refrigerant charge



SmartPac

## SmartPac™

With the SmartPac, FRICK screw compressors, heat exchangers, pressure vessels and controls all come together in a compact package ready to install. Advanced heat exchanger technology increases operating efficiency with a reduced refrigerant charge.

When installed by a FRICK Factor, SmartPacs get a 3-year warranty.



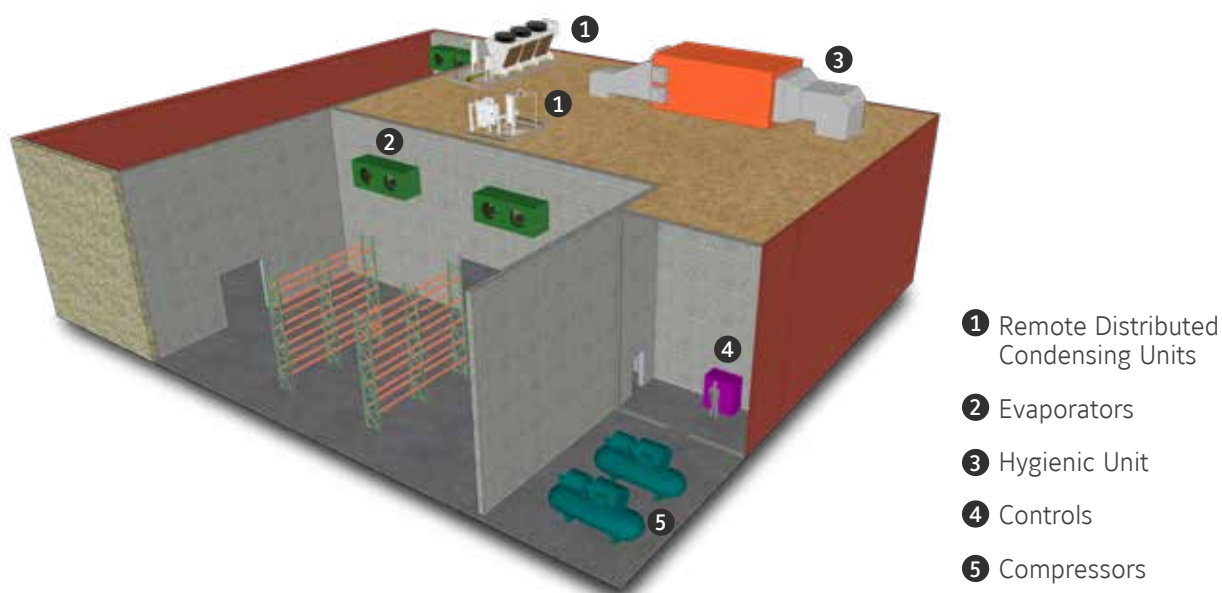
# Low Charge Central Systems



## The low charge solution from a single source

The FRICK Low Charge Central System (LCCS) enhances the operational efficiency and reliability of a central refrigeration system with the controlled precision of the FRICK packaged remote distributed condensing (RDC) units.

This configuration results in a total system ammonia charge of approximately 1.5–3 lbm/TR. The complete FRICK low charge solution includes compressors, evaporators, condensers and controls.



## Advantages

- Significantly reduces ammonia charge by 85% or more
- Lowest total cost of ownership of any low charge system
- Minimal liquid in occupied space
- Eases regulatory burden
- Flexibility with single and/or two stage, economized, side loads
- Easy expansion capabilities
- Capacity redundancy
- Scalable and flexible for easy expansion
- Likely to reduce insurance costs due to significant reduction of liquid ammonia, especially in the building
- Addresses water scarcity issues without water treatment concerns, using adiabatic or air-cooled condensing
- Ease of system start-up after power disruption
- Multiple heat recovery possibilities
- Compressor wiring and maintenance in smaller engine room
- Retains familiar industry components
- FRICK Factor customization, installation and service



# Pressure Vessels



## Engineered for clean, safe operation

### Accumulators

Vertical accumulators with or without coils

### Intercoolers

Vertical intercoolers with or without coils

### Receivers

- Horizontal and vertical high-pressure receivers
- Horizontal and vertical thermosyphon receivers
- Vertical high-pressure thermosyphon receivers

### Oil Pots

Horizontal oil pots

### Economizers

Flash type and shell-and-coil type

### Surge Drums

Horizontal surge drums with single-flow or dual-flow



### Surge Drum Packages

Horizontal vessel design with sufficient room for plate and frame heat exchangers mounted below vessel.

### Liquid Recirculator Vessels and Packages

Horizontal and vertical recirculator packages and vessels range from 24- to 96-inch outside diameter. Offered with either mechanical seal or semi-hermetic style pumps, packages are completely factory piped and come standard with a 3-inch float column and 3 level eyes. Standard ammonia packages include an oil pot.

Options include unit-mounted controls and starters, liquid-level control systems, oil pot heaters, variable speed drives, and liquid makeup assemblies (shipped loose).

### Special Vessels and Packages

FRICK vessels and packages can be custom-manufactured to specific application and design requirements.

# Hygienic Air Units



## FRICK AcuAir® Hygienic Air Units

FRICK AcuAir systems are engineered and built to help you meet the requirements of the United States Department of Agriculture. These units are built with quality in mind and engineered to provide clean, tempered air to maintain a sanitary environment.

Maintaining a process room's temperature, humidity, pressure and filtration is critical to providing a safe food processing environment that helps to meet the needs of the Food Safety Modernization Act.

- Hygienic air conditioning
- Rooftop installation
- Engineered to meet specific sanitary needs



*Recessed steel drain pans are triple-sloped for positive drainage process.*



## Makeup Air Units

Whether your application requires simple fresh-filtered air with little temperature conditioning or specific volumes of tempered air, the AcuAir applications team will help you to provide the correct solution to your project.

## Custom Engineering

The extensive experience of FRICK AcuAir and the array of unit options allow us to customize a unit for your specific application.

## Designed for Internal Wash-Down

Floor drains are provided throughout the unit that are piped to the exterior of the unit base. Under the cooling coil and downstream, the unit is provided with recessed stainless steel drain pans that are triple-sloped for positive water drainage. Internal wiring and motors are also engineered for wash-down duty.

## Precise Control

The standard AcuAir control platform uses Quantum LX technology to deliver the precise control necessary to meet your process room requirements. Proven in thousands of applications, the Quantum LX is field configurable to adjust to the changing needs of your process.

# Evaporators



## Innovative solutions

### FRICK heavy-duty evaporators

Quiet fan operation

Fully welded hygienic drain pans

Epoxy-fin for long life

Full coverage drain pans



## A HEAVY-DUTY EVAPORATOR PROVIDES:

- Reliable heat transfer for continuous operation at all temperature levels
- Design flexibility in geometry, fan selection and construction materials

### Quantum HD Unity

**Provides the right solution for efficient evaporator control**

- Flexible defrost-sequencing control platform
- Control up to 30 evaporator zones from each Quantum HD Unity system control
- Remote evaporator I/O panels can be mounted wherever necessary to minimize installation cost
- Manages energy consumption during peak periods by load shedding based on schedule, kW limits or a combination of schedule and kW limits
- Control for dehumidification, heating and re-heat are standard
- Modulating liquid feed and VSD fan operation standard for each zone
- Optional HOA switches for all basic control valves per zone

### Rooftop Freezer System

**Penthouse unit features**

- 4" (R-32) or 5" (R-41) urethane foamed-in-place wall panels
- Exterior painted, stucco-embossed steel panel
- Large service doors with heated seals
- OSHA guards at fan inlet
- Fan motor service rail
- Interior maintenance lighting
- Refrigerant and drain lines extend through the insulated enclosure
- Insulated drain pan – with or without hot gas pan coil
- External electrical control panel (optional)
- FRICK variable frequency drive starters are available



# Evaporative Condensers



## Reliable year-round operation

### Easy Maintenance

- **Internal Access** – The interior of the unit is spacious and easily accessible via multiple large, hinged access doors for adjusting the float valve, cleaning the strainer or flushing the basin.
- **Triple Guard Corrosion Protection** – The basin contains a boundary layer for superior leak prevention.
- **Harmony™ Removal System** – Water distribution branch removal system that requires no tools.

### Low Installed Cost

- **Support** – All models mount directly on two parallel I-beams and ship complete with motors and drives factory installed and aligned.
- **Modular Design** – Large models ship in multiple sections to minimize the size and weight of the heaviest lift, allowing for the use of smaller, less costly cranes.



### Energy Saving

- **PE VFD Motors** – Fan motors are premium efficient inverter duty.
- **VFD Starters** – FRICK variable frequency drive starters are available.
- **Design** – Evaporative condensers lower the condensing temperature, saving up to 15% compared to a traditional condenser.

### Quantum HD Unity Condenser Control

Dynamic or fixed set point discharge pressure control. Redundant condenser pressure inputs mean no downtime for a failed pressure sensor. Settings for defrost pressure control, Quick Step operation, VSD fan operation and many others ensure steady operation even in upset conditions. Other features such as bleed control and non-condensable gas warnings help save operational costs for the entire system.



# Heat Exchangers



## Proven technology

Plate heat exchangers are in successful operation in a variety of applications for the food and beverage markets and widely accepted in the industrial refrigeration market.

## Quality Heat Exchanger Solutions

Components of the energy intensive refrigeration cycle are changing rapidly to maximize the commercial payback and thermal efficiency. FRICK plate heat exchangers fulfill this need for efficiency. They have proven reliability and high performance as both evaporators and liquid cooled condensers.

### Flooded evaporation

A flooded evaporator has liquid refrigerant, at its saturation point, fed into the plate evaporator. The heat from the fluid being cooled causes the refrigerant to boil in the heat exchanger. In most cases, the basic system uses gravity to feed the refrigerant from a separator vessel and the differences in density of the two-phase refrigerant cause it to flow through the heat exchanger and return to the separator. This is referred to as a natural recirculation or thermosyphon system.



## FRICK Packaged Heat Exchangers

### Compact chilling solution features

- Semi-welded plate heat exchanger
- Liquid level control with probe and controller
- Mounted proportional modulating liquid supply feed assembly
- Refrigerant level column with high level float switch
- Efficient dual-flow surge drum

# Controls

## Quantum™ HD Unity Compressor Controller

The Quantum HD Unity compressor controller is the most widely applied retrofit controller in industrial refrigeration, outpacing all other retrofit options combined for the following reasons:

- Reliability
- Easy, field-configurable universal program
- Competitive price with superior value
- Industry-leading product support
- Shortest lead time in the industry
- Unmatched emergency breakdown response
- Free and easy software

These attributes are now being carried into complete system control with Quantum HD Unity System Controls.

## Quantum HD Unity System Controls

Quantum HD Unity System Controls provide control for compressors, condensers, vessels, evaporators and engine rooms – all on the same platform.

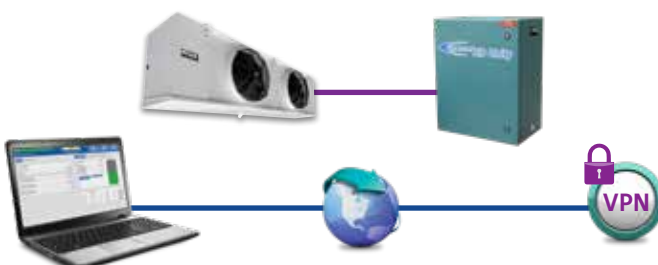
The intuitive navigation and unmatched reliability of the Quantum HD is now available in system controls while making a quantum leap in networking and remote access.

All networked Quantum HD Unity controllers are accessible from any one of the other networked controllers.

Designed primarily for cold storage and similar refrigeration processes, Quantum HD Unity System Controls are the smart, economical solution for system controls.



Allen-Bradley Compactlogix PLC Controller by FRICK Engineered Control Solutions.





## Engineered Control Solutions (ECS)

FRICK Engineered Controls Solutions has been meeting the industrial refrigeration market's custom control needs for nearly 40 years, setting the standard in the following areas:

- Best control practices
- Energy savings
- Unmatched drawing packages
- Product support
- Free lifetime emergency support
- Non-proprietary hardware and software
- Total combined system experience
- Overall customer satisfaction

FRICK ECS offers both Allen-Bradley Compactlogix (shown) and Controllogix, as well as Opto-22 PLCs as standard.

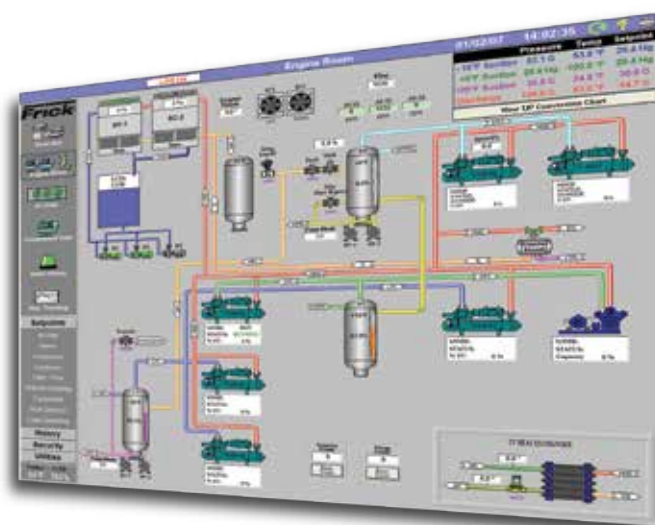
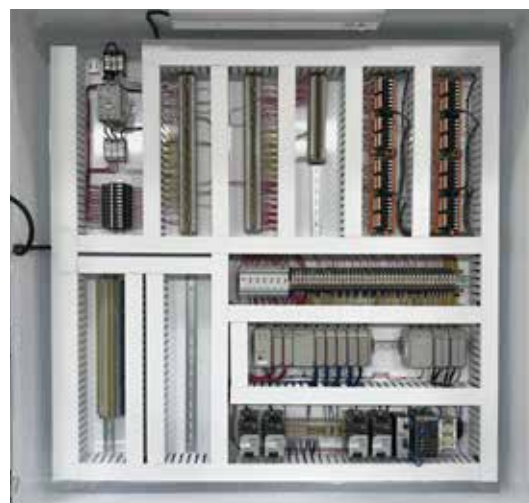
We start with a solid base program, then we build it to suit your needs.

Each system is:

- Commissioned and supported by the controls engineer who programmed it
- Built in our own UL-508A shop
- Backed by free lifetime emergency support

### Operation and Graphics

These evaluations and subsequent control are displayed on customized graphics in P&ID format. By depicting the physical layout of the facility, they allow the operator to clearly understand the operating status of the entire system at a glance.



*Allen-Bradley Compactlogix PLC Controller  
by FRICK Engineered Control Solutions.*



# We promise to go further.

## SINGLE SOURCE INDUSTRIAL REFRIGERATION SOLUTIONS

### World-Class Solutions

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

### Reliably Cold

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

### Unrivalled Expertise

FRICK offers quality that is unrivalled in the industry.



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INDUSTRIAL REFRIGERATION

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Form 020.001-SG1 (2019-02)  
Supersedes: 020.001-SG1 (2017-11) • Subject to change without notice • Published in USA • 03/19 • PDF

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