



ATMO  
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natural refrigerants

June 16 & 17, 2016 – Chicago

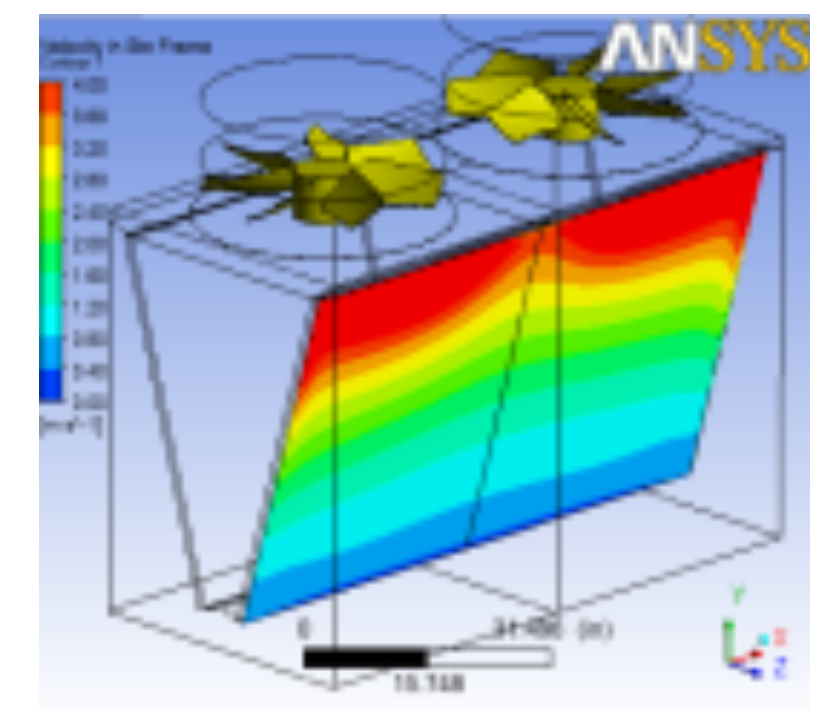
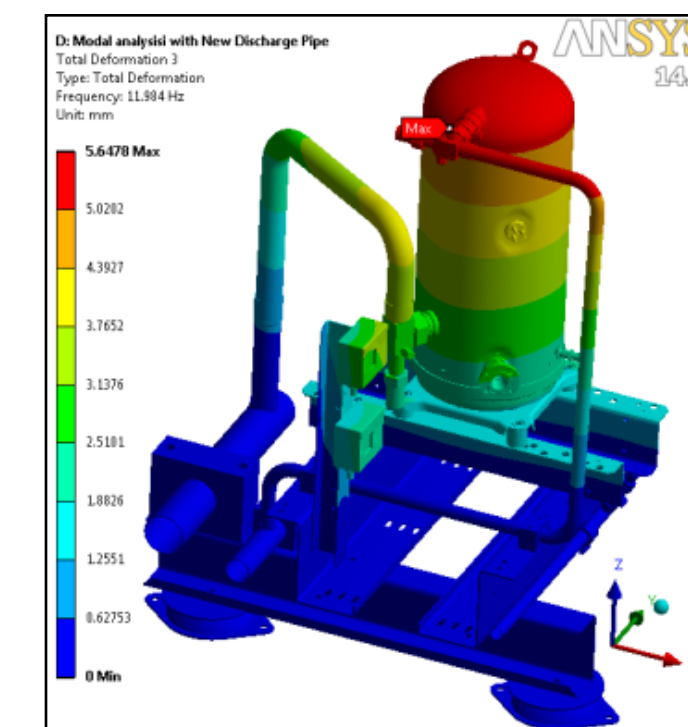
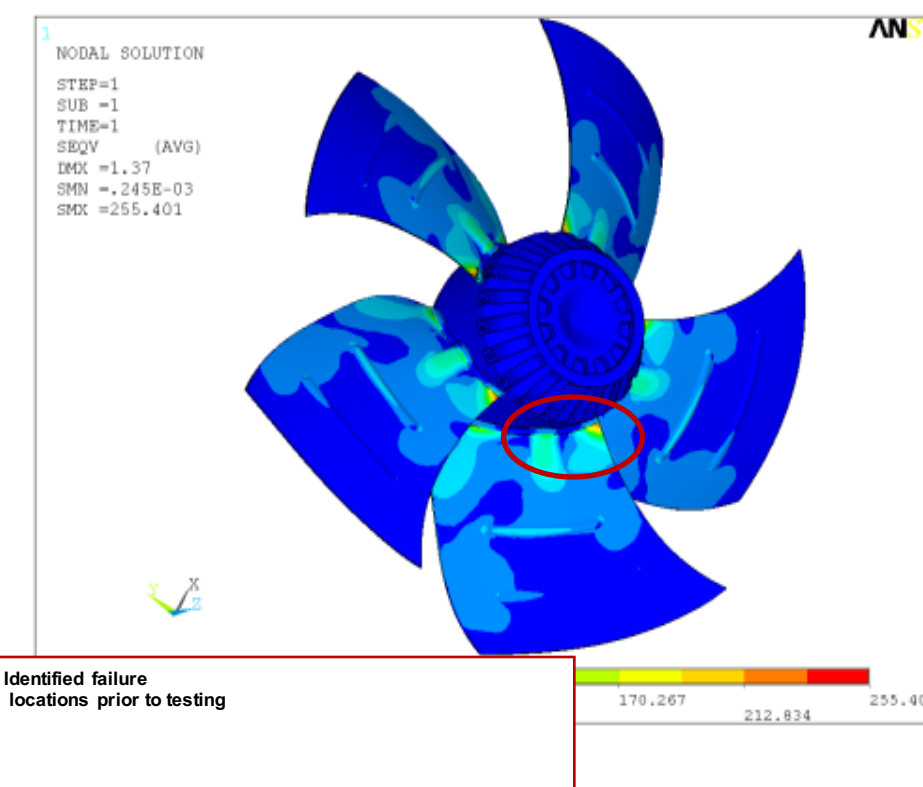
**KYSOR/WARREN**

### Open Innovation

- *Support new development through external innovation*
- *Create development partnerships outside our industry*
- *Accelerate “time to market” with concurrent/joint development*
- *Tap into core competencies beyond our own*
- *Develop new business models that create value*

### “World Class” engineering development center of Lennox International (LITC)

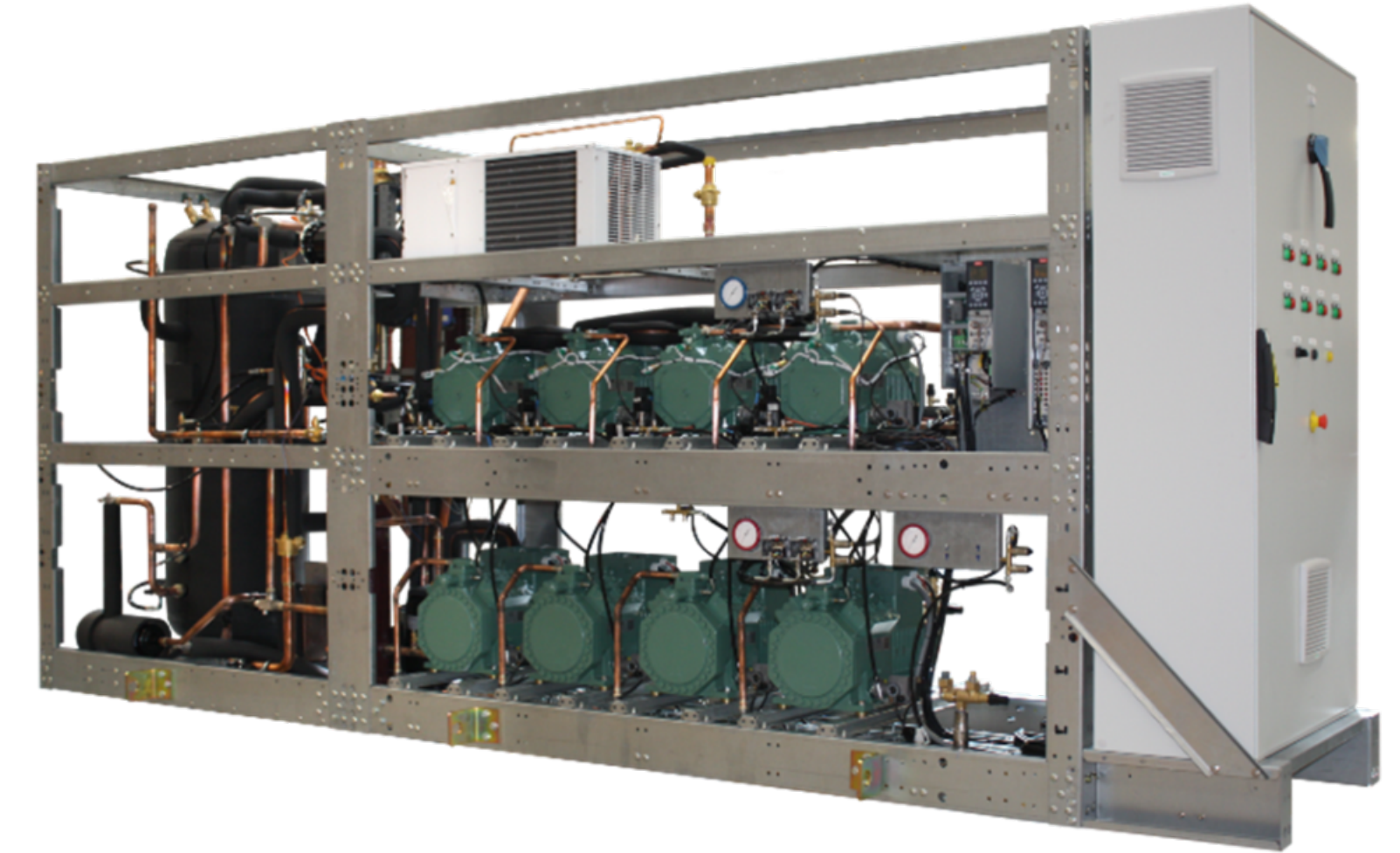
- Industry leading capabilities:
  - *Computation Fluid Dynamics (CFD) analysis*
  - *Finite Element Analysis (FEA) optimization*
  - *Mechanical engineering*
  - *Controls hardware/software engineering*
  - *Benchmarking / Value Engineering tools*



- “World Class” product development & testing facilities
- Support customers globally through close collaboration
- Global performance standards capabilities
- Verify and test the latest technologies available
- Verify energy and cost efficiency technologies and components
- Validate components from different suppliers and competing technologies in parallel



- Global designs accessible around the world
- Expandable to meet increasing store loads
- Common component locations
- Multiple options with pre-determined mounting locations
- Standardized design reduces service complexity



*Transcritical CO2 Booster Rack*



*Microchannel Condensers*



*Coming Soon, Gas Coolers*



*Rooftop Ammonia Rack*



### Standard Features

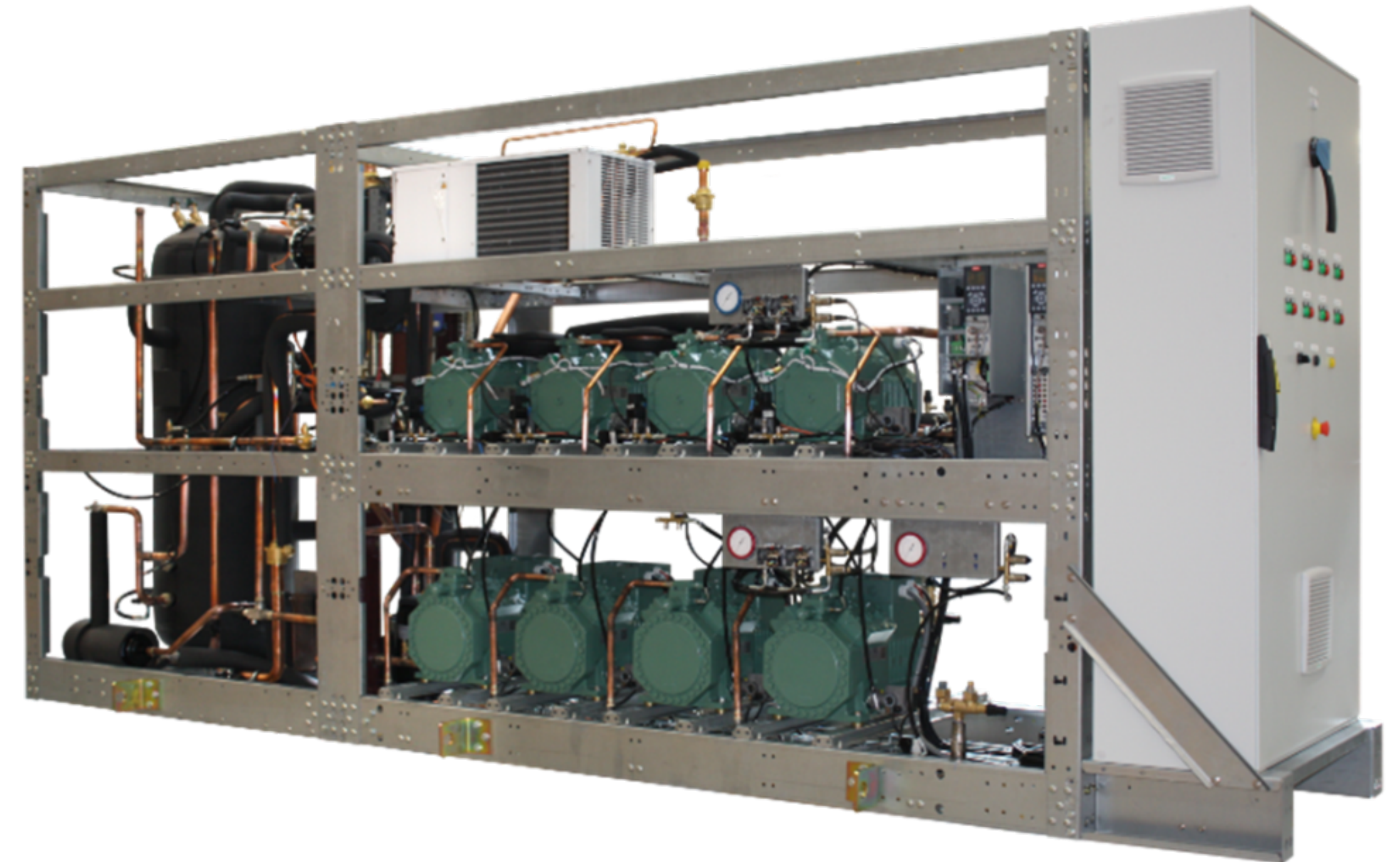
- Semi-hermetic reciprocating compressors
- Electronic oil management system
- Air-cooled gas cooler
- Medium Temperature VFD

### Optional Features

- Low Temperature VFD
- Hermetic digital scroll compressors
- Warm climate optimization
  - *Parallel Compression*
  - *Ejector Technology*
- Heat reclaim

### Benefits

- 100% HFC-FREE, SINGLE REFRIGERANT SYSTEM
- Reduced pull down time compared to HFC DX systems.
- CO<sub>2</sub> is a climate neutral refrigerant



### Standard Features

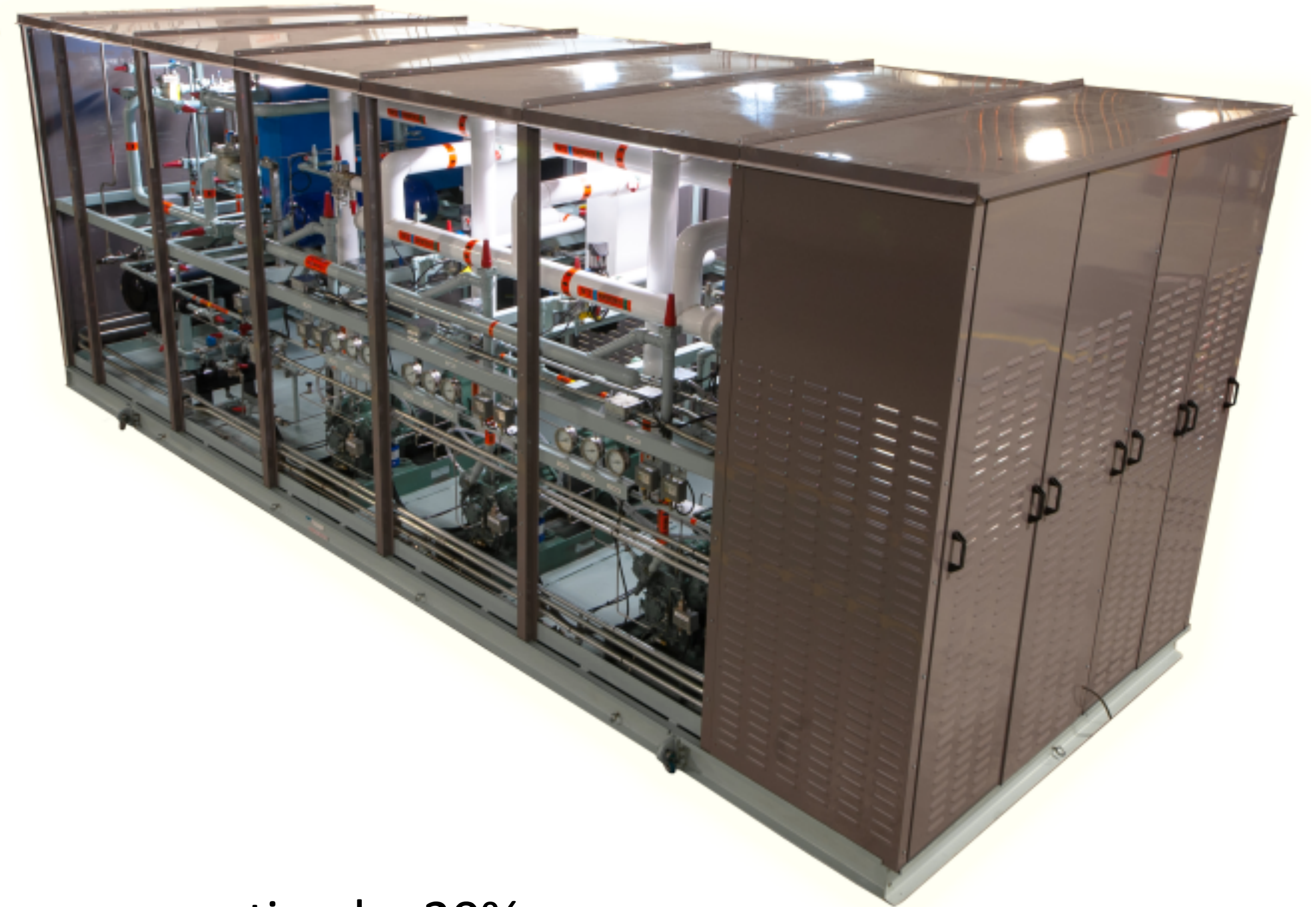
- Self-contained NH<sub>3</sub> rack package
- VFD capacity modulation
- Automatic oil recovery
- Leak detection and purge ventilation
- Emergency pressure control

### Optional Features

- Ammonia diffusion system
- Heat reclaim
- Capacity control valve

### Benefits

- 100% HFC-FREE
- High efficiency refrigeration cycle reduces energy consumption by 20%
- Environmentally friendly, having zero ODP (Ozone Depletion Potential) and zero GWP (Global Warming Potential).
- Ultra-low charge – 1 lb./TR; less than 150 lbs. per system (53 lbs. @ Piggly Wiggly)



### Standard Features

- All aluminum coil construction
- Increased primary surface area
- Light weight construction
- Lower overall height

### Optional Features

- Variable speed EC fan motors
- Single or Split condenser

### Benefits

- Reduced refrigerant side pressure drop
- Corrosion resistant design
- Refrigerant charge reduction
- Reduces structural requirements for support



- Kysor/Warren and Heatcraft are developing best in class HFC-Free products for the refrigeration industry
- HFC-free display solutions available, to compliment your HFC-free system
- Our global designs are intended to simplify manufacturing and maintenance
- Representatives are here right now, say “hello” and ask them answer any questions you have
- Make an appointment and our sales specialists will help you identify the right HFC-free system for you
- More innovative products are in development to reduce the need for HFC's







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Thank you very much!