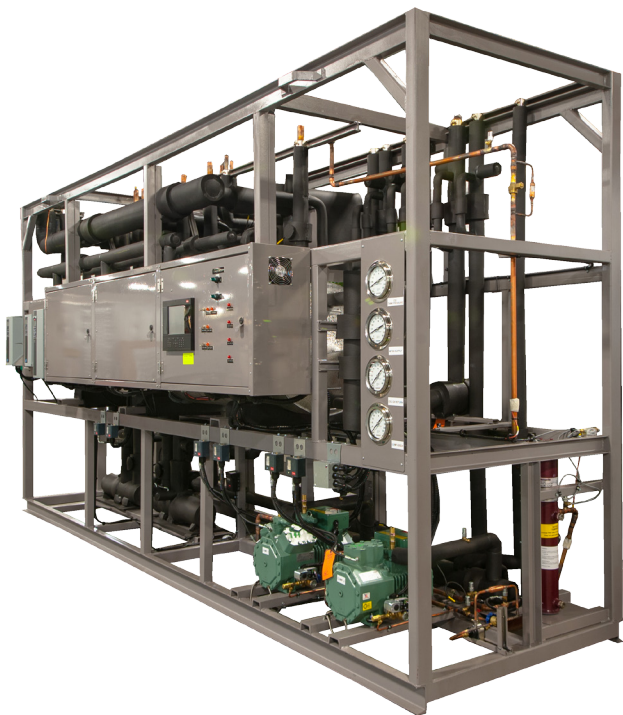




CO₂ Transcritical Refrigeration
Sales Brochure



About Heatcraft Worldwide Refrigeration

Heatcraft Refrigeration has been creating solutions with customers for over 125 years. Built on a tradition of excellence, we are proud of our commercial and industrial refrigeration products and services; and our commitment to our customers. Solutions that help our customers achieve their goals for sustainability, profitability and compete in today's changing commercial and industrial refrigeration environment.

We provide unparalleled customer service and are on the leading edge of technology in the manufacture of evaporators, condensers, condensing units and mechanical refrigeration systems.

Our core values, building relationships and creating quality solutions for our customers, are fundamental to our success. These values define who we are and set us apart from our competition.

CO₂ Transcritical Refrigeration System

Heatcraft's transcritical CO₂ system provides an optimized solution for sustainable refrigeration system design. This system provides an HFC-free refrigeration solution while providing significant lifecycle cost savings for refrigerated warehouse and food processing facilities.

System Benefits:

- Completely HFC-free system (uses only CO₂)
- Naturally occurring CO₂ refrigerant
 - Ozone Depletion Potential (ODP) of 0
 - Global Warming Potential (GWP) of 1
- Well developed, known CO₂ transcritical technology
- Very energy efficient in most climates

Heatcraft Advantages:

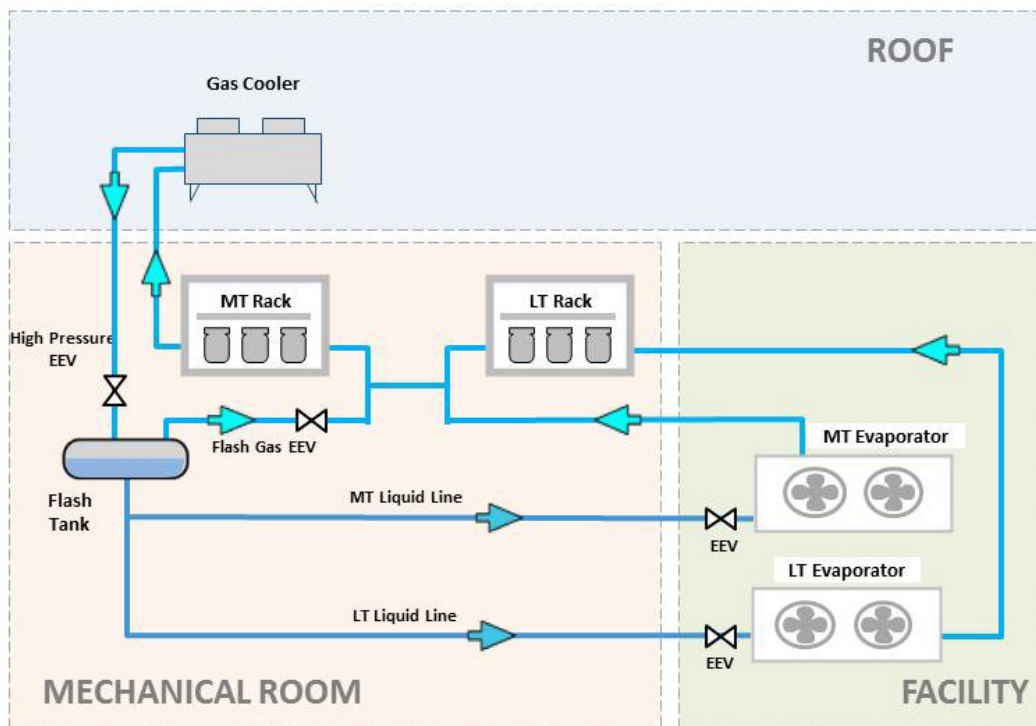
- Commitment to innovation and quality
- Proven history with CO₂ as a refrigerant
- Extensive qualification and testing protocols



Typical Performance VS Traditional HFC System

	TRADITIONAL HFC	CO ₂ TRANSCRITICAL
GLOBAL WARMING IMPACT	Baseline	↓98%
ENERGY COST	Baseline	↓6% - 10%
TOTAL COST OF OWNERSHIP	Baseline	↓5% - 10%

System Layout



System Operation

Heatcraft's transcritical CO₂ refrigeration system is completely HFC-free and designed to provide superior performance for refrigerated warehousing and food processing applications.

In this system, liquid carbon dioxide is distributed throughout the facility to provide cooling for each refrigerated space. Electronic expansion devices control temperatures by metering refrigerant flow into evaporator coils optimized specifically for use in CO₂ applications.

Suction gas from the low temperature evaporators return to the low temperature compressors on the CO₂ parallel rack. The gas is compressed to the same pressure as the suction line coming from the medium temperature evaporators. It is then combined with the medium temperature suction gas and any flash gas coming from the flash tank. This mixture then enters the medium temperature compressors before being routed to the gas cooler for heat rejection (gas cooling or condensation). Upon exiting the gas cooler, the refrigerant passes through a high pressure EEV before being separated into gas (which goes to flash tank and is sent to medium temperature suction) and liquid (which completes the refrigerant cycle).

NOTE: the low temperature and medium temperature compressors are typically combined on one rack frame.

Design

STANDARD FEATURES	OPTIONS
<ul style="list-style-type: none">■ Air-cooled gas cooler■ Electronic oil management system■ Case and unit cooler coils optimized for use with CO₂■ Electronic expansion valves	<ul style="list-style-type: none">■ Evaporative assisted gas cooler■ Heat reclaim■ Warm climate optimization



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