



Advansor

Capable of making a difference.

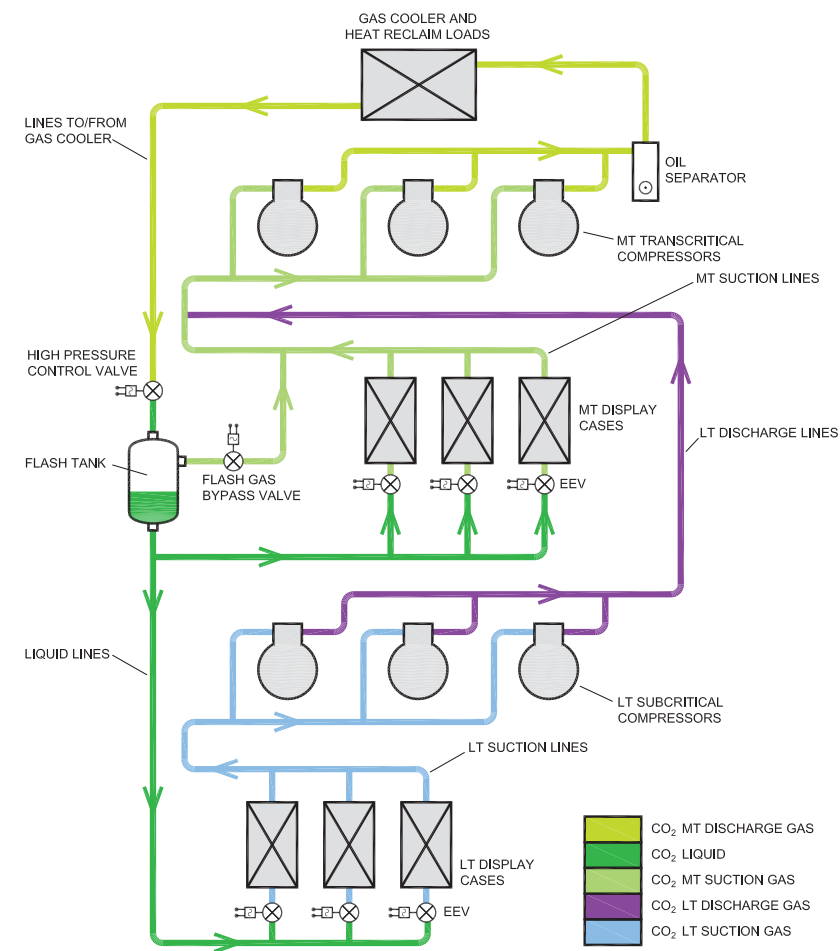
Hillphoenix
a DOVER company



The Hillphoenix® Advansor CO₂ booster system is a member of our sustainable line of refrigeration systems. The Advansor CO₂ booster system is an HFC-free refrigeration alternative that utilizes carbon dioxide as the only refrigerant in the system. Hillphoenix customers can take advantage of the inherent benefits of CO₂ and combine them with those of other Second Nature systems - reducing direct refrigerant emissions to the lowest level possible.

ADVANSOR™

Basic CO₂ Booster
System Design



The Advansor CO₂ booster system is a transcritical CO₂ system that provides both low- and medium-temperature refrigeration to display cases and walk-ins without relying on any synthetic refrigerants.

Advansor systems utilize case controllers to monitor case performance and keep tabs on temps, alarms, etc. They also control the evaporator superheat and what's more, they do it remotely. No more need to install temperature probes and run wires across the store. This savings, plus the safety of CO₂ as a “future-proof solution” — forget worries about other refrigerants, only adds to the list of reasons to install an Advansor system. Now, here's how it works: The cooling cycle begins with liquid CO₂ in the flash tank (receiver). The liquid is distributed to coolers, freezers, and cases via a network of copper piping. Electronic expansion valves (EEVs) control the flow of CO₂ into the evaporators which have been specially

designed to ensure efficient operation in CO₂ booster systems. Suction gas from the low-temp evaporators returns to the rack and is compressed by the low-temp compressors to the pressure of the medium-temp evaporators. Suction gas from the medium-temp evaporators returns to the rack and is combined with the discharge gas from the low-temp compressors and with flash gas exiting the flash tank via the flash gas bypass valve. This mixture enters the medium-temp compressors and is compressed to high pressure and is sent to the gas cooler where it is cooled to near ambient temperature — in cooler weather, the CO₂ in the gas cooler condenses similar to conventional systems.

From the gas cooler, the CO₂ enters the high-pressure control valve where it is expanded back to subcritical pressures. The CO₂ then enters the flash tank where it is separated into liquid and gas and the cycle begins again.

Advansor Benefits

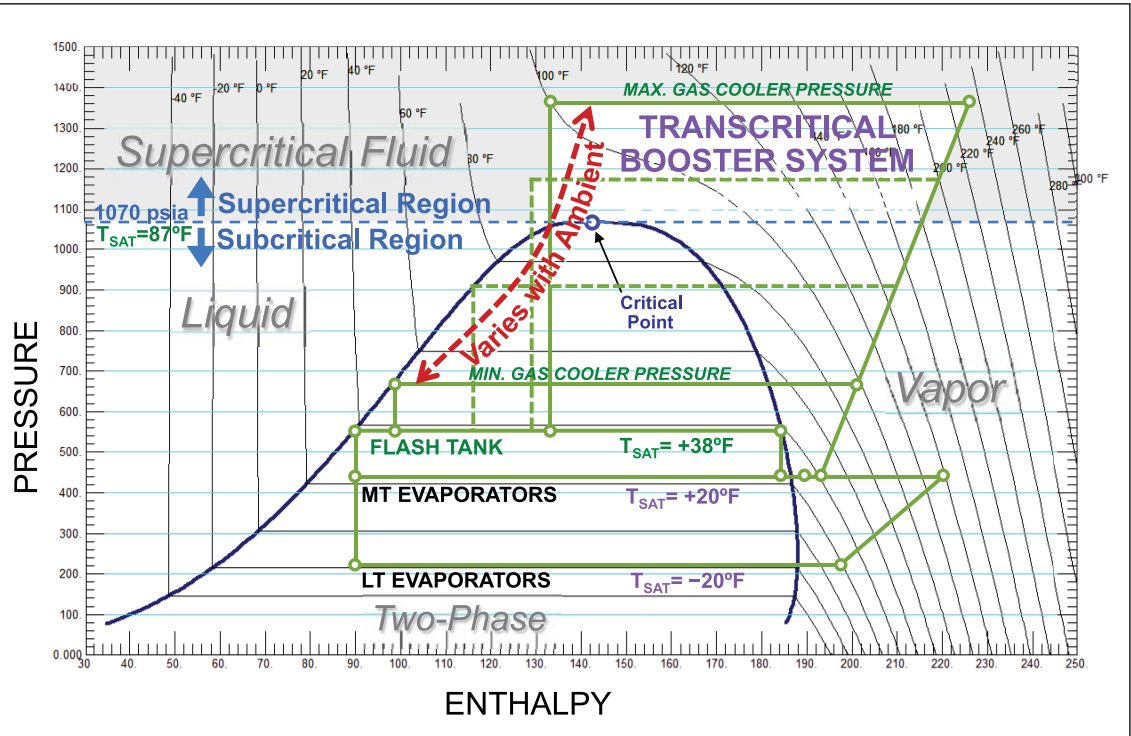
- It's an HFC-free system – CO₂ (R-744) is the only refrigerant used.
- CO₂ is a “natural refrigerant” that is non-ozone-depleting (ODP=0) with almost no global warming potential (GWP=1).
- CO₂ transcritical systems have proven themselves in thousands of installations throughout North America and Europe.
- Advansor technology has over 10,000 installations and counting.
- The system's higher quality heat reclaim opportunities improve store energy performance.
- Advansor systems require a lower CO₂ charge and have a smaller weight and footprint compared to CO₂ secondary systems.
- More efficient than conventional HFC systems in some climates.
- An excellent way to help achieve GreenChill Platinum-Level Certification.

Advansor Features

- Air-cooled gas cooler with variable-speed fans.
- Adiabatic cooling is also available for a more energy-efficient solution.
- Electronic-controlled, high-pressure control valve and flash gas bypass valve ensure optimal performance at all ambient conditions.
- Simple electronic oil management system ensures adequate lubrication and long compressor life.
- A suction accumulator and heat exchanger protect low-temperature system from liquid flood-back.
- CO₂ reciprocating compressors for both low- and medium-temperature loads have proven themselves in thousands of installations worldwide.
- Specially-designed evaporator coils for CO₂ direct expansion operation provide good oil return back to the system.
- Electronic expansion valves on all evaporators ensure efficient coil operation.

CO₂ Booster Cycle

CO₂ Booster
System on
P-h Diagram



How It Works

Advansor Gets Results



Standard Equipment:

- CO₂ reciprocating (MT) and scroll (LT) compressors, which have proven themselves in thousands of installations world wide.
- Variable-frequency drive on lead medium-temperature compressor.
- Cases and walk-in unit coolers equipped with electronic expansion valves and electric defrost.

Optional Equipment:

- Heat reclaim heat exchangers can be factory-mounted.
- Air-cooled, CO₂ discharge gas de-superheater for increased energy-efficiency.
- Variable-frequency drive on low-temperature compressor group.
- Factory-piped gas cooler on common frame with Second Nature Advansor CO₂ rack.

- Adiabatic gas coolers available for a more energy-efficient solution.
- CO₂ low-temp scroll compressors.
- Parallel compressors for better energy efficiency, compressor redundancy and system flexibility.
- Gas ejectors improve system performance.
- Hot gas defrost.

Display Cases Complete the Picture:

A full range of standard and specialty display cases with evaporators specifically designed for operation with the Advansor CO₂ booster system are available.

Both Advansor and AdvansorFlex CO₂ booster designs are further evidence of how Hillphoenix leads the way in natural refrigerant systems, installations and CO₂ technology.

For more information about Advansor or any other Hillphoenix product, please contact your Hillphoenix representative today.

Equipment Options

Hillphoenix®

a **DOVER** company

Conyers, GA USA

770.285.3264

hillphoenix.com