

Cooling system for air conditioning and refrigeration



Air-cooling systems with CO₂ as the sole refrigerant



compFORT

More than 10 years of development of refrigeration systems using CO₂ as refrigerant combined with more than 1000 systems in operation, have positioned Advansor as the world's largest manufacturer of transcritical CO₂ refrigeration systems. The systems combine a number of features that ensure reliability, optimal temperature control, and low operational costs. Choosing a product from the compFORT series, provides the end user with the most reliable and energy-efficient CO₂ refrigeration system on the market.

- Environmentally friendly refrigeration systems for commercial refrigeration and air conditioning
- Based on more than 10 years of extensive development and experience
- Reliable and energy-efficient systems
- More than 1000 units installed

Why use CO₂?

compFORT units from Advansor use only one refrigerant - CO₂. CO₂ is neither flammable nor toxic, making it an attractive refrigerant, both in terms of production, installation and operation of the system. CO₂ meets all Danish and international requirements for refrigerants, present and future. By selecting a compFORT Advansor unit, neither the installer nor the end user need worry about new laws and taxes.

The advantages of compFORT

- 100% environmentally friendly unit
- Non-toxic, non-flammable refrigerant
- Only one refrigerant
- No greenhouse effect, GWP = 1
- No ozone-depleting potential
- No zone classification needed
- Compact construction
- Low noise level
- Low installation requirements
- Easy to maintain
- Low energy consumption
- Low installation costs
- Low maintenance costs
- Future-proof solution

Advansor units are energy efficient and have high COP-values. Calculations have shown, that using a CO₂-based transcritical DX system in North European climate conditions, savings in the range of 15-20% can be achieved, depending on the mode of operation and type of control. Compared to a HFC unit with dry cooling, savings up to 25-30% on an annual basis can be achieved.

The unit eliminates the need for water/glycol circuits, therefore realizing significant energy and construction savings.

A compFORT unit uses a traditional single stage design, with direct expansion in the evaporators. From the evaporators, gas flows directly into the specially designed high-pressure CO₂-compressors. From the compressors, the discharge gas flows to an oil separator where oil is separated from the gas, and then further to a gas cooler. From the gas cooler, the gas expands to an intermediate pressure receiver via a high-pressure valve. The high-pressure valve will automatically control the gas cooler pressure, so that the optimal COP-value is achieved throughout the entire year. The specially designed intermediate pressure receiver has a 90 bar pressure rating, preventing the refrigerant leakage when unit is not in operation. This allows quick and easy maintenance.

compFORT units represent the latest technology in natural refrigerants, for example:

- Air conditioning for offices
- Cooling of production facilities
- Cooling in food production
- Cooling of server rooms

Regarding air conditioning applications, there are currently high pressure evaporator plates that can be built into all types of ventilation systems. Those may be provided with valves and control systems as a fully integrated system which can be externally monitored. When CO₂ is used as the refrigerant, the charge is not limited, and DX evaporation can therefore be used. This eliminates installation of a water/glycol system and dry cooler circuit. By using direct evaporation large amounts of energy are saved compared to water-based systems. Furthermore, significant cost savings are achieved, related to pump operation and maintenance of water systems and their components.



compFORT AC 3x0

Model: compFORT	AC 1x0	AC 2x0	AC 3x0	AC 4x0	AC 5x0	AC 6x0	AC 7x0
Compressors MT	1	2	3	4	5	6	7
MT capacity [kW] [At 3°C evaporating and 32°C outdoor air]	50	100	140	172	215	258	301
Receiver capacity* [L]	70	70	130	130	130	130	200
Mechanical connections							
Liquid pipe	7/8"CU	2x7/8"CU	DN40	DN40	DN40	DN40	DN40
Suction pipe	7/8"CU	2x7/8"CU	DN40	DN40	DN50	DN50	DN50
Pressure pipe leading to condenser	DN20	DN25	DN32	DN32	DN32	DN40	DN50
Liquid pipe from condenser	DN20	DN20	DN32	DN32	DN32	DN32	DN40

* The unit can be equipped with an extra-large receiver - ask Advansor

Standard configuration compFORT:

- Semi-hermetic reciprocating compressors from leading manufactures
- Control panel and electronic control, mounted on the side of the unit
- MT compressor - the flow rate is regulated by variable frequency control
- Standard design pressure for the unit: MT / receiver / HP: 60/90/120bar

Optional features:

- Separate compressors and receiver modules, for easy on-site assembly
- Cabinet for installation outdoors
- Extra-large receiver volume
- Systems to monitor the unit on an external network
- Complete 60 bar ventilation unit with control panel for evaporators including valves, automation and regulators