



# Gekoland

By: Grupo Disco



## Natural Refrigeration in warm climates



### Geko10

## An alternative to HFC in commercial refrigeration and CO2 transcritical systems in the Mediterranean Area

The experience in the last few years has demonstrated that transcritical CO<sub>2</sub> technologies used in Northern Europe for power above 100 kW in the Mediterranean Area -with temperatures above 23°C- are very inefficient and have critical discontinuities in their service.

After some failed experiments, the market has provisionally decided to use subcritical CO<sub>2</sub> systems based on HFCs, mainly R-134a which provides an excellent efficiency, with a 1.430 GWP and a 26€/Kg rate.

However, the latter is also a bad alternative, the lesser of two evils, although they comply with the legislation, they don't prevent leaks, to which, in addition to the tax, the increasing cost of HFCs must be added.

In the Mediterranean Area, Gekoland, with such high ambient temperatures, the ideal solution is the **NH<sub>3</sub> indirect centralized system**, in pumped CO<sub>2</sub> cascade, frozen and fresh, or glycol for fresh and CO<sub>2</sub> for frozen areas.

**Geko** refrigeration systems are compact air condensed units, with ultra-low ammonia charge (ULC) which is permanently controlled within the same unit.



These condensing units have the following obvious advantages:

- Suitable for 43°C ambient temperature.
- Outdoor rooftop design.
- They don't require a machine room.
- Easy installation.
- They only use natural refrigerants not affected by future environmental regulations.
- Very cheap refrigerants, available for today and tomorrow.
- 0,1 Kg/kW NH<sub>3</sub> load.
- Very high energy efficiency.
- Cost of maintenance similar to HFCs systems and lower than CO<sub>2</sub>/CO<sub>2</sub>.
- Multifunction units, they can cool water/glycol, or condense CO<sub>2</sub> in cascade, or both at once.
- Simple technologies, very well known for years.
- The NH<sub>3</sub> has always been used for its high efficiency and its extraordinary thermodynamic characteristics.
- High availability of qualified personnel for installation and maintenance.
- Robust, reliable and durable units.
- Significant energy savings.
- Suitable for B, C and D access categories without machine room and limited emergency exits.

In order to deal with the problems of transcritical CO<sub>2</sub>/CO<sub>2</sub> installations, NH<sub>3</sub>/CO<sub>2</sub> cascade tests are being made in warm areas around the world and it is being proofed their significant energy savings and their profitability in warehouses, hypermarkets and industrial facilities.

## Geko description

**Geko** units are built-in plug&play air condensed systems to cool brines and condense CO<sub>2</sub> or both at the same time.

- Ultra low charge (ULC) 0,1 Kg/kW NH<sub>3</sub>.
- Only natural refrigerants.
- Ideal energy efficiency.

### **Geko10**

**Geko10**, first unit of the range, with 10 Kg of NH<sub>3</sub>, developed for C and D access categories and outdoor B types.

Power in climate 120 kW (4,3 COP).

## Applications



### Climate

- H<sub>2</sub>O
- 12° - 7° / 120 kW



### Fresh and frozen products

- CO<sub>2</sub>
- - 10° / 60 kW
- - 30° / 25 kW



### Fresh

- Glicol
- - 10° / 105 kW



### Frozen products

- CO<sub>2</sub>
- - 30° / 80 kW



# Geko10

## Technical characteristics of the units

- 2 screw compressors with 120 m<sup>3</sup>/h. volumetric displacement.
- Ammonia air condensation with microchannel technology coil.
  - 4 EC fans.
  - Flow by fan: 16.000 m<sup>3</sup>/h, 1,1 kW power and 800 mm diameter.
- Air oil cooler with stainless steel tube coil and aluminum fins.
  - 2 EC fans.
  - Flow by fan: 6,000 m<sup>3</sup>/h, 0,8 kW power and 500 mm diameter.
- Very high separation capacity vessel separator, specially designed to offer a minimum level of filling. From where the evaporator - glycol cooler and the CO<sub>2</sub> condenser are fed by gravity.
- Evaporator - glycol cooler and CO<sub>2</sub> condenser through semi-welded plate exchanger.
- The design of the two plate exchangers has been optimized to service the lowest possible ammonia load.
- Special oil separator with coalescing filter for high efficiency in oil separation.
- Three-way oil valve for constant oil temperature control.
- 300-liter glycol buffer tank.
- 4 kW nominal power primary circuit glycol pump.
- Dimensions:
  - Length: 5.000 mm (width) x 2.100 mm (high).
  - Weight: 3.950 kg.

