



ATMO
sphere

ADVANSOR  **TM**

by Hillphoenix



Transcritical CO₂ challenges

Traditional NH₃/CO₂ cascade systems

Jens Kallesøe, Director of External & Internal
Sales

Advansor A/S



- Legislation
 - F-gas directive, restrictions on NH3
- Environmental awareness
 - General awareness about environmental impact using other than neutral refrigerants

- Food safety
 - No (less) contamination in case of leakage
- First costs
 - Ready to commission at known price
- Installations costs
 - Only very little job to be done on site
- Energy efficiency
 - Part load, COP, heat recovery potential
- Equipment dimensions / footprint
 - Limited indoor space requirement (vs. NH3) (single unit installations)
 - Outdoor enclosure



Key industries & applications


Focus of Advansor:

- ❄️ Cold rooms / - storages
- ❄️ Logistic centres
- ❄️ Food factories
- ❄️ Pharmaceutical
- ❄️ Ice rinks
- ❄️ Marine/off shore

❄️ Max capacities **per rack**

- ❄️ MT: 5-1.200 kW
- ❄️ LT: 10-500 kW
- ❄️ ... larger compressors will soon allow higher capacity on each rack

❄️ Configurations

- ❄️ DX CO2
- ❄️ Pumped CO2
- ❄️ Indirect with glycol or another secondary fluid 
- ❄️ CDU's
- ❄️ Racks for "off shore"

Dronten MW-project (Holland)

A brand new processing plant, by the Staay Food Group (NL), are now using state of the art refrigeration technology and city-farming type technology to grow the lettuce indoors under special LED lights.





Advansor is a proud partner in this project, this again proves that transcritical CO₂ systems are not only for commercial use. Local contractors Huijbregts Koeltechniek BV.





Dronten/NL

Fresh Care Dronten Facts:

-  New factory 30.000m² floor area
-  Produces lettuce
-  Annually production cap. 300.000kg lettuce
-  Using the stat of the art LED light/ Humidity and Temperature control to produce lettuce.



Production space



Machinery room
4 out of 7 racks in place...



...all 7 pcs V-shape gas coolers
ready to be connected



Design/Capacity

Total capacity is 3,36 MW is expected to be the biggest TC CO2 refrigeration project in the World (known).

In total the system includes 45 Bock compressors, made up of 28 medium temperature compressors, 14 parallel compressors and 3 frost compressors.

The capacity is split on 7 transcritical racks (45 pcs Bock compressors)

Design/Capacity/Racks

A1: (L4+2x3)

315kW @+0C

30kW @-28C

150kW A/C

A2: (L4+2)

465kW @+0C

B: (L4+2)

530kW @-7C

HR 240kW (15/25C)



C1: (L4+2)

463kW @-5C

HR 205kW (30/80C)

C2: (L4+2)

463kW @-5C

HR 205kW (30/80C)

C3: (L4+2)

463kW @-5C

HR 205kW (30/80C)

C4: (L4+2)

463kW @-5C

HR 205kW (30/80C)

Total capacity MT / LT / A/C

530 kW @ -7C

1.870 kW @ -5C

780 kW @ 0C

30 kW @ -28C

150 kW of cooling for A/C

Total: 3.360kW

Heat recovery

240 kW @ (15/25)

820 kW @ (30/80)

Total: 1.060 kW



ATMO
sphere

Thank you very much!

ADVANSOR  **TM**

by Hillphoenix