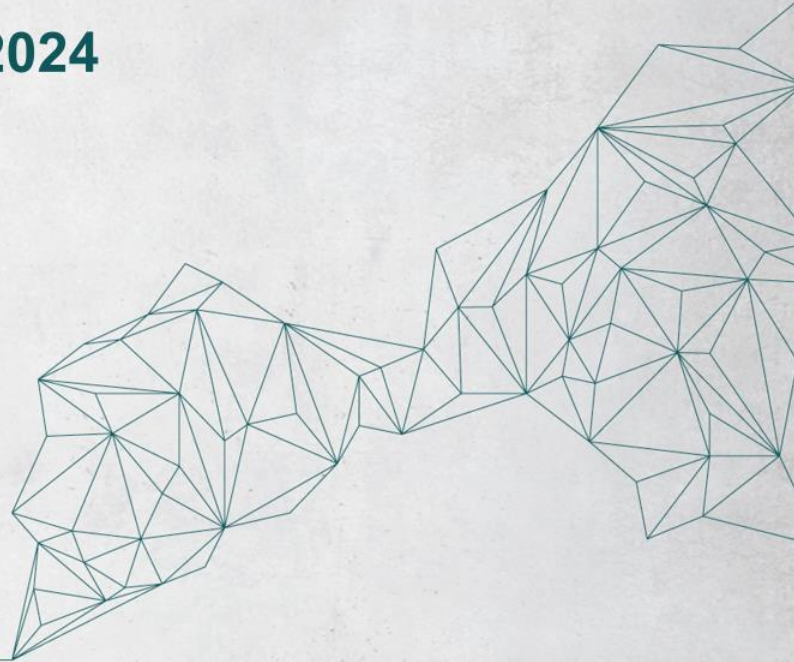


Chillventa Specialist Forums 2024 Chillventa Fachforen 2024

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ADVANSOR

NEW MAERSK DISTRIBUTION CENTER AIMS FOR GREENSTAR-6 RATING

Anders Mønsted, Business Development Manager

ADVANSOR

Welcome

Anders Mønsted

Business Development Manager Industry

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30 years of experience with Industrial refrigeration at
Danfoss, Johnson Controls / Sabroe etc

Visit us in hall 9-528 to see an industrial rack on display



Trends & Challenges

Increased focus on CAPEX

- Higher interest rate requires proven business case
- Fast project execution

Lack of skilled people onsite

- Focus on less complexity – easy installation and maintenance

Increased pricing of electricity

- Need for lower operating expenditures (OPEX)

High reliability required

- Need for high operational reliability
- 100% redundancy

Ambitious climate action goals

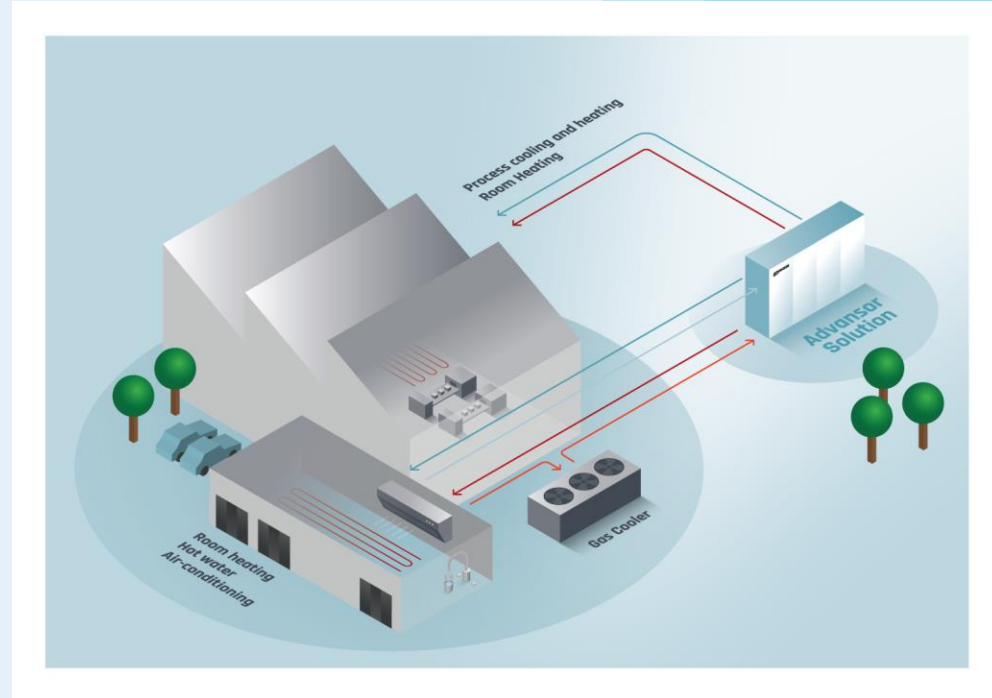
- Carbon neutral



Consider a Full Climate Solution

Consider one unit combining cooling, freezing, air-conditioning and heating when possible

- Easy to re-use energy due to heat recovery
- Less units to install
- Less units to maintain
- False load can be considered to boost heating output



Fast installation on-site

Configurable racks based on well proven technology and tested components

- Fully assembled
- Fully factory and programmed tested
- Fast commissioning



100% redundancy increases reliability

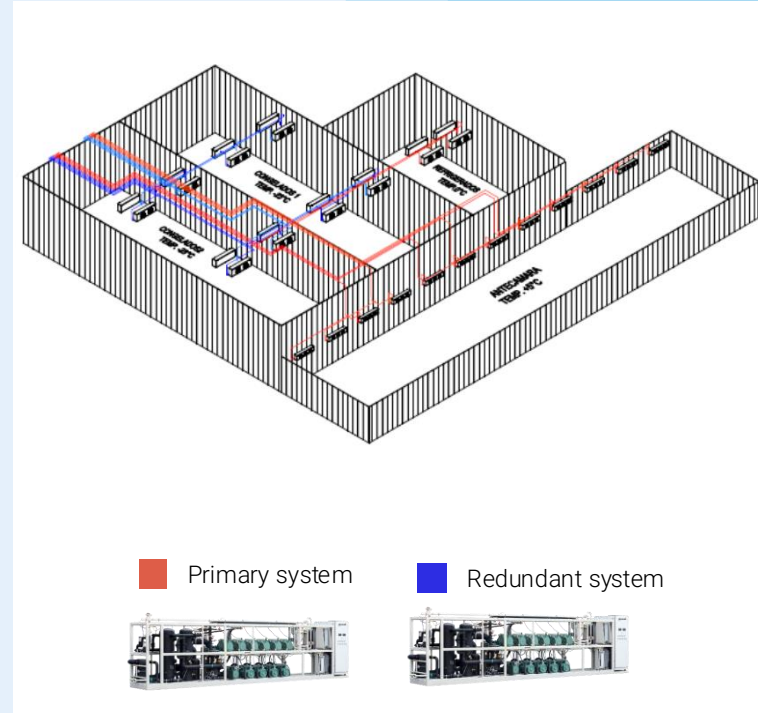
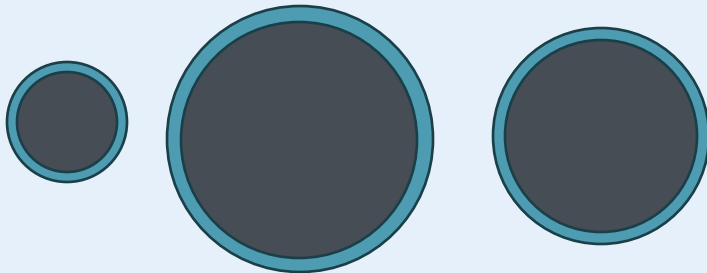
- Pipes and evaporators are doubled which is possible due to small pipe dimensions
- Standard and reliable system design
- Possible to install two completely independent systems each with 100% capacity

Pipe dimensions, 1000 kW -30°C suction pipe

CO₂
Ø125

Ammonia/freon
Ø300

Glycol
Ø250



NEW TECHNOLOGY FOR IMPROVED ENERGY EFFICIENCY

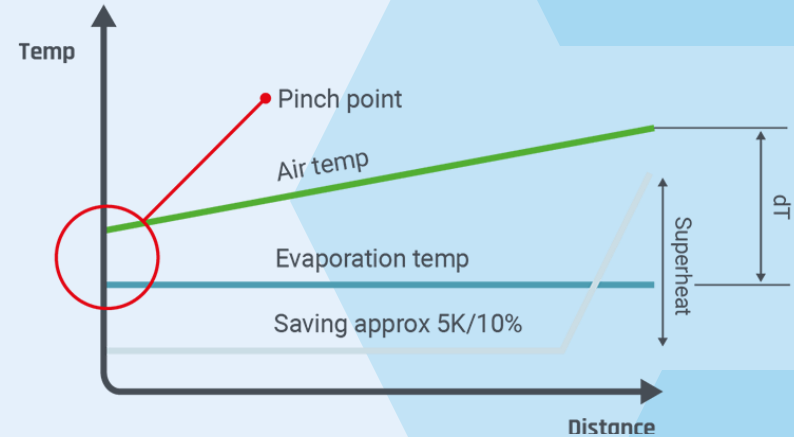
Energy saving options

Prioritization	Savings
Parallel compression	5% COP
Permanent Magnet	7% COP
Ultra-low Superheat	10% energy savings
Ultra-low Superheat with ejector	+5% COP
Liquid Power Cooler & COP Hunter (LT only)	5,5% COP (3,5% LT Only)
Low Pressure Ejector	4% COP

Higher COPs equate to higher efficiency, lower energy (power) consumption and thus lower operating costs.
The COP is highly dependent on operating conditions like temperature → Energy Tool

Ultra-Low Superheat and Ejectors

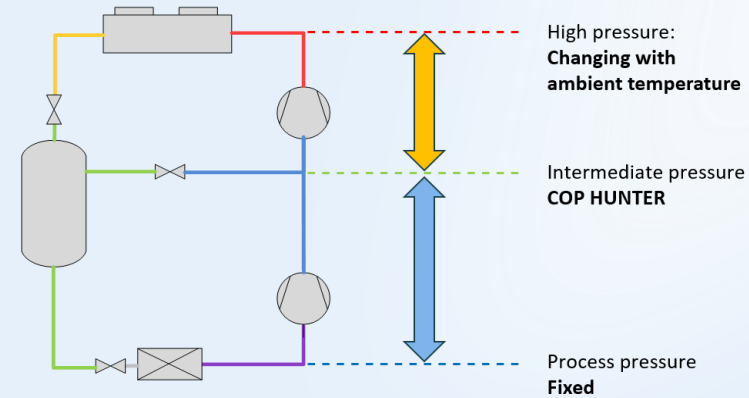
- 95% as efficient and 25% of the price of a pump module due to CO₂
- Liquid and gas ejectors can be used to optimize the solution
- The overall efficiency will depend on the actual yearly weather conditions
- If heat recovery with high temperature output is needed the ejectors operation will be more stable



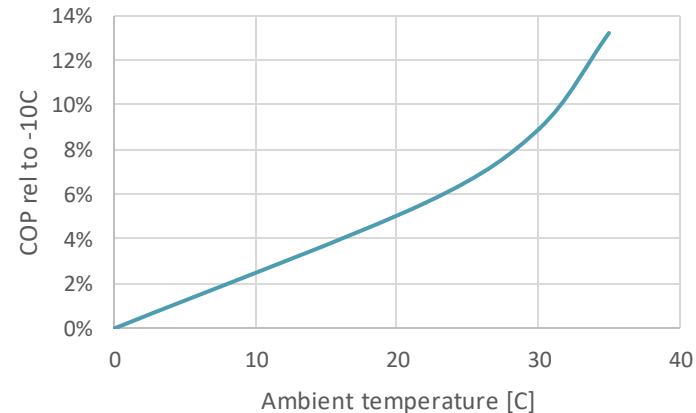
New Control Strategy: COP Hunter

COP Hunter

- New control strategy of LT only systems, developed by Advansor - an algorithm that ensures maximum COP in all operation points



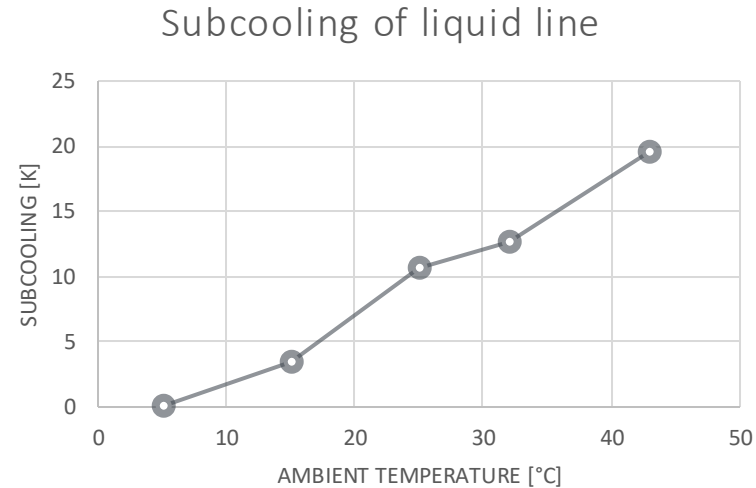
COP improvement



New Technology: Liquid Power Cooler

Liquid Power Cooler

- A system developed by Advansor, making it possible to sub-cool the liquid line without compromising optimal receiver pressure



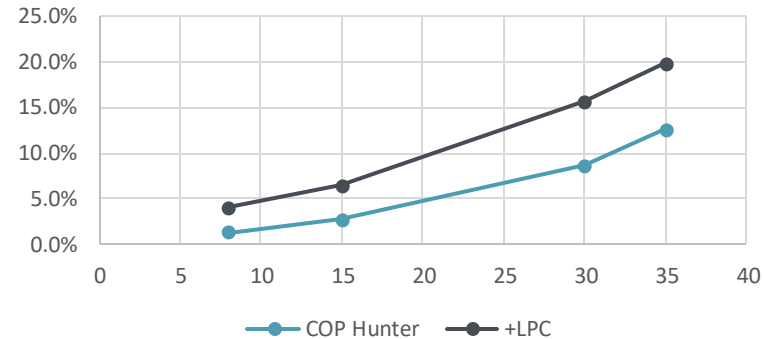
Combination of the two new features

The combination of COP Hunter and Liquid Power Cooler will result in the most energy efficient LT only system available in the market.

Benefits

- Highest possible COP
- Subcooling of liquid line
- Mass flow reduction in liquid line
- Pressure drop reduction in liquid line, LT suction
- Reduction of discharge temperature
- Eliminate risk of condensation in the desuperheater
- Reduced use of liquid injection
- Reduction of total m³/h on transcritical compressors

COP relative to standard LT only control



CASES

Maersk Hamilton

- New distribution center in New Zealand
- 45.000m² of warehousing space
- Storage for over 21,000 pallets of cold chain products
- 16,000 m² of fully convertible temperature-controlled space with temperatures ranging from minus 25°C to plus 15°C.
- Identical racks for easy operation and maintenance



Solution

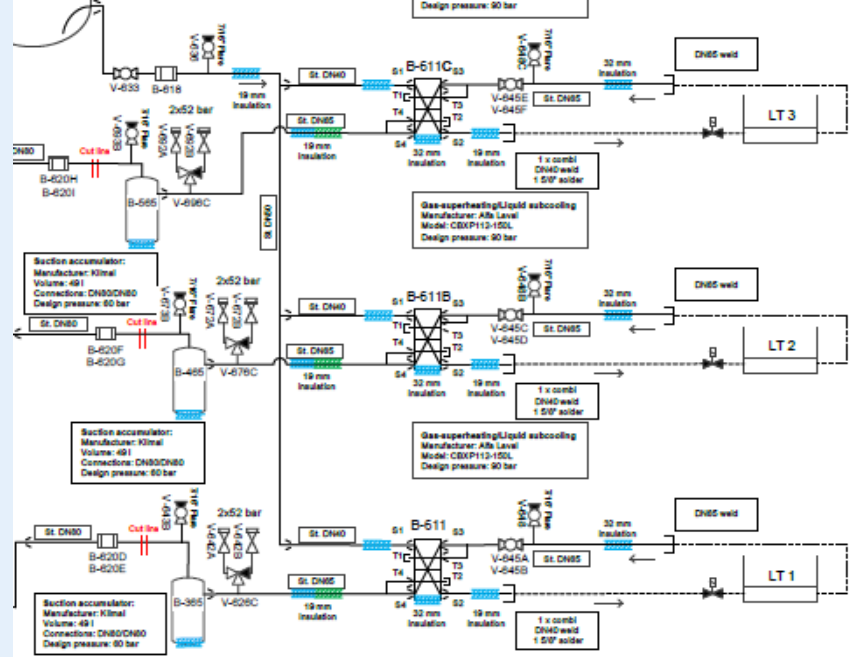
- 7 racks, 3 for blast freezing and 4 for storage
- Capacities
 - 2,1 MW blast freezing in 3 rack each with 3 freezers
 - 1,7 MW freezing
 - 0,9 MW cooling
 - 0,15 MW air-con
 - 2 MW heating
- Heat recovery floor heating, hot tap water and glycol defrost
- Permanent Magnet Motors on all MT and IT compressors
- Racks delivered within 4 months
- Start-up Q4 2023

Three racks for the meat blast freezing process providing an impressive capacity of 702 kW at -45°C each and four racks for cold food storage.



Blast freezing, 2100 kW

- 9 blast freezer cells each with separate temperature control
- 3 refrigeration racks with 3 individual suction groups
- The freezing process can be optimized individually for each freezer
- In this system there is not a common pump module fixing the evaporator to the lowest possible



Blast freezing cell

- Racks are placed next to the blast freezer cells



QUESTIONS?

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Stop by our Stand 9-528



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