Future Solutions in Industrial Refrigeration

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GCCA European Cold Chain Conference

21. March 2018
Refrigerant choice is key to Green Refrigeration

Industrial Refrigeration Systems

Refrigerant choice – key criteria and considerations

• Safety
• Energy efficiency
• Environmental impact (GWP, ODP)

Ideal refrigerant characteristics

• High chemical stability
• Good physical characteristics
• Excellent thermodynamic properties
• Good availability and economical

Ozone Depletion Potential (ODP)
Global Warming Potential (GWP)
Safety and efficiency operation of Industrial Refrigeration systems
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Danfoss ready valve station ICF

Danfoss system and application solutions

Danfoss Intelligent Air Purger

Reduction of plant power consumption

Saves money - an “all in one” solution

Danfoss formula for efficiency

The Danfoss ICF Valve Station + ICFD Defrost Module

Danfoss Advanced evaporator controller

Dedicated for industrial refrigeration applications

Danfoss Gas Detection

Plug and Play Gas Detection solution
Safety and Service with Danfoss Valve station ICF

• Saves money - an “all in one” solution
• One valve - several valve functions
• Based on advanced technology providing an environmentally friendly solution
• Saves time - “all in one” solution
• Easy handling - compact design
• Easy welding - disassembly not necessary
• Unique design makes it easy to access the valves during service
• Low internal volume - minimal refrigerant loss during service
Danfoss formula for efficiency

The Danfoss ICF Valve Station + ICFD Defrost Module

It is a formula that unites the well-known benefits of the Danfoss ICF technology with the most efficient defrost method known into one state-of-the-art defrost solution for industrial refrigeration applications.

**Pressure control**
Defrost => Drain liquid and gas
- Hot gas bypass (blow-by)
- Increase compressor load
- Increase energy consumption

**Liquid drain**
Defrost => Drain liquid
- Decrease hot gas consumption
- Decrease compressor load
- Decrease energy consumption

**Benefit**
- Reduction of blow-by gas by up to 90%
- Less loading of compressors
- Reduce hot gas consumption
- Reduced energy consumption
Compressor energy savings

Customer Benefit (end-user)
- Reduction of blow-by gas by up to 90%
- Eliminates need to re-compress blow-by gas
- Less loading of compressors
- Reduce hot gas consumption

Customer Value (end-user)
- Reduced energy consumption

Assumptions:
- Evaporator: 41 kW @ -25°C (12 TR, @ -13°F)
- Defrost 40 min. Once a day
- Savings: 12.6 kWh per defrost
- Industry current rate: EU 28 countries 2017: 0.15 EUR

Calculation:
- Evaporator/year: 12.6 x 0.15 x 360
- 680 EUR
  Per Evaporator /Year
DANFOSS COOLING

“At Danfoss Cooling, we keep people, products and the planet cool.”