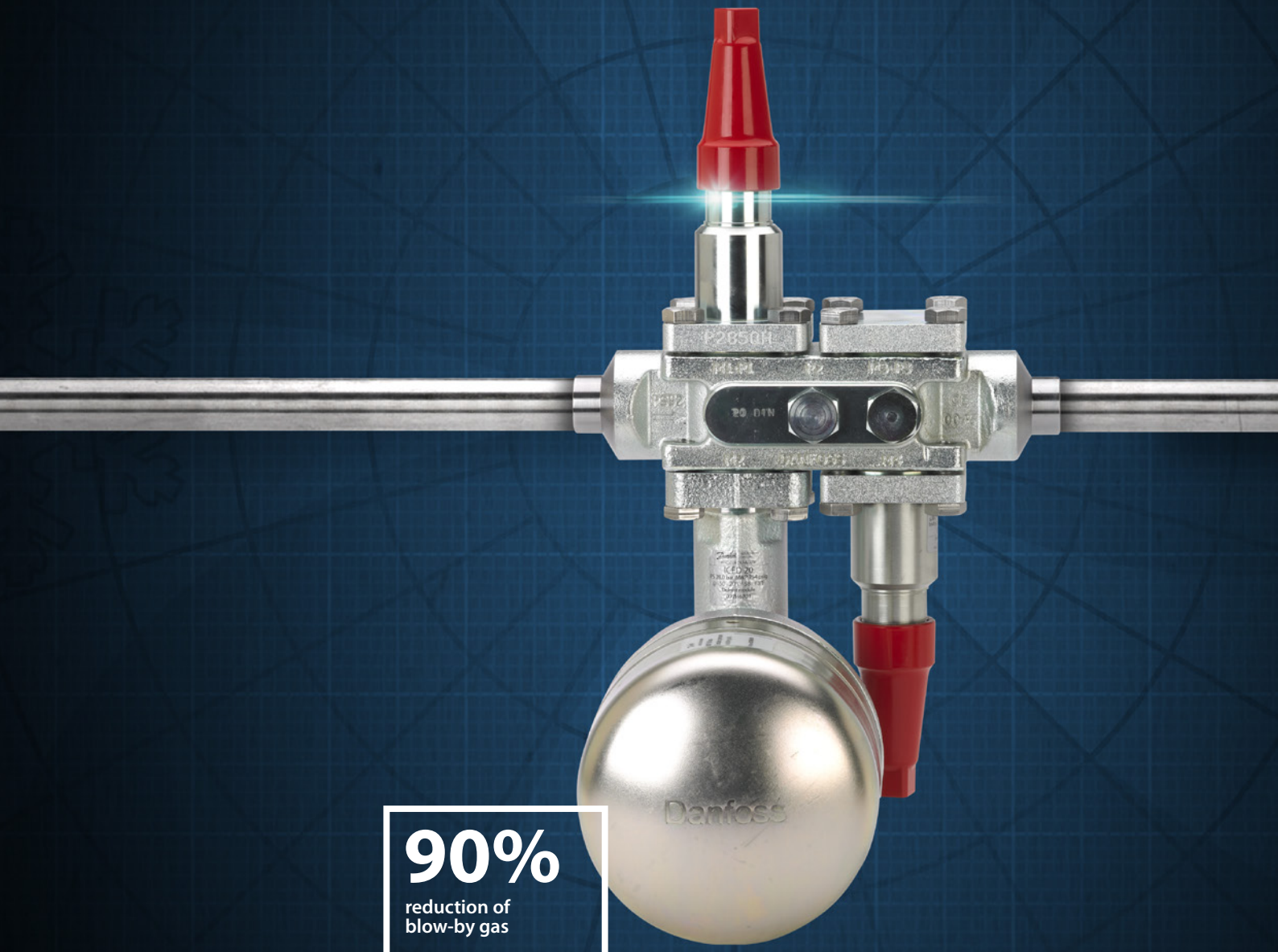
ENGINEERING
TOMORROW

Industrial Refrigeration | ICFD Defrost Module

Improve defrost performance **and reduce** energy consumption

Liquid drain module for the ICF valve station



90%
reduction of
blow-by gas

ICFdefrost.danfoss.com

Hot gas defrost by liquid drain method

Achieve optimum **defrost performance**

The liquid drain method is widely acknowledged as the most efficient hot gas defrost method within industrial refrigeration. The method ensures that liquid condensate is drained at lowest possible pressure resulting in a reduction of blow-by gas by up to 90%.

The significant reduction of blow-by gas means that almost no blow-by gas needs to be re-compressed, which releases compressor capacity **and reduces energy consumption.**

By combining the liquid drain method with the ICF technology the overall operating costs are reduced due to a decrease in the loading of compressors and improved operational efficiency.

ICFD Defrost Module

A formula that redefines efficiency in industrial refrigeration

The ICFD Defrost Module is a **compact** liquid based drain module packaged into our widely acknowledged ICF Valve Station.
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.

The solution makes it possible to equip an evaporator with ICF Valve Stations across the wet suction, liquid, hot gas, and defrost drain lines It provides an impressive range of benefits in respect of improved operational efficiency, easy installation, and energy savings.

The ICFD Defrost Module comes in one size, ICFD 20, spanning evaporators up to 200 kW (58 TR) and is fully compatible with ICF 15-4, ICF 20-4 and ICF 20-6.

The working principles behind the ICFD Defrost Module:

- The design is based on a mechanical float, and the operational mechanism is developed to operate at a very high pressure differential
- Only allows liquid to pass through – no blow-by gas can bypass
- Provides an automatic capacity adjustment during operation with proportional opening for the necessary amount of liquid – no settings required
- Has a very high capacity compared to its size due to its unique pressure balanced design
- Possible to manage a liquid lift without any additional bypass valves thanks to a built-in bleed function

Feature	Metric	Imperial
Max. evaporator capacity @ Riser height 0 m (0 ft.)* @ Riser height 5 m (16 ft.)	 200 kW 180 kW	 58 TR 51 TR
Max. working pressure	28 bar	406 psi
Refrigerants**	Ammonia	
Media temperature	-50/+50°C	-58/+122°F
Ambient temperature	-30/+50°C	-22/+122°F
Approvals	CE (PED)	UL

* Based on defrost capacity factor = 2

** ICF valve station with ICFD released for ammonia only. For CO_2, please contact Danfoss

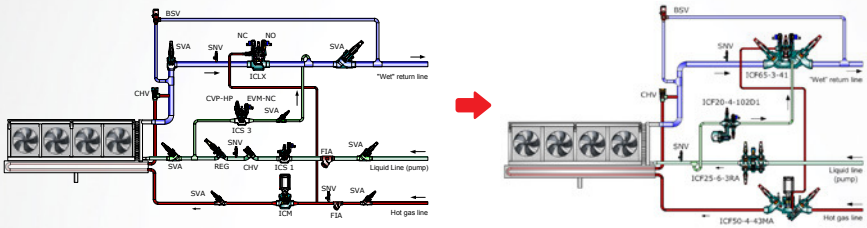
ICF Valve Station

Reduce system complexity **and improve efficiency**

The Danfoss ICF Valve Station has changed the installation process and operation performance of valves – and helped professionals from all over the world to simplify, improve, and optimize their industrial refrigeration plants.

The ICF valve station has been designed for flexibility, thus there is no need to order different variant for various refrigerant. Applicable to HCFC, non flammable HFC, R717 (Ammonia) and R744 (CO_2). ICF can be used in suction lines, pumped liquid lines, liquid injection lines, defrost drain lines, and hot gas lines. In addition, the ICF valve station is supplied as a complete assembly, is fully tested at high pressure, and its functions are tested under factory controlled conditions emphasizing its high-performing reliability. The ICF valve station has a proven track record and an impressive installed base of more than 60.000 pieces. And the numbers increase every day.

Based on advanced technology, the ICF valve station incorporates several functions in one housing, which can replace a series of conventional mechanical, electro-mechanical, and electronically operated valves:



What's in it for me

The superior benefits of the ICFD Defrost Module

Reduced energy consumption
Reduction of blow-by gas by up to 90% resulting in less loading of compressors.

Improved defrost performance
Reduction of evaporator downtime when defrosting thanks to its high drain capacity catering for improved operational efficency.

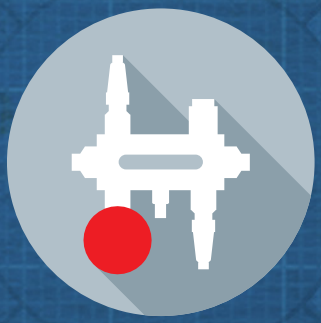
Easy system design
Supports optimal system design with the Coolselector®2 application tool.

Improved job site efficiency
Ensures easy installation due to a reduction of components and weldings plus no need to disassemble and re-assemble. No settings or adjustment required.

Broad application range
Fully compatible to ICF 15-4, ICF 20-4, and ICF 20-6 in addition to a wide application range spanning evaporators up to 200 kW (58 TR) evaporator capacity.

ENGINEERING
TOMORROW

Cool facts about the ICFD Defrost Module



- Reduces blow-by gas with up to 90%
- Reduces energy consumption – based on actual use cases up to 20 kWh per evaporator per defrost cycle (* based on real cases, varies across system capacity: E.g. Ammonia cold storage plant, 1 evaporator 66 kW @ -30°C (19 TR, @ -22°F) saving 20 kWh per evaporator per defrost cycle
- Potential to significantly shorten defrost duration depending on system specifications
- Improves job site efficiency

Coolselector®2 application tool

The Coolselector®2 provides a complete valve and piping calculation and selection which optimizes product selection and operation of the ICFD Defrost Module. In addition, the tool offers specific sales/order codes and easy access to consult Danfoss Industrial Refrigeration experts for advice.

Let's talk

At Danfoss, we believe that long-term business relationships start with a conversation.

- To understand your situation
- To learn how we can meet your needs
- To give you confidence in our solutions

So contact your local Danfoss representative
– and let's talk.

Learn more about ICFD Defrost Module
at **ICFdefrost.danfoss.com**

DKRCI.PB.FT0.K0.02