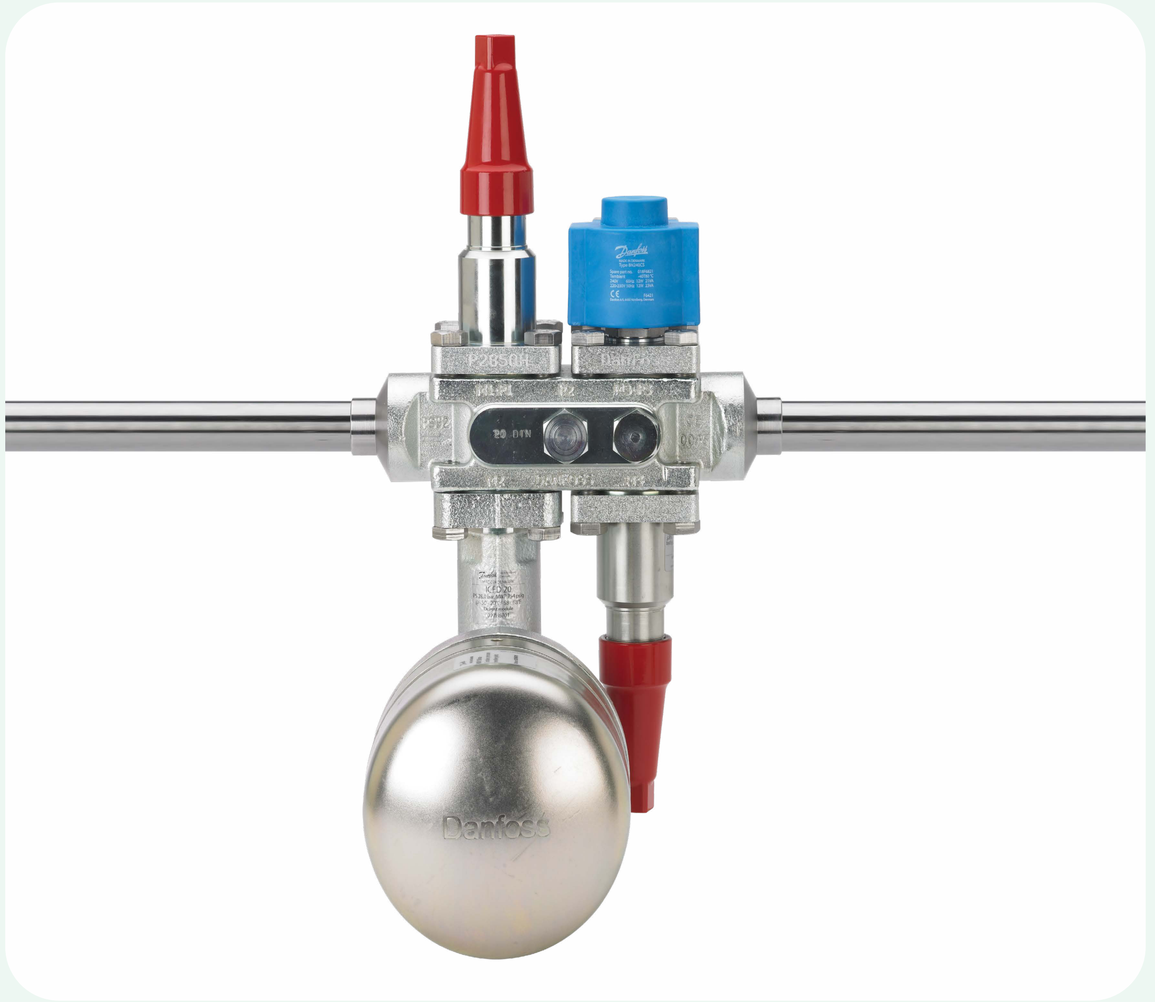
Case story

Cutting energy use and costs while boosting frozen storage reliability

ICFD valve stations deliver major energy and cost savings in frozen storage

In industrial refrigeration, energy efficiency is a critical factor in both sustainability and profitability. Frozen storage facilities operate under demanding conditions, consuming significant amounts of energy to maintain precise temperatures. Even small inefficiencies can lead to substantial operational costs and environmental impact.

One area often overlooked is the defrost drain line in cooling systems where poor performance can waste energy, cause ice build-up, and lead to costly downtime. Danfoss ICFD valve stations offer a proven solution, integrating multiple valve functions into a single compact unit to optimize defrost performance, reduce energy consumption, and simplify maintenance.



Overview

Modernizing Romanian retailer's frozen storage

A major international retailer's distribution center in Ploiești, Romania, which serves as a key hub in the company's regional logistics network, handles vast quantities of frozen goods destined for hundreds of retail outlets. Operational reliability and efficiency are critical to ensuring products reach stores in optimal condition.

With refrigeration systems representing a substantial share of the site's energy use, management has consistently taken a proactive approach to identifying improvements that safeguard both performance and product quality. In 2025, building on this commitment and guided by recommendations from Pro Refrigeration Team, a trusted partner with extensive industrial refrigeration expertise, the retailer initiated a focused project to enhance energy efficiency and optimize refrigeration processes at the Ploiești facility. This decision reflects a strong dedication to responsible operations and long-term sustainability.

A detailed assessment revealed that the freezer drain line was a significant source of inefficiency, with defrost cycles consuming more energy than necessary. The project team concluded that upgrading this part of the system with a modern, integrated solution could deliver substantial energy savings, improve overall reliability, and reduce service complexity.

Recognizing the need for proven, high-efficiency technology, Danfoss was brought in as the solution provider to deliver the technical innovation required for measurable improvements.

"From our experience, even seemingly small components can have a big impact on system performance. By addressing the drain line inefficiency, we saw a clear opportunity to help our client achieve significant energy savings while improving operational stability, and Danfoss was the perfect match for this solution, offering the proven technology and innovation needed to make it happen."

Eugeniu Nafornița
Service Manager, Pro Refrigeration Team

Pro Refrigeration Team quick facts

Founded: 2010

Headquarters: Bucharest, Romania

Overview: Pro Refrigeration Team is a specialist contractor in commercial and industrial refrigeration solutions, serving clients across Romania and the wider region. Since its founding in 2010, the company has built a strong reputation for delivering reliable, high-performance systems tailored to the needs of food retail, industrial facilities, and large-scale logistics operations.

Challenge

Hidden energy losses in defrost systems

While the defrost drain line may seem like a small part of a large refrigeration system, its performance has a direct and often underestimated impact on both energy use and operational stability. In frozen storage environments, the drain line plays a key role in removing liquid during defrost cycles. If it operates inefficiently, the defrost process can take longer and consume more energy, while ice build-up may lead to reduced system performance.

At the retailer's Ploiești distribution center, inefficient defrost cycles were leading to unnecessary energy consumption, driving up operating costs and increasing the facility's environmental footprint. The existing setup relied on multiple separate components: individual valves, fittings, and strainers which made servicing complex and time-consuming. Technicians had to work with a variety of parts, increasing labor costs and prolonging downtime. This complexity also meant that preventive maintenance was more difficult to schedule and execute, increasing the risk of unexpected failures.

For a facility operating at such a large scale, even small inefficiencies could accumulate into significant energy losses and operational costs over time. The distribution center's management therefore needed a solution that would:

- Reduce energy consumption without compromising defrost performance
- Simplify servicing and reduce maintenance costs
- Deliver a fast and measurable return on investment

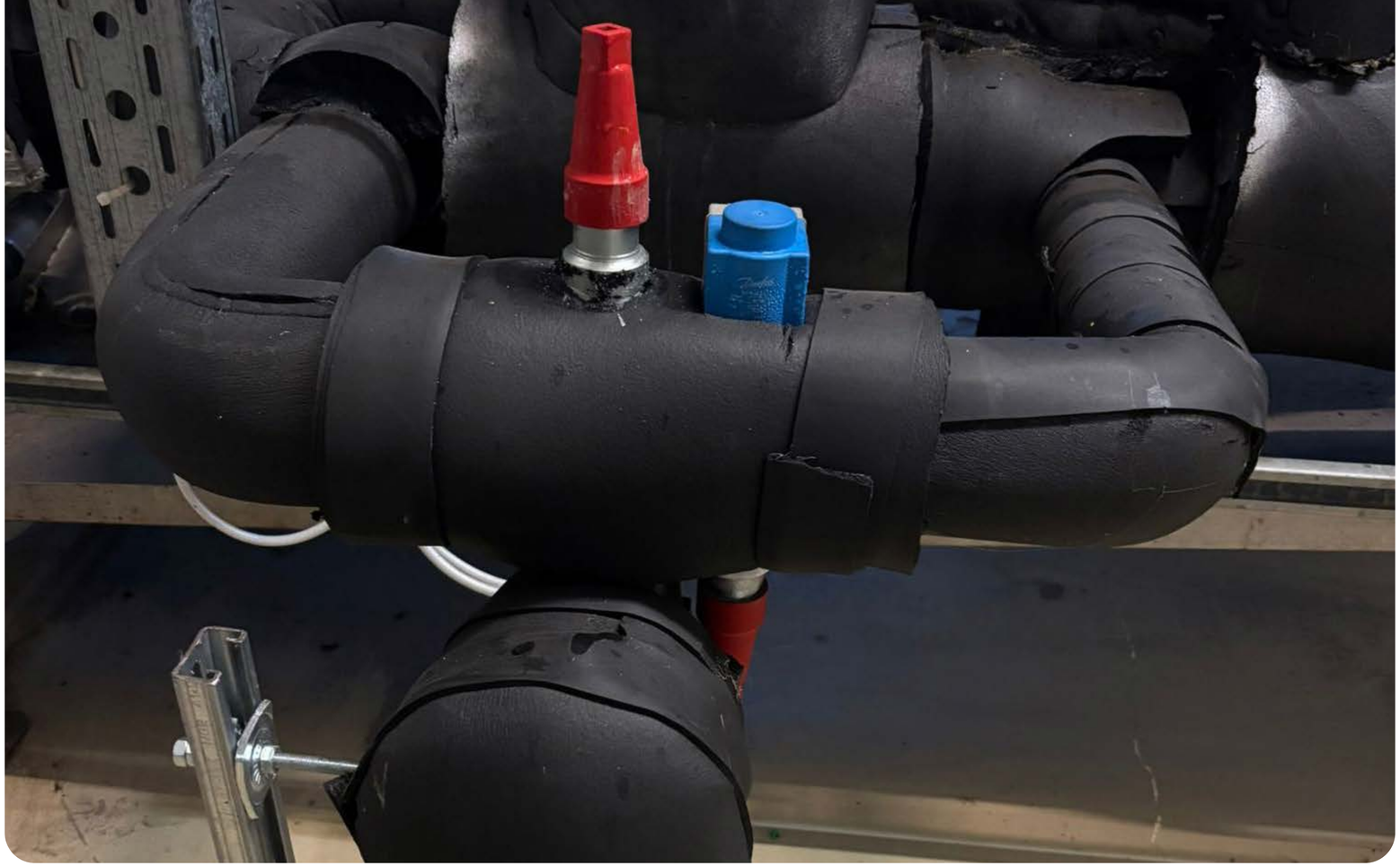
Solution

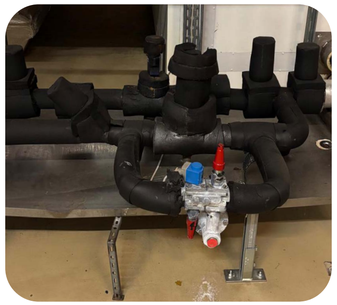
Integrated valve technology for maximum impact

Pro Refrigeration Team implemented five Danfoss ICFD valve stations in the evaporator defrost drain line. These compact, multi-functional units integrate several valve functions into one housing, including stop valves, solenoid valve and defrost drain module, all optimized for defrost applications.

The integrated design reduced installation complexity, saving time and minimizing disruption to operations. Service access was improved, allowing technicians to perform inspections and maintenance more quickly. Most importantly, the ICFD stations optimized defrost cycles, ensuring that energy was used efficiently and only when needed.

By streamlining the defrost process, the system avoided unnecessary energy waste, and maintained consistent operational performance.





Results

Significant savings and improved reliability

The benefits of the upgrade were immediate and substantial. Energy consumption dropped noticeably across all months in 2025, delivering significant cost savings and improving operational stability. Maintenance requirements were reduced, downtime was minimized, and the facility achieved a rapid return on investment.

The scale of the savings demonstrated the value of targeted technology upgrades in industrial refrigeration. Even a single system improvement, when applied strategically, can have a transformative effect on performance, profitability, and sustainability.

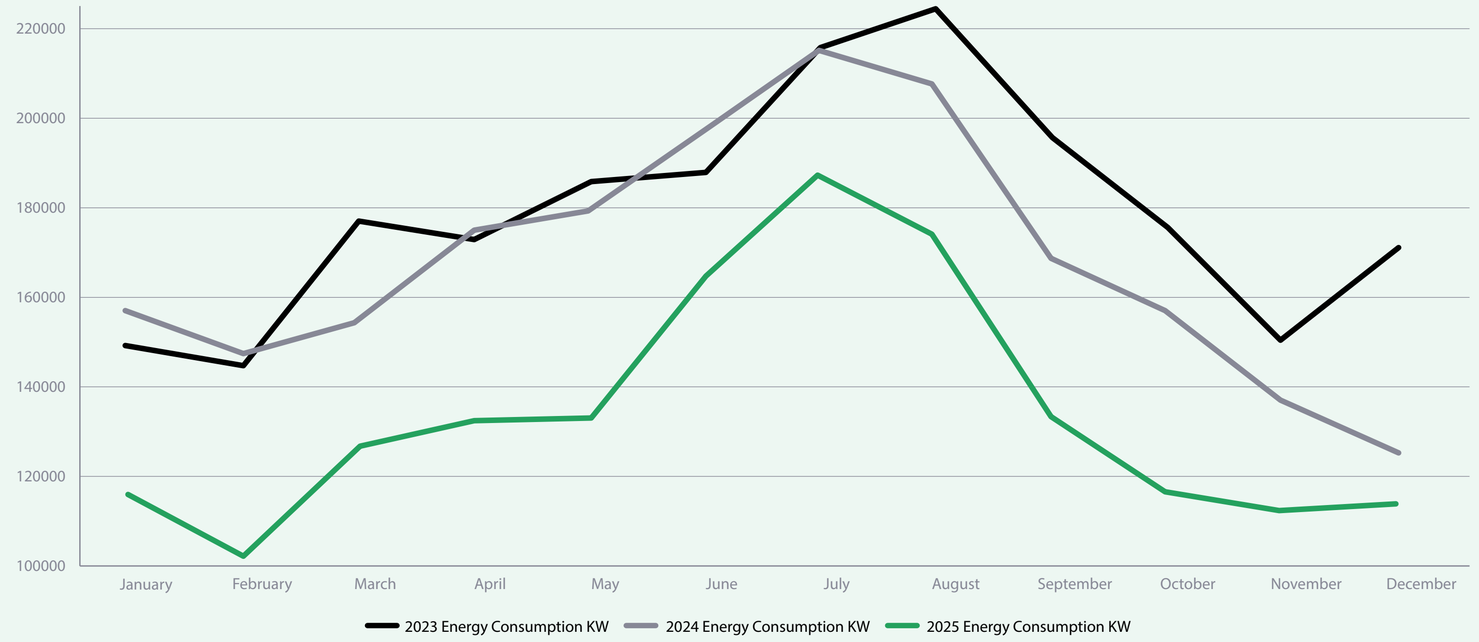
This success reinforces Danfoss'role as a trusted partner in helping facilities optimize performance, lower operating costs, and advance sustainability goals through smart, integrated solutions.

Guided by Pro Refrigeration Team's expert assessment and recommendation, the project targeted the defrost drain line as a critical efficiency opportunity, ensuring the right solution was applied where it would deliver maximum impact. Together, Danfoss and Pro Refrigeration Team transformed a focused upgrade into a powerful improvement for the retailer's frozen storage operations.

Discover more about the Danfoss ICFD valve stations here.

Retailer data

Energy consumption 2023-2025 in KW before and after Danfoss ICFD installation



The installation of five Danfoss ICFD valve stations at the beginning of 2025 delivered energy savings of 466 MWh compared to 2023 and 385 MWh compared to 2024, translating into cost reductions of over € 69,000 and achieving a rapid return on the initial € 20,000 investment.

Explore our solutions
danfoss.com

Danfoss A/S
Climate Solutions
danfoss.com
+45 7488 2222

AE560646084548en-000101