



## Logistics complex chooses U-Turn solution and gains significant energy savings

Unconventional solution for German hypermarket group's expansion

Case Story



**When Globus decided to invest €21 million in expanding and upgrading its central logistics complex to a new cutting-edge cold storage facility, it needed a state-of-the-art refrigeration system to match. With Alfa Laval's help, that's exactly what it got.**

The Globus Group owns 43 hypermarkets with more opening every year as the German company pursues its ambitious expansion strategy. Due to a need to store increasing quantities of fresh food, its cold storage warehouse in Bingen am Rhine underwent an extensive upgrade and expansion. The new facility was opened in March 2012, and has increased storage space by over 10,000 square metres. Naturally,

such a large-scale expansion required a big increase in cooling capacity, putting heavy demands on planners, engineers, suppliers and technicians when it came to designing a new refrigeration system.

### **A radical approach**

In designing the new system, Munich refrigeration consultants Dieter Sperber Ingenieurbüro für Kältetechnik developed a solution that was unconventional but highly effective. "A U-Turn separator and plate heat exchanger from Alfa Laval were used instead of a conventional NH<sub>3</sub> separator," says planner Dieter Sperber. "The small dimensions enable a more compact system design and a significantly lower volume of coolant in the system."

### **Fast facts:**

#### **The challenge:**

To supply a state-of-the-art and environmentally friendly refrigeration system for the 13,300-square-metre cold storage facility of a rapidly expanding German hypermarket group.

#### **The solution:**

- A refrigeration system featuring U-Turn separators and plate heat exchangers from Alfa Laval
- Easy to transport, position and set up
- Lower cost than conventional liquid separators
- Efficient separation properties
- Significant energy savings
- Reduced need for engineering services, material and coordination on-site
- Use of natural coolants NH<sub>3</sub> and CO<sub>2</sub> for high level of environmental friendliness
- Locally based technical support for swift response.

The benefits of using a U-Turn were already evident in the project-planning phase. The equipment is very easy to transport, position and set up, due to its low height and required space. Other benefits include the small amount of coolant filling, efficient separation function and CE approval according to the Pressure Equipment Directive.

### Smaller and lighter

"The U-Turn as an evaporator-separator unit costs less than conventional liquid separators, offers better separation properties and reduces the need for engineering services, material and coordination on-site," explains Günter Sass, Refrigeration Sales Director, Alfa Laval Germany. "It presents an ideal solution for Alfa Laval semi-welded plate heat exchangers in terms of the liquid column and pressure loss. The U-Turn saves room and reduces weight, since it goes through doors. This made it possible to meet the customer's requirements."

The result was a state-of-the-art refrigeration system, with a total capacity of 1,364 kW, in the smallest possible space. However, capacity and space were not the only requirements – increased energy efficiency was also mandatory, and again this objective was met.

### Energy savings

"The use of the natural coolants  $\text{NH}_3$  and  $\text{CO}_2$  achieved a high level of environmental friendliness," says Dieter Sperber. "The coolant filling level is very low in relation to the system's output thanks to the system's compact design,

## Product facts

### Alfa Laval U-Turn

The U-Turn is a liquid separator especially designed for use with plate heat exchangers in ammonia applications, which ensures minimum pressure drop losses and maximum energy efficiency. The module provides an effective and compact installation with less vertical rise and smaller overall dimensions than any other solution. All ammonia connections are grouped on the same side, which allows the module to be installed in close proximity to walls or on the perimeter of a main skid.



the use of the U-Turn heat exchanger and the air cooler connection via the brine network."

Special attention was also paid to heat recovery. Thanks to the optimum configuration of the ten Alfa Laval plate heat exchangers and the intelligent control of the individual heat consumers, the energy gained from heat recovery covers the building's entire demand for heat and hot water on cold winter days. The use of speed-controlled permanent-magnet motors and EC fans also helped achieve further energy savings.

However, it wasn't just the system's merits that were appreciated. "The quality of service was also a decisive factor," says Lutz Hering, Managing Director, compact Kältetechnik GmbH, who supplied the  $\text{CO}_2$  low temperature and  $\text{NH}_3$  screw compressor machine systems. "Alfa Laval offers good technical support across the board. Field staff and installation technicians even come in person

to provide assistance, assess problems and much more. Our high expectations in the Globus project were fulfilled."

### Successful collaboration

Overall, the planning and commissioning of the new cold storage warehouse was a complete success, meeting all of Globus' requirements. "All of the companies involved worked together very well and extremely professionally," says Gunther Mäling, chartered engineer, who is in charge of refrigeration facilities at Globus' sites. "As a result, the project can only be described as a complete success from the beginning to the end."

## Customer facts:

### The Globus Group

The Globus Group in Germany includes 43 hypermarkets, 79 hardware stores, nine specialty electronics retailers and one Globus Drive. It employs more than 32,000 people, including 630 in Bingen.

### How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)