Swift and seamless switch to carbon dioxide

Finnish supermarket ready for the future with Optigo air coolers **Case Story**

Through its expertise and testing facilities, Alfa Laval was able to help S-Market become one of the few supermarkets in Finland to use CO_2 refrigerant.

When entering the new S-Market in Helsinki, Finland, the shopper's eye is drawn to the neat displays of fresh food and beverages including milk, yogurt, cheese, butter, juice and fruit. But this is only made possible by having the right infrastructure behind the scenes. Undeniably some of the most critical spaces are cooling and terminal rooms, where all the cold products are kept before they are put on the shelves. At the S-Market, these rooms are full of evaporators manufactured by Alfa Laval.

Towards natural refrigerants

"In this very interesting project our customer, the S-Group, gave us a few prerequisites for the type of cooling equipment they wanted. The most crucial requirement was carbon dioxide, which had to be chosen as the refrigerant," says Taisto Tolonen, project manager at Norpe Finland, the company that installed the supermarket's cooling

Fast facts:

The challenge:

To supply S-Market with a safe and efficient refrigeration system using carbon dioxide as a refrigerant, making the supermarket compliant with upcoming EU legislations concerning carbon emissions.

The solution:

Optigo CD air coolers were installed in the fish cold room (0-2°C), chicken cold room (0-2°C), ready-food cold room (3-5°C), fruit and vegetable cold room (6-8°C), as well as three coolers in the terminal area (2-4°C). An Optigo CC air heat exchanger was installed in the freezer (-20 to -18°C).

system. “You know, the most commonly used refrigerant in Finnish supermarkets is still artificial. The challenge is that it does not meet the upcoming F-gas legislation, which will be enforced in a few years.”

Currently there are no more than 50 supermarkets in Finland where carbon dioxide is used as a refrigerant. According to Tolonen, Norpe and Alfa Laval have been co-operating since the 1970s. This latest project started with a visit to Alfa Laval Italy in December 2011, where the carbon dioxide evaporators are manufactured.

Focus on quality

“Although carbon dioxide is nature’s own gas, it does not act like traditional, more commonly used refrigerants,” says Hannu Viikilä, project owner at Alfa Laval Nordic. “In order to guarantee the highest possible quality for our products, we tested certain units and then created design programs with which to secure exact capacities.”

Carbon dioxide has good heat exchanging ability, but its draw back has always been its high pressures. However Viikilä points to the isolated bunker that Alfa Laval has built at its manufacturing site in Alonte, Italy, where long gas coolers can be pressure tested with 172 bar.

Fulfilling customer needs

“I can proudly say that our clear strength is the ability to combine theory and praxis,” says Hannu Viikilä. “We are able to show how carbon dioxide reacts at different pressures and our global development team was strongly committed to the correct CO_2 calculation methods.”

Norpe also knows that Alfa Laval has a long reference list concerning challenging refrigeration environments, including supermarkets.

Facts about Optigo air coolers installed

Optigo CD

For cooling and freezing rooms where high activity demands increased airflow, the Optigo CD provides double airflow, but low air velocity and noise levels. As with the other products in the Alfa Laval Optigo product line, the CD model is easy to install and clean and follows HACCP guidelines for food safety.

Optigo CC

Optigo CC is the perfect single-flux choice for larger-volume applications. It has a clever design with a new highly efficient coil (for reduced refrigerant content) and the same footprint as the previous series. This makes it easy to install and connect, while high energy efficiency gives low lifecycle costs.

Along with the Optigo CS, there are three models in Alfa Laval’s Optigo range of energy-efficient and environmentally friendly air heat exchangers. All three have been optimised for CO_2 and are easy to install, making them ideal for small to medium commercial applications, such as supermarkets, restaurants and chilled food storage.

“For us as an installer and contractor it was of great importance to have a reliable and experienced component supplier,” says Lasse Silvan, project engineer from Norpe. “We also appreciate the quick service in our native language, as well as high technical know-how on the part of Alfa Laval’s contact people. Alfa Laval’s high commitment to new environmentally friendly cooling solutions is admirable. After many years of close co-operation I can say that they are honestly interested in customer’s needs and are ready to fulfill needs to the smallest detail.”

Design that delights

According to Silvan, the project did not meet any significant challenges. Supplies came as agreed, and there were no surprises during the pressure and leak tests, which Norpe carried out after installation in November 2012.

“Last but not least,” concludes Taisto Tolonen, “I want to mention the modern design of the evaporators. Their rounder form gives a lighter and smoother feeling.”

Customer facts:

Customer:

S-Market is part of the S-Group, a network of companies in retail and services. It has more than 1,600 outlets in Finland, and over 1.9 million co-op members.

Installer:

Norpe is Europe’s leading provider of commercial refrigeration solutions. Based in Finland, the company operates globally, employs over 400 cooling experts and has an annual turnover of more than EUR 100 million.