



One-year payback time on supermarket shell-and-tube investment

CDEW desuperheaters installed in Spain

Case Story



By installing Alfa Laval CDEW desuperheaters in central cooling systems for stores and distribution centres, supermarket chains can reduce heat waste and make considerable energy savings. One Spanish supermarket recouped its investment in under a year.

Selling groceries has always been a competitive business, but today the challenges facing the food retail industry are greater than ever. Consumers are demanding lower prices and a greater variety of fresh produce requiring refrigeration, and supermarkets are looking to reduce energy bills and their environmental impact.

Food retailers are recognizing the benefits of investing in shell-and-tube (S&T) desuperheaters from Alfa Laval for their central cooling systems. One major Spanish supermarket chain has placed an order for up to 150 S&T desuperheaters per year with Alfa Laval Iberia through the central cooling system builder Zanotti Smart Solutions.

The supermarket uses Alfa Laval CDEW desuperheaters in the central cooling systems of its stores and distribution centres, recovering the heat generated to heat tap water, and to provide radiant floor heating and comfort heating. By doing so, it has reduced its energy

Fast facts:

Distributor:

Tewis Smart Systems, main distributor for the Iberian refrigeration market. Customers include Carrefour, Ikea, Repsol, Mercadona

System builder:

Zanotti Smart Solutions, part of the Zanotti Group

Challenge: To supply desuperheaters in central cooling systems for a major supermarket chain's stores and distribution centres.

Solution:

100-150 Alfa Laval CDEW desuperheaters per year installed in central cooling systems. The supermarket chain has reduced its energy costs and carbon footprint, and payback time is less than a year.

costs and its carbon footprint – and its investment has paid for itself in less than a year.

Recovered heat cuts bills

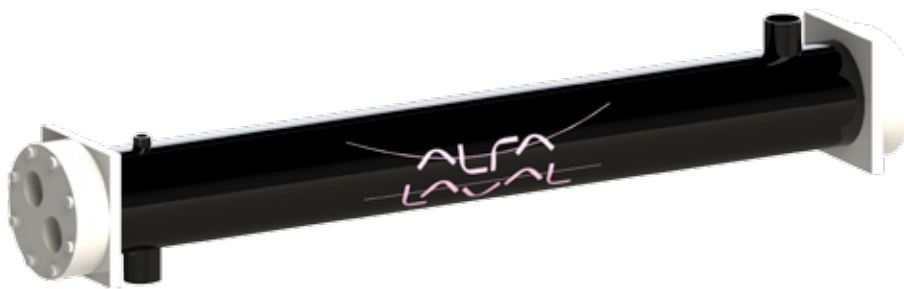
Normally S&T condensers are used for condensing the refrigerant, typically R404 or R134a, using water. The refrigerant discharge temperature at the compressor is higher than 70°C and normally condensing temperature is on the range of 40-45°C. The superheated vapour leaves the compressor at a fairly high temperature. This vapour represents energy that is too valuable to waste, and it can be desuperheated in a heat exchanger and the heat can be used for hot water production or room heating.

Alfa Laval's S&T units are also used as desuperheaters. The design of an S&T desuperheater is similar to the S&T condenser design. The difference is that while the condenser is condensing the refrigerant from its gaseous phase to the liquid phase, the desuperheater is using the hot gas to heat up the water temperature, typically from 30°C to 40°C.

It is important to keep the refrigerant pressure drop limited, typically lower than 25 kPa, in order not to affect the condensing pressure – otherwise the COP of the system would be penalized. In this respect the S&T desuperheaters are highly beneficial since they keep the pressure drop limited as the gas is flowing within a large shell. The purpose of this heat exchanger is to increase the energy efficiency of the whole system.

Energy efficient solution

Zanotti Smart Solutions had previously been using heat exchangers from a competitor to Alfa Laval, and was satisfied with that solution. But the Alfa Laval Iberia's team showed both Tewis – its largest refrigeration distributor in Iberia – and the supermarkets that they



Alfa Laval CDEW shell and tube water-cooled condenser

could exceed their expectations. "We all paid a visit to Alfa Laval's factory in Alonte, Italy, because we wanted to show them our quality and manufacturing processes, and to prove to them that we are a first-class supplier of these critical components," says Ricardo Roma, Channel Manager at Alfa Laval Iberia.

Javier Atencia, Technical Manager of Zanotti Smart Solutions, was impressed by what he saw in Italy. "We found a highly-automated factory where the priorities are quality and customer service, with a large product range able to cover all our needs."

High quality standards

Following the visit, the system builder, distributor and the end customers decided to switch to Alfa Laval shell-and-tube heat exchangers for their central cooling systems. Alfonso Olcina, Chief Commercial Officer of distributor Tewis Smart Systems, explains: "Alfa Laval is a prestigious, well-recognized brand which is competitive and has high quality standards."

Atencia at Zanotti Smart Solutions is more than happy with the solution. "It is a robust, reliable and easy-to-use shell-and-tube product." Today 80% of Zanotti's installations feature heat recovery systems.

About the Alfa Laval solution

Alfa Laval CDEW shell and tube water-cooled condenser

- Special water gasket configuration to resist high water pressure (up to 10 bar)
- Standard range includes different models for all HFC refrigerants with capacity range from 60 to 2000 kW
- Square tube sheet can be used as support for the condenser
- The CDEW-E version has been optimized for R134a high performance applications.
- For smaller capacities (from 5 to 150 kW) CXP condensers and desuperheaters are also available.

Working in partnership

But beyond the nuts and bolts of the total solution, all the players are also enthusiastic about the partnership that has developed. "Tewis is a very demanding distributor and is always looking for excellence in product and service, but we like that – it pushes us to be better," says Roma at Alfa Laval.

"We are very pleased with the relationship with Alfa Laval," adds Olcina at Tewis. "It is not just a supplier/distributor relationship but a real partnership. We work together to look for new technical solutions and new ways to the market."

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