

Sustainable Copeland™ ZX A2L Refrigeration Unit Solution for Medium Temperature Application at Delhaize



In Short

End-user: AD Delhaize Heultje

Installer: Keyzers Koeltechniek

Wholesaler: Heytec

Scope: Provide a sustainable refrigeration solution for a 1.600 m² supermarket, to supply medium temperature cabinets.

Solution: Copeland ZX ZXDY-060 A2L refrigeration unit with R455A refrigerant

Result: Reduction of Delhaize's greenhouse gas emissions



Equipment

One Copeland ZX A2L refrigeration unit with R455A



Safety

A rigorous training on the risk assessment process was facilitated by Emerson

Situation & Challenge

The aim of the end-user was to find a more sustainable alternative to the old refrigeration equipment, designed for A1 refrigerants (R448A, GWP 1450), by the end of 2020. The new solution had to provide cooling for an area of 1.600 m², that includes five medium temperature cabinets, with a total length of 20m, out of which 17.5m with doors and 2.5m open.

One of the biggest challenges was to find a cooling solution with a low global warming potential (GWP) that decreases the carbon footprint while lowering the operational costs. The choice for an A2L refrigerant was made after a price comparison with a CO₂ installation, which showed higher lifecycle costs in the target application. Therefore, A2L seemed the right choice for the supermarket owner's needs.

One of the main installation challenges was the short amount of time to setup the new equipment. The new unit had to be installed in less than 4 hours, before the store's regular opening time. Another challenge was to find a quiet operating solution, due to the location of the supermarket, situated in a small urban area surrounded by residential homes.

Solution

A key factor in choosing the new Copeland™ ZX A2L refrigeration unit was its capability to operate with low GWP refrigerants. Emerson has been closely involved in providing assistance for the unit and refrigerant selection, by recommending R455A, a refrigerant that has a global warming potential below 150.

The installation was done in less than 3 hours and enabled the end-user to open the store at its regular time, without having to disconnect the display cabinets and to stop the food refrigeration. After its installation, the operation of the ZX A2L unit was very quiet, thanks to the new fans designed for an improved sound attenuation. Additionally, the unit benefits from low sound levels below 40 dB(A), which makes it a perfect fit in such urban areas.

An important driver for choosing a Copeland ZX with digital capacity modulation was the application with multiple evaporators in several cabinets. This way the cooling capacity can be adjusted exactly to the demand of the application with precise set points which increases the overall energy efficiency significantly.

The refrigerant load in the new unit was 19% lower than in the previous system thanks to the optimized condenser. With the new hermetic design with brazed connections, the risk of refrigerant leakage was significantly reduced. This improvement enabled a safe installation and operation, a key aspect especially for A2L applications.



Copeland ZX A2L refrigeration unit, installed at Delhaize supermarket, in Belgium.



Medium temperature cabinets from Delhaize store, equipped with the Copeland ZX A2L refrigeration unit.

Results

The chosen solution with a GWP of 150, aligns to Delhaize's strategy on reducing greenhouse gas emissions, contributing in this way to the retailer energy reduction program.

Testimonial

“ Thanks to the low noise of the Copeland ZX unit, there are less problems using them in residential areas. There is little difference in the installation of the piping of this unit with A2L refrigerants compared to previously used refrigerants. The unit is easily accessible for maintenance and repairs. ”

M. Verbelen
Keyzers Koeltechniek BV

For more details, see climate.emerson.com/en-gb

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