European retailers could save millions with the right choice of refrigeration system

Analysis conducted by technology company Emerson, in conjunction with HVACR research institute ILK Dresden has shown that European retailers could save hundreds of millions by making the right choice of refrigeration system as they transition away from HFCs to sustainable alternatives.

- *European retailers are being forced to re-evaluate their refrigeration systems as a result of EU regulations and global targets for HFC phase down*
- *Compared to 'remote rack CO_2' systems, the analysis has found that a store using integral display cases could achieve savings of over €50,000 over a 10 year period*
- *Across a European fleet of 10,000 stores, the savings could equate to almost one-half € billion in a decade*
- *The benefits of integral display cases include reduced capital investment, lower maintenance costs, simpler installation and decommissioning and reduced energy consumption*

AACHEN, GERMANY, JANUARY 16, 2018 – Emerson has worked with the independent institute of air handling and refrigeration ILK Dresden to analyse the long-term cost implications of different refrigeration systems using low GWP refrigerants. The study was conducted as European F-Gas regulation and the Kigali Amendment to the Montreal Protocol are forcing retailers to re-evaluate their refrigeration systems and transition to more environmentally sustainable technologies.

The analysis compared the two leading low GWP refrigeration technologies: remote rack CO_2 systems and integral display cases, which utilise propane refrigerant (R290). It concluded that, due to the simplicity of integral display cases, compared to larger and more complex remote rack systems, store operators could achieve significant savings of over €50,000 per system. Any operator with 10,000 stores could therefore achieve potential savings of more than €500,000,000 over a ten year lifespan of their refrigeration systems.

The study focused on a typical European discounter store with 10 display cases per store and approximately 1,000m^2 vending area. It found that retailers could make the following savings in each of their stores through a range of factors:

Cost benefit	Saving per store
Reduced capital investment*	€29,204
Lower energy consumption*	€9,093
Lower service, maintenance and insurance costs*	€6,429
Simpler decommissioning*	€2,014
Reduced store closure time during installation	€1,800
Reduced cost of store shutdown during refurbishment	€1,800
Loss of performance due to leaks	€715
Total Savings over 10 Year Lifespan	**€51,055**

** ILK Dresden study results*

Refrigeration is integral to the European food retail sector, which is undergoing a fundamental transformation as global and European targets to phase-down the use of high GWP HFC refrigerants come into force. As the industry makes the transition, it faces a choice of technology which could have significant operational and cost implications.

Eric Winandy, Director of Integrated Solutions, Emerson Commercial and Residential Solutions, said: "The environmental impact of refrigeration is significant, and recent international agreements are forcing operators to rethink the systems they use. As the retail sector makes this once in a generation transition, it's presented with a major challenge but also an opportunity to select the right technologies which can maximise long term environmental, operational and cost benefits."

He added, "Our analysis shows that the choice of a refrigeration system entails far more than just a need to move to a low GWP refrigerant. It has major implications for the operations of stores, for maintenance and upkeep and for the overall running costs of facilities. Integral display cases won't be appropriate for every store, but the significant cost benefits they can deliver highlight the fact that retailers should consider every option and all of the implications of the choices."

Background on Integral Refrigeration Systems
So far most supermarkets seeking to drastically phase-down HFC refrigerants have chosen CO_2 systems, and only a handful have opted for water-cooled hydrocarbon integral systems, likely due to the fact that the architecture is less familiar.

'Integral' refrigeration describes stand-alone display cabinets and freezers that each contain their own cooling system – similar to a domestic fridge. They predominate in drinks vending machines and ice cream freezers found in corner shops worldwide. Most supermarkets have some integrals, even if their main system is remote. But integrals can also be used to provide refrigeration for entire stores provided the heat generated is removed to an external chiller or heat exchanger through a simple pipe containing water or brine. These are referred to as water cooled integral systems, and need no plant room.

Additional information about the comparative lifecycle analysis can be found in a fact sheet at http://www.emersonclimate.com/europe/en-eu/About_Us/News/Pages/Studies.aspx .

Emerson also recently partnered with the University of Birmingham to produce a research report on the implications of the transition from HFCs to low GWP alternatives for food retailers.

To access the full complimentary whitepaper, ***Retail Refrigeration: Making the Transition to Clean Cold***, visit www.emersonclimate.com/europe/en-eu/About_Us/News/Pages/Studies.aspx.

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