

Moving Towards Sustainable Refrigeration Commercial Applications

Natural refrigerants in commercial applications

In contrast to industrial refrigeration, no universally accepted alternatives to hydrofluorocarbon (HFC) refrigerants are currently commercially available. Considering its very diverse range of refrigeration requirements Nestlé has therefore embarked on an active programme pursuing appropriate technical solutions also for smaller commercial refrigeration systems. As for industrial refrigeration, **Nestlé is committed to search for HFC free** commercial refrigeration that is safe, legally accepted, cost effective and commercially available.

To this end, we are collaborating closely with all major equipment suppliers and through international organisations promoting natural refrigerants, such as the International Institute of Ammonia Refrigeration in the US, Eurammon in Europe, the Carbon Dioxide (CO_2) Interest Group and the International Institute of Refrigeration.

In our research & development centres and several commercial scale trials we continue to perform extensive tests with hydrocarbon refrigerants in various applications. Nestlé is also working at other refrigeration technologies.

Hydrocarbons

Nestlé currently has in excess of 7,000 hydrocarbon-based ice cream freezers operating in Europe. This large scale trial includes controlled maintenance programs and ongoing evaluation. However, their use is subject to legal restrictions in some countries and for some applications.



Hydro carbon ice cream freezer

Nestlé on the Move Towards Sustainable Refrigeration

Keeping in mind the total greenhouse impact of refrigeration units – which is a combination of refrigerant type and energy consumption – Nestlé has also improved the efficiency of its freezers. Comparing today's purchasing specification against the 2001 design the energy usage is significantly less, thus reducing the "Total Equivalent Warming Impact" by 40 %.



Ice cream freezers



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Carbon Dioxide Refrigeration

Nestlé is leader in developing and testing the CO_2 refrigeration technology for commercial freezers.

Nestlé engineers with the support from several key suppliers (including Liebherr GmbH) successfully developed and tested the world's first two stage CO_2 ice cream freezer cabinet.

The test results from an ice cream temperature point of view were promising. The overall efficiency is presently being evaluated at the Nestlé Product Technology Centre - Beauvais - France. Design and performance optimisation will continue.

Additionally, two 3.5 tons delivery vans using CO_2 started field tests in Poland since mid 2005.





Ice cream freezer operating with CO₂ two-stage compressor

Development of Solar Assisted Battery Powered Ice Cream Freezers

Nestlé in 1998 developed their first solar assisted battery powered ice cream freezer cabinets. Today, we have 25 units in operation in field trials in Australia and China.



Solar Assisted Battery Powered Ice Cream Freezers



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Looking to the future

Nestlé is currently working closely with selected suppliers to evaluate the feasibility of adopting the promising Stirling cycle technology.

All these initiatives will help us to fulfil our commitment to replace synthetic refrigerants by the most appropriate and sustainable solution for each of our diverse refrigeration needs.