



PRAGUE

25-26/11/2024





Energy efficiency improvements on horizontal freezers for supermarkets

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Who we are

A distinctive company

- 65-year-old Irish-owned company
- Exporting globally from the Dublin headquarters
- **Patented LEAP technology**: a unique solution to a critical challenge faced by retailers worldwide

A long-standing commitment to innovation and environmental responsibility

- 1999: Pioneering the industry with **Iceland UK's first fully natural refrigerant store**
- Today: All Novum freezers proudly use R290



Main Customers

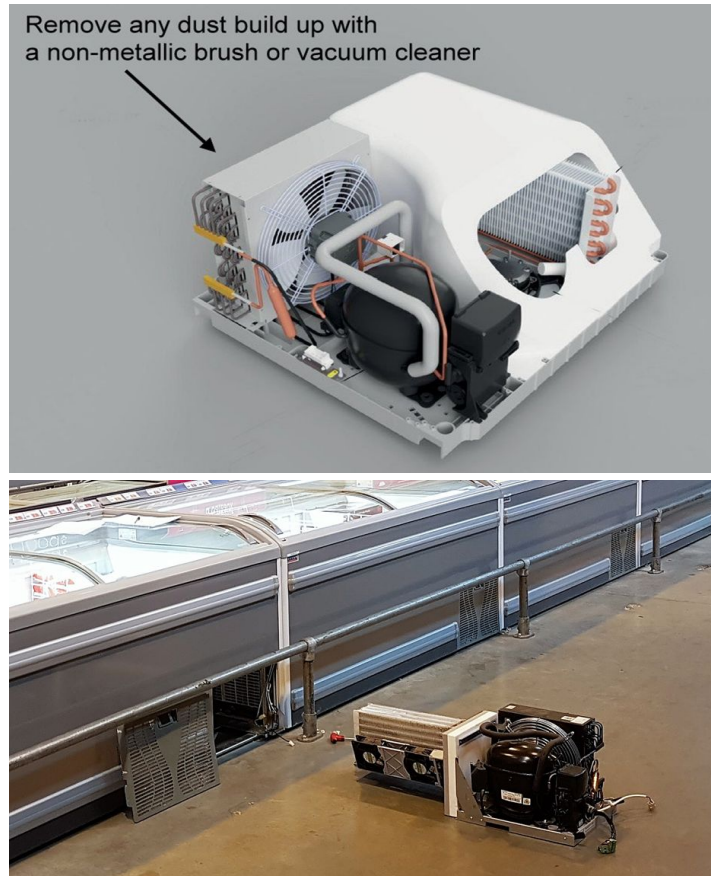


Leap Cassette System

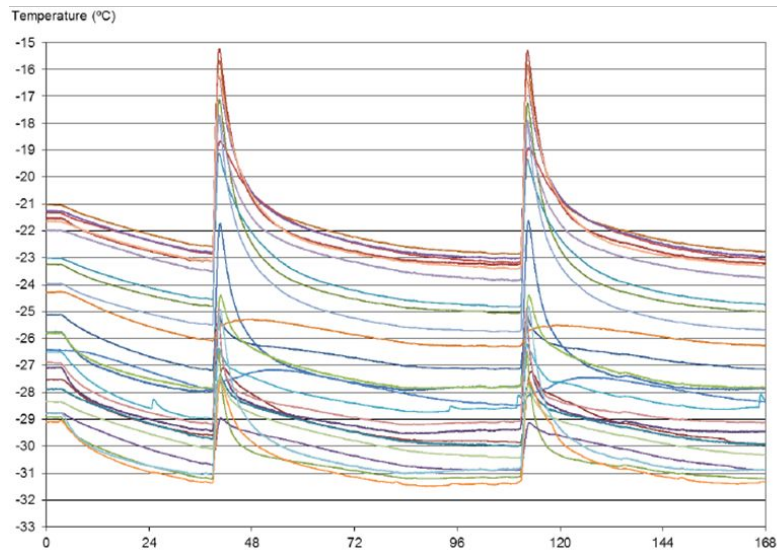
Where simplicity meets excellence

- One Piece, Self-Contained removable cassette
 - Easily Upgradable
 - Substitute it in less than 15 mins
 - No Lost Sales due to Downtime or Shop Floor Repairs
 - Less food waste/better food integrity
- Fixed speed R290 compressors 40 - 65g
- Fully compliant with Eco-design regulations

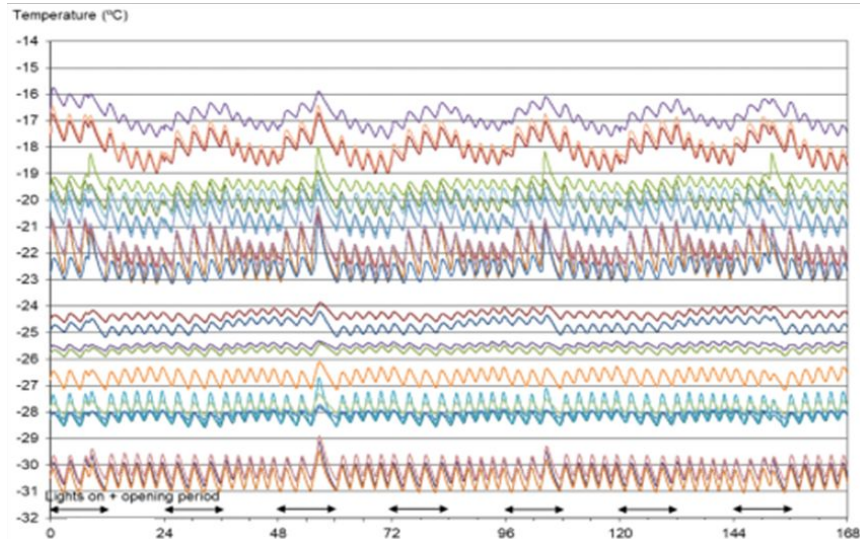
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Typical competitor



Novum LEAP



Reducing the impact of the Defrost

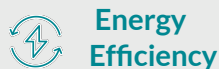
LEAP HORIZONTAL FREEZER

500 liter freezer, top on hinge



Market	Food Retail, Merchandising
Application	Frozen food or Ice Cream
Detail	Horizontal freezer, 484 lit., hot gas defrost, Forced draft evaporator

PERFORMANCE ASSESSMENT



EMC3134U



FMFT406U
+ Embraco Controller

On-Off

SVS

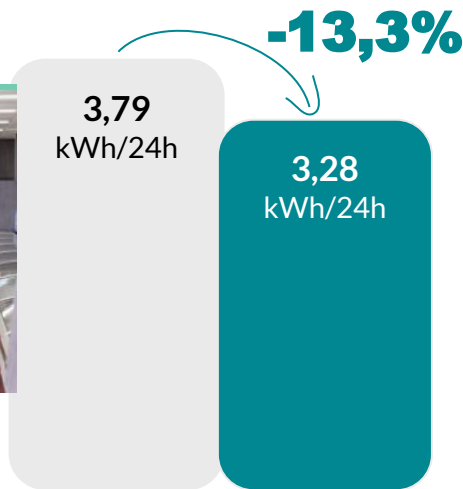
Test procedure

Test	Temperature	Humidity	Package Temp.*	Description
Door Closed EN ISO 22043	25°C	60%	-18 °C	Steady packages, closed doors throughout the entire test
Door openings EN ISO 22043	25°C	60%	-18 °C	Steady packages, 12 h door openings (3 min at the beginning + 10s every 10 min) + 12 h door closed

*warmest package for C1 class according to ISO standard

RAISING THE EFFICIENCY BAR

BY MORE THAN 13%



LESS ENERGY

- 0,51 kWh/24h, equal to ~13 % energy savings

LESS MONEY MORE SUSTAINABILITY

- The energy saving obtained is equivalent to -34€* per year and 42 kg CO₂ per year not emitted. **

Considering a reductive number of 10.000 cabinets installed per year, this leads to **more than 344k € saved in energy and 423 tonnes of CO₂ not emitted per year**



EMC3134U

FMFT406U +
Embraco Sync



Fixed-Speed
technology

Variable-Speed and Embraco
Frequency control

BETTER FOOD PRESERVATION

- Less food waste and better food integrity

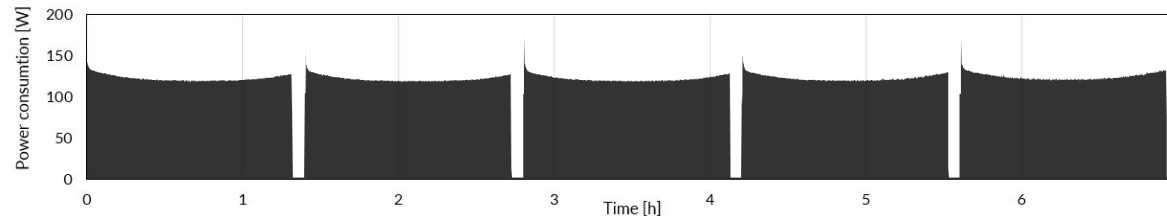
(*) Assuming 185 €/MWh

(**) Assuming 0,227 kgCO₂eq/kWh (EEA)

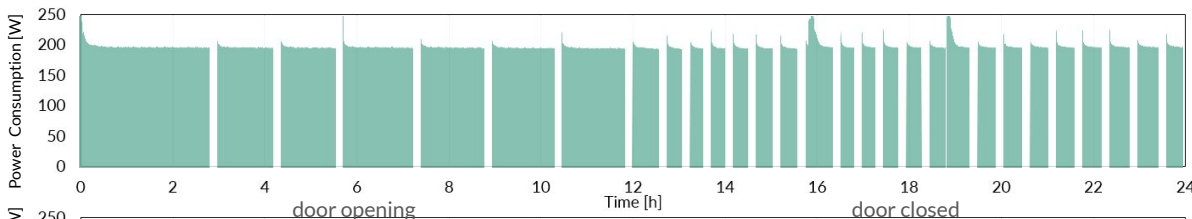
High efficiency on-off



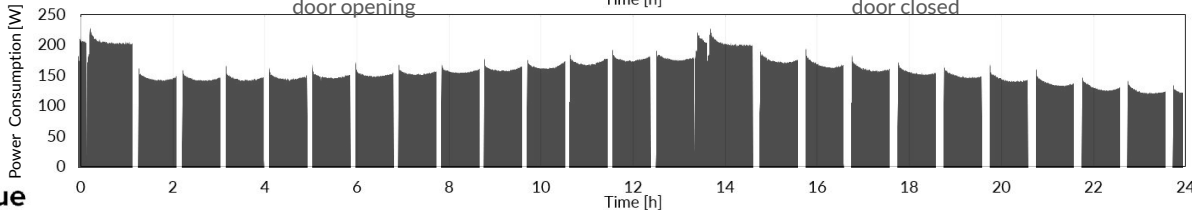
closed door



High efficiency on-off



door openings





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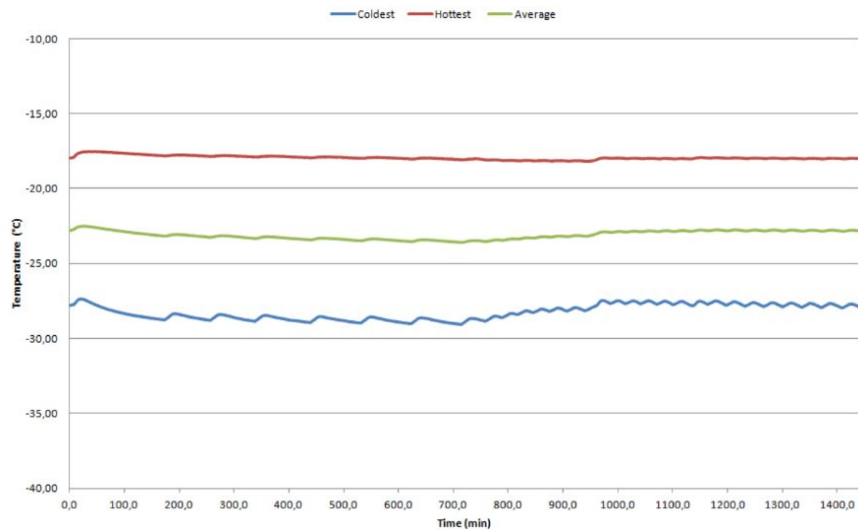
GREAT TEMPERATURE STABILIZATION

Average Packages Temperature - Closed Door + Door Openings



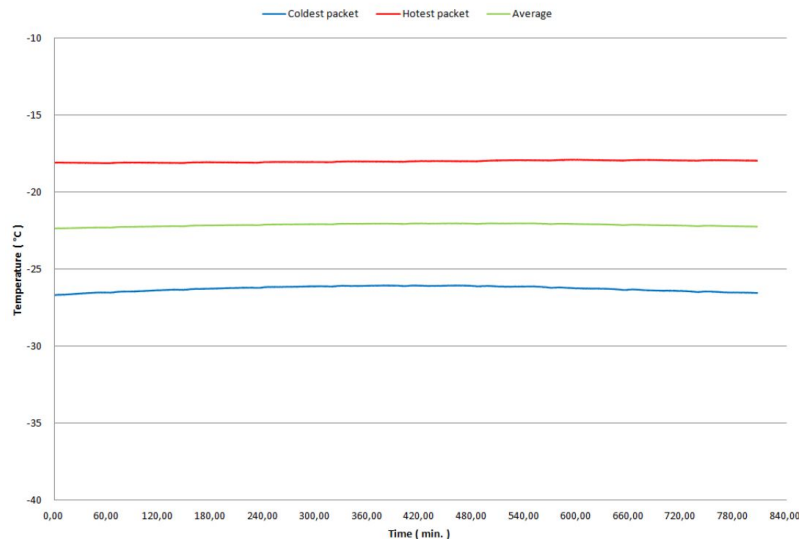
High efficiency on-off

Specific temperatures graph



Variable Speed + Embraco Sync

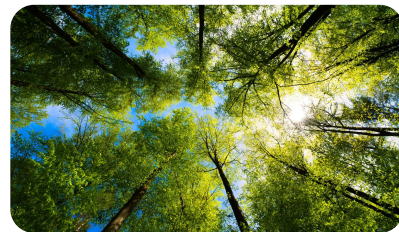
Specific temperature graph



Variable Speed, with adequate Control, guarantees better temperature stabilization

A transitioning world

Embraco is committed to a clear and **sustainable path for refrigeration**, prioritizing **ecological*** and **economical benefits**.



() The ecological requirements have been recently reinforced by Regulations*

New F-Gas Reg.

(EU) 2024/573
OJ 7th.2.2024

ESPR**

(UE) 2024/1781
OJ 7th.2.2024

EN 60335-2-89

Rev. EU standard
2nd.8.2023

PFAS restriction

Echa Proposal
7th.2.2023

() Product durability, energy and resource-efficient**

PIONEER IN NEW TECHNOLOGIES

Variable-speed technology



Natural refrigerants and the most efficient solutions



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Wide application range for commercial refrigeration

embraco
Nidec



LBP



Naturally
Efficient



Energy
Efficiency



Reliability

HBP

FIXED SPEED

Extended cooling
capacity



EL



EM



EH



EG/F



NE



NT



NJ



SCROLL

VARIABLE SPEED

Excellence in energy
efficiency



Atom



FMX



VES



FMS



VEM



FMF



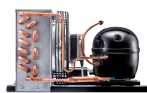
VEH



VNEX

CONDENSING UNITS

Optimized design for
better performance



Standard portfolio



Customized solutions



BIOMA



Monoblock

NEW PRODUCTS

Controllers
and EC Fan



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Synchronize to Optimize

embraco
Nidec

Embraco Sync
synchronizes the whole system,
optimizing performance and energy efficiency



Embraco AIR
ECM motor is way more efficient than market-standard shaded pole fans

Variable Speed compressor **saves energy by adapting** its rotation speed to the cooling demand



YouControl
an easy interface that allows **a precise fine tuning of the system's parameters** to reach the maximum efficiency



With adaptive Defrost and adaptive Door Heater

Synchronizing the components is the necessary next step to improve energy efficiency and performance

Driving the Future of Energy-Efficient Refrigeration

Relentless Pursuit of Energy Efficiency

Even with high-efficiency baselines, advanced technology in variable speed and **intelligent control** unlocks **new levels of performance**.

Proven Impact: Reduced Costs and Emissions

Our case study highlights substantial energy savings, translating into **lower energy bills** and **significant CO₂ emissions reduction**.

Enhanced Food Quality and Preservation

Superior temperature stabilization ensures the **integrity and safety of stored goods**.

Sustainable Design for a Circular Economy

LEAP solutions enable **streamlined maintenance** and **material recyclability**, fully aligned with the new Ecodesign Regulation

Pioneering the Variable Speed Standard

Embraco is committed to making **Variable Speed** the **Industry standard in Commercial Refrigeration**.



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