



## Sync It All case study

# Food Retail - Upright Freezer

# Synchronize to optimize

Integrated electronic devices for  
performance optimization



## About the Sync It All Portfolio

# FOR MORE INTELLIGENT, RELIABLE AND ENERGY SAVING SOLUTIONS

Embraco is leading the way once more, developing an integrated portfolio with electronic devices, all synchronized to increase performance, improve food preservation, reduce noise and decrease energy consumption.

Through the controller, fan, variable-speed compressor, and the YouControl development interface, all working together, it makes it easy to reach efficiency goals.

**Sync it all during the development stage and have a better experience today and in the future.**



## About the Sync It All Portfolio

# The future is connected

Embraco's electronic devices together mean **more intelligence and energy efficiency**



Total flexibility in equipment parameterization



Reduced approval time for new products



Lower energy consumption



Less noise

## About the Variable Speed Compressors

# Present Everywhere: Variable Speed Fits All The Applications

### Main benefits of the VCC technology

- High Efficiency
- Low noise & vibration
- Temperature Control
- Variable Speed/Capacity
- Fast cooling and Freshness
- Wide Voltage Range
- Reduced Pull Down Time



## About the Variable Speed Compressors

# Inverter compressors bringing far more benefits for the application

### Beyond energy savings

#### Fast Cooling

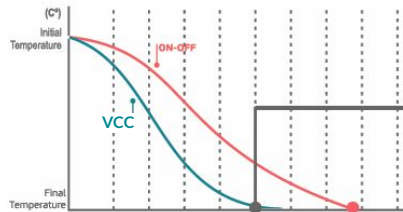
Variable speed compressors **reduce pull-down time**. This feature results in a **much higher temperature stability**, helping to keep products fresh for longer.

#### Lower Noise & Less Vibrations

After the temperature stabilizes, compressors will run at a lower rotation, resulting in a **better consumer experience at the point of sales**.

#### Wide Voltage Range

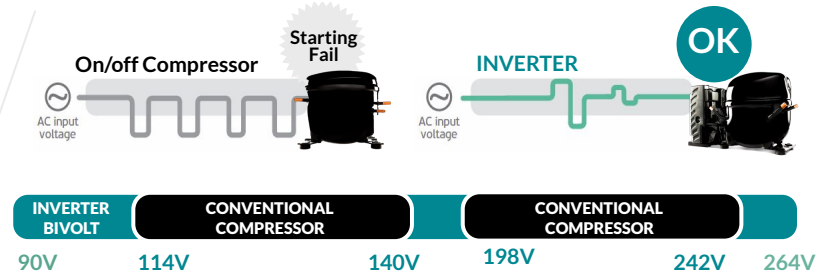
Since the inverter provides regulated tension to the motor, the entire system is much more **tolerant to voltage fluctuation**, resulting in less food loss, less maintenance costs and no need for voltage stabilizers.



SET POINT TEMP

ON-OFF

VCC



Rated input voltage



# Case Study

think ahead

embraco  
**Nidec**

# Case study: Food Retail - Upright Freezer

570 liter freezer, glass door

## TECHNICAL SPECIFICATIONS

Segment	Food Retail, Merchandising
Application	Frozen food or Ice cream
Detailing	572 liters, glass door w/ heater, Electric heater defrost, Forced draft heat exchangers, LED lights and Electronic Fan motors

## PERFORMANCE COMPARISON

Proposed Setups



FMFT213U



FMFT213U  
+ Embraco Controller

Set with Embraco  
**YouControl** interface

Baseline

SVS

SVS (Sync Variable Speed) is the logic embedded into the Embraco Controller



## TEST PROCEDURE

Standard	Temp	Humidity	M-Package class	Climate Class	Description
ISO 23953-2	25°C	60%	L1	3	24h test with Steady packages at the beginning: 12 h door openings (3 min at the beginning + 10s every 10 min) + 12 h door closed



# Case study: Food Retail - Upright Freezer

570 liter freezer, glass door

## Findings

ISO Standard 24h test

- -24% Energy Savings keeping compressor

**SVS** + Adaptive Door Heater

- -22.5% considering day Energy Consumption

- -22.5% considering night Energy Consumption

- **Adaptive Door Heater** major savings:  
From 4.2 to 2.0 kWh/day (**Run Time Ratio = 47%**)

### PERFORMANCE COMPARISON

*Proposed Setups*



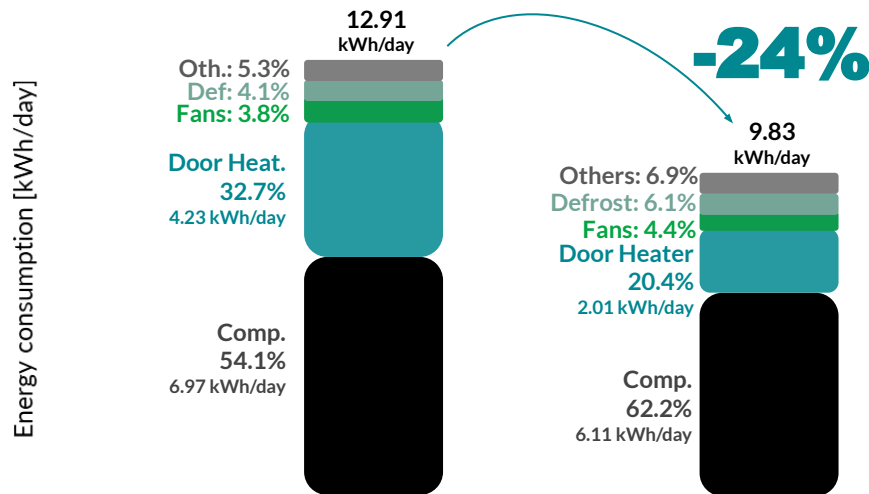
FMFT213U



FMFT213U  
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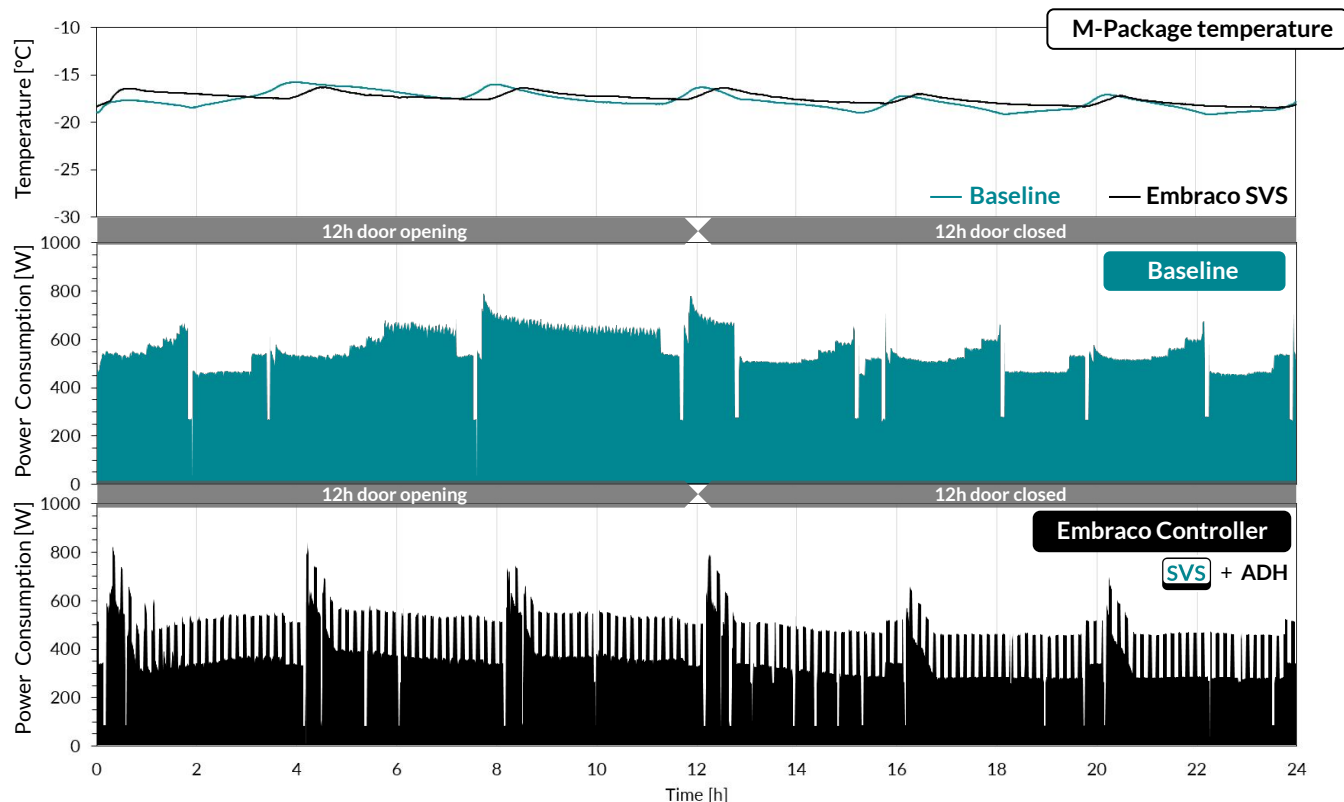
# Case study: Food Retail - Upright Freezer

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## Findings

ISO Standard 24h test





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our solutions, follow our  
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