

**Nidec  
Global Appliance  
Company Profile**



# We Are Part of Nidec Corporation



Founded in  
**1973**



**HQ:**  
Kyoto, Japan



**+ 340**  
Companies



**+ 40**  
Countries



**Over 70 M&A**  
(Mergers & Acquisitions)



**+ 100k**  
Employees  
worldwide



**\$17.1B**  
Net Sales (FY 24)



Information  
Technology



Vehicles

AMEC



Robotics



Power Generation



Appliance

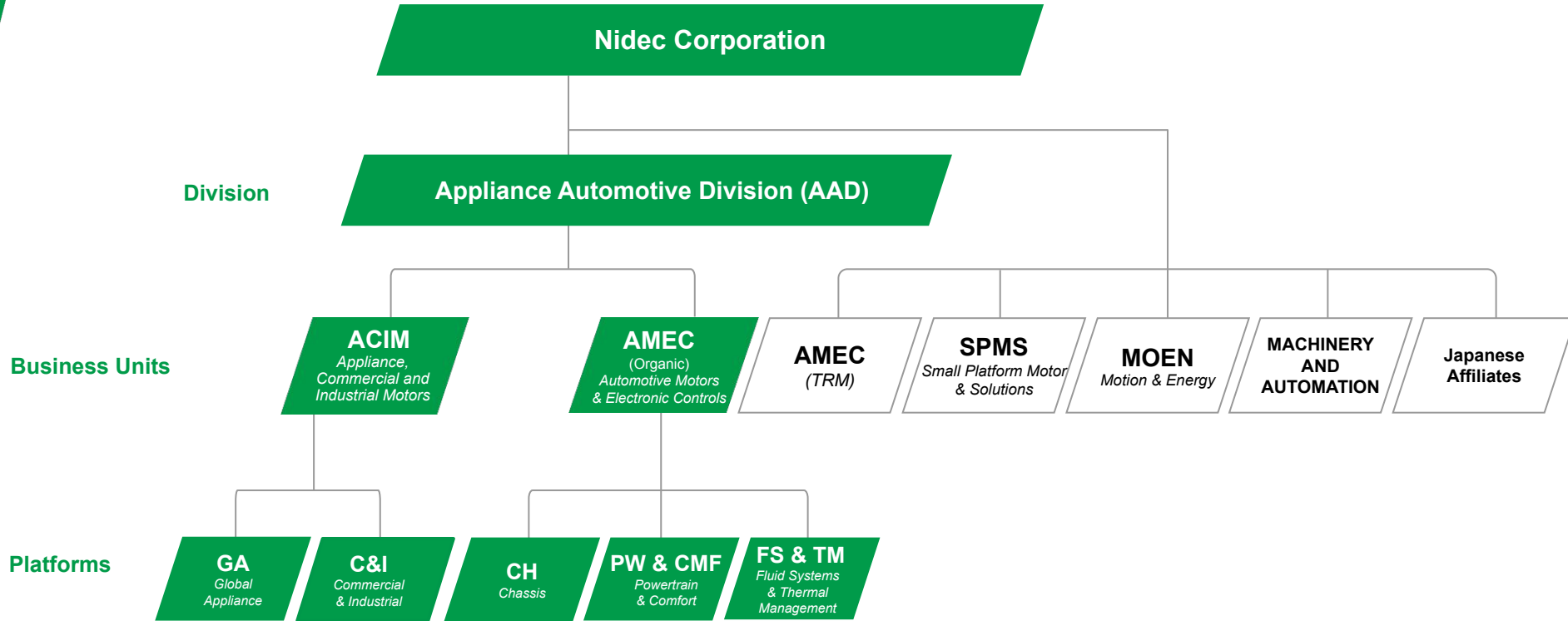
ACIM



Industry

ACIM

# Appliance Automotive Division Inside Nidec Structure



# ACIM at a glance

## We develop highly-efficient solutions

that empower people and industries to move towards a more sustainable world.



**34**  
manufacturing sites



**+30**  
business offices



**+25**  
countries



**+ 19,000**  
people



**Headquarters**  
in Pordenone  
(Italy)



**\$3B**  
Net Sales (FY 24)



**70,000,000**  
products sold/year



**+ 4k**  
customers worldwide



ABOUT NIDEC GA

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# NIDEC GLOBAL APPLIANCE

# About Nidec GA



**HQs:** Joinville (Brazil)



**+13,500** employees



**19** manufacturing plants and **5** business offices across **9** countries



Annual production capacity of **+90 million** motors and compressors



**9 R&D Centers** worldwide and **around 500 engineers**



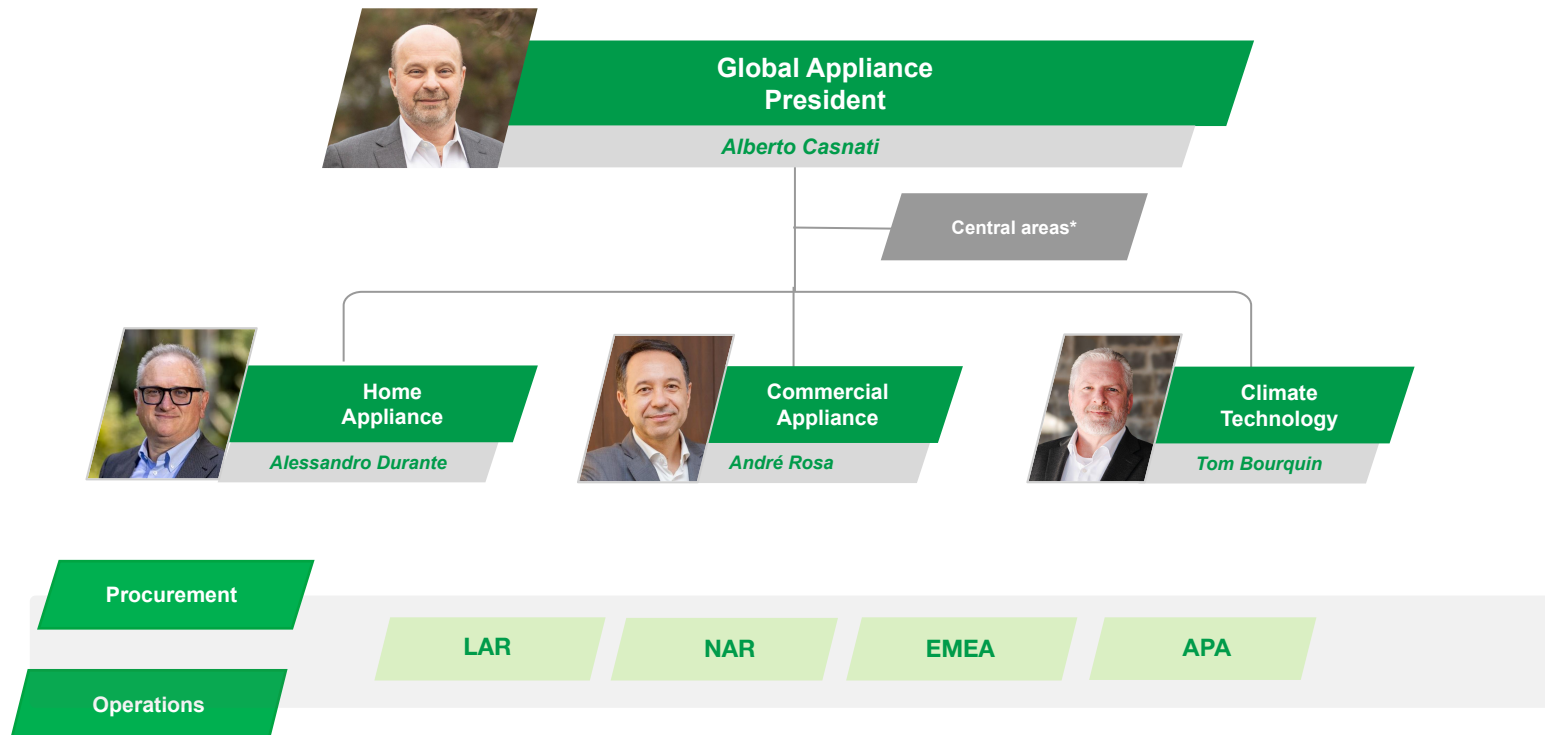
**90 countries** served by our products



**\$2.1B (FY 24)**  
sales/year



# GA Structure



\*Finance, Central R&D, Quality, Human Resources, Communication, Institutional Relations, Business Expansion & Investments and S&OP

# Global Appliance Platform

We are a global partner for **home and commercial** appliances industries

Complete portfolio of **motors, compressors, condensing units and electronics** designed to deliver the best-in-class performance, differentiated by high energy efficiency, low noise and reliability.

## Home Appliance



## Commercial Appliance



## Climate Technology



OUR  
BRANDS

**Nidec**

**embraco**  
*Nidec*

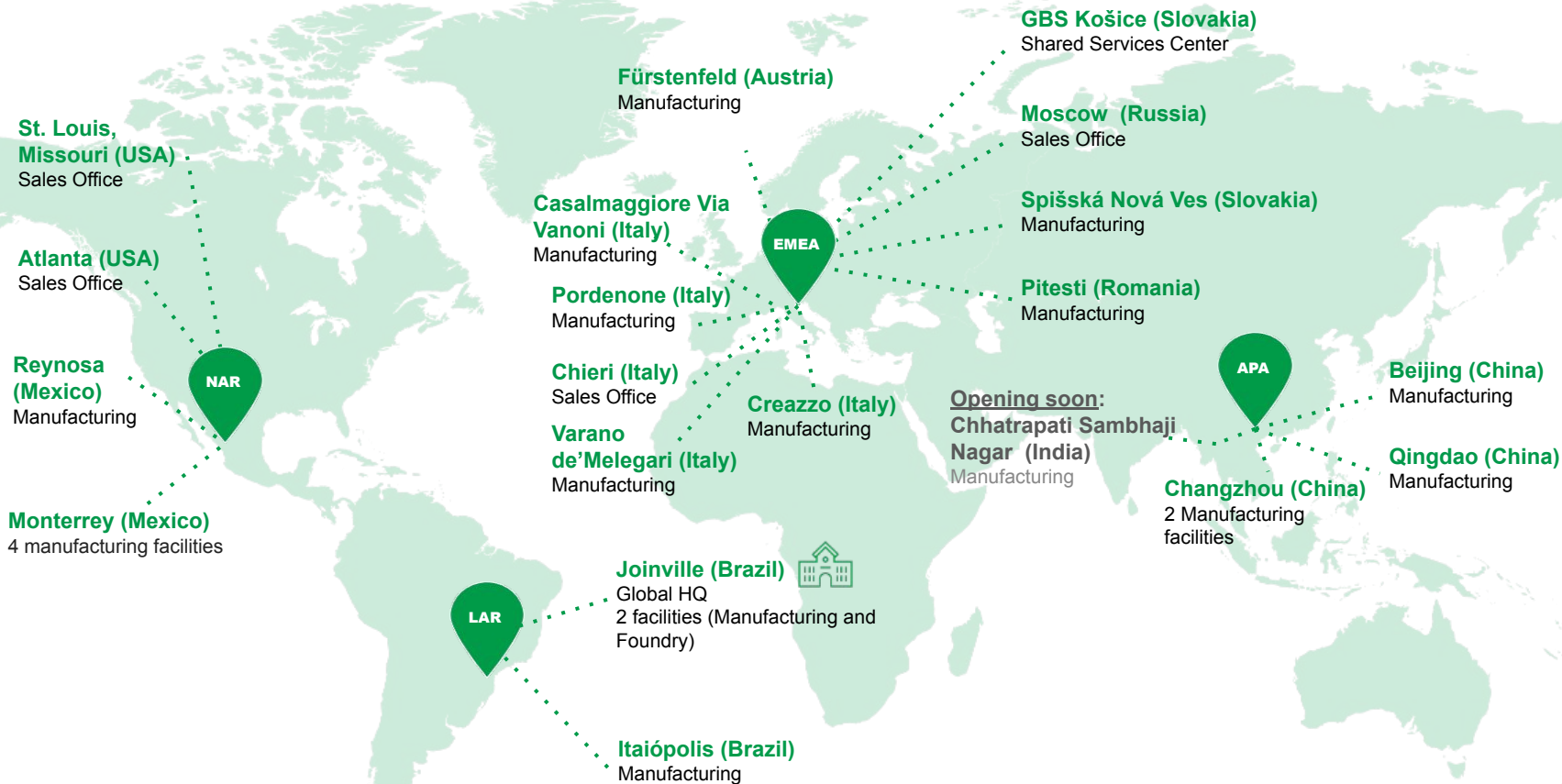
**FR**  
*Nidec*

**embraco**  
*Nidec*

**embraco**  
*Nidec*



# GA Global Presence



# GA Innovation Drivers



## Energy efficiency

Technology that enables **reduction of energy consumption.**



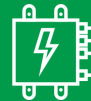
## Low noise

**Low noise** in motors and compressors is key to **keep the consumer experience positive.**



## Natural Refrigerants

Portfolio designed to deliver the **best in class performance**, under the safest conditions with natural refrigerants.



## Electronics

Design and production of inverters, controllers and EC fans for **better performance and optimized total cost of ownership.**



## Miniaturization

**Size reduction** combined with **embedded technology.**



## Motors

**Integrated Motors & Drives** with Synchronous Technology

# GA Research & Development

We are differentiated by a **deep expertise in Research & Development**, capable of **delivering technology and innovation** that anticipates trends.



**Robust structure for innovation**  
with 9 Research & Development Centers



**Partnerships with Universities**  
in different regions of the world



**Local engineering support teams**  
with labs and application engineers available worldwide



**+500 valid patents and +4,800 in the history**  
Innovation is a continuous process

ABOUT GA

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# BUSINESS SEGMENTS AND BRANDS

# GA Business Segments and Brands

**Nidec**  
Global Appliance

**Nidec**  
Global Appliance

## Home Appliances

Compressors and motors for residential and professional appliances.

**Nidec**

**embraco**  
Nidec

**FR**  
Nidec



## Commercial Appliances

Compressors, condensing units, monoblocks and electronics for commercial refrigeration.

**embraco**  
Nidec



## Climate Technology

Solutions for heating, ventilation and air conditioning

**AIC**  
MOTORS

**RESCUE**

**embraco**  
Nidec



GA BUSINESS SEGMENT

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# HOME APPLIANCES

# Home Appliances Segment

**Nidec**  
Global Appliance

Two steps ahead of the trends to drive appliances to a more sustainable future



**Nidec**

**Motors** for residential washing machines, dryers and dishwashers.



**FR**  
**Nidec**

**Motors and pumps** for food service, professional appliances and medical applications.



**embraco**  
**Nidec**

**Compressors** for refrigerators and freezers.

HOME APPLIANCES BUSINESS SEGMENT

**PORTFOLIO FOR RESIDENTIAL  
LAUNDRY AND KITCHEN**

# Solutions for Residential Laundry and Kitchen Appliances

**Nidec**  
Global Appliance

**Nidec**

We offer innovation through a complete portfolio of **motors for washing machines, dryers and dishwashers**

Excelling in technologies for **low noise, compact and energy efficient solutions**



# Portfolio for Washing Machines, Dryers and Dishwashers

- ✓ Experts in the **OEM process**
- ✓ Deep understanding of the **market regulations worldwide**
- ✓ Highly advanced R&D
- ✓ **Tailored solutions**

## Washing Machines

## Dryer

## Dishwasher

### Traditional Motors



### BPM Motors



# The Right Solution For Each Customer's Need

We are differentiated by our **co-development** methodology with customers, which means:

- **Cost savings and improvements** in the customer's production line.
- **Working closely with customers** in the product development process to **provide proposals** with high added value.
- Formulate the **best solution** for each of our customers' products.



# Products For Washing Machines

## Washing machine motors in all types of technologies

Our range of motors for washers covers the requirements for all regions and types of appliances.

Available also as IMAC (Integrated Motor and Control).



**HAWM**  
Horizontal axis washing machine



**VAWM**  
Vertical axis washing machine



Universal



CIM



CIM - IMAC



BPM



BPM - IMAC



DD



DDM



DDM gear drive



PSC

# Products For Dryers

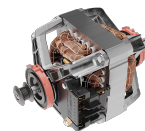
From classic solutions **to second generation BPM models**



**DRY**  
Tumble  
dryer



PSC



Split-Phase



BPM



BPM -  
IMAC

# Products For Dishwashers

## Complete portfolio of motors for dishwashers

Also available with  
electronic board and  
integrated heater

DW  
Dishwashers



PSC  
pump



PSC & integrated  
heater



BPM  
with integrated heater and  
electronics

# Electronic Drives

## Deep expertise in **electronic drives**



### WM drives



- Client dedicated communication HW/SW
- Proprietary unbalance control algorithm
- Integrated or modular



### Dryer motor drives



- Modular version



### Dishwasher drives



- Integrated on pump

HOME APPLIANCES BUSINESS SEGMENT

**PORTFOLIO FOR PROFESSIONAL APPLIANCES  
AND MEDICAL APPLICATIONS**

# Solutions For Professional Appliances

**Nidec**  
Global Appliance



Traditional brand of **motors and pumps** for professional appliances with worldwide presence.

Products marked by **energy-efficiency, reliability, high performance and customization.**



# Solutions for Professional Kitchens



## Motors for food processors

Low noise,  
customized and  
thermally optimized  
**motors for food  
processors** (slicers,  
coffee grinders etc).



Single Phase  
Motor for slicers



Gear motor for  
ice nuggets



Single phase  
motor for coffee  
grinders

# Solutions For Professional Kitchens

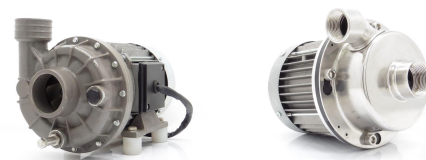


## Pumps for professional dishwashers

Compact and energy efficient **pumps for professional dishwashers**, with optimized hydraulic performances.



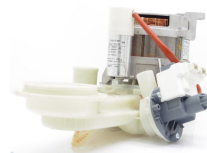
### Three Phase Pumps



### PSC Pumps



### Integrated Pump



# Solutions For Professional Kitchens



## Motors for professional ovens

Energy efficient  
**motors for  
professional ovens**  
developed for the  
best ventilation  
performance.



Synchronous  
Single-phase  
motor



BPM Motor



PSC Motor

# Solutions For Medical Applications



State of the art **motors for disinfection machines** used in hospitals, dental clinics and laboratories.

High **reliability** to withstand aggressive cleaning chemicals.

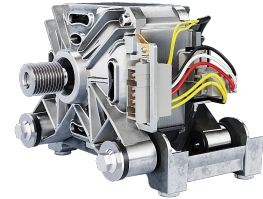


Dual-stage High Pressure Pump  
with PSC Motor

# Solutions For Professional Laundries



High efficiency and low noise **motors for professional washing machines:** high reliability.



BPM Motor



Asynchronous motor






HOME APPLIANCES BUSINESS SEGMENT

# **PORTFOLIO FOR RESIDENTIAL REFRIGERATION**

# Solutions For Residential Refrigeration



**embraco**  
**Nidec**

-  **High-quality and high-performance**
-  **Efficiency through constant innovation**
-  **Low noise**
-  **Small size solutions**
-  **Cost Competitive**

# Portfolio For Home Appliances



An innovative and efficient portfolio



FIXED-SPEED

*Reliability: Extended product life*



EL



ES



EM



EG

VARIABLE-SPEED

*Highest efficiency standards and world class low noise*



ATOM



FMS



FMX



VES



VEM



VEG

**FUTURE:**  
High performance with portfolio simplification

*Standardization to cover all applications' range*



ATOM



FMS



FMX



VES

# Fixed-speed Portfolio



## Renowned fixed-speed

Portfolio differentiated by low noise, reliability and high efficiency levels

### EM FAMILY



EM3: wide performance range

#### Best Seller

Years of expertise and non-stop evolution in more than

**100M** compressors sold in natural refrigerants

#### ENERGY EFFICIENCY

30 – 40%\* increase over recent years

### Size reduction journey with fixed-speed compressors



EG

EM3

ES



LOW GWP SOLUTIONS:  
SINCE 1994, THE PIONEER  
IN ANTICIPATING FUTURE  
CHALLENGES

# Variable-speed Portfolio

## Extra efficiency and temperature stability for refrigeration



Lower energy consumption

Up to **50%\***  
reduction



Fast Cooling

Target temperature reached faster, ensuring

**better food preservation**



Miniaturization  
**Small on size**

but large on its application range



**Low noise**



*\*in comparison to conventional on-off compressors from the market versus our most premium product family (VES). Efficiency indexes based on internal tests.*

# Miniaturization Journey

## Discover The Versatility:

Comparing dimensions across our products

50% smaller  
and 60% lighter\*

VES



Weight  
~6.8kg

FMS



Weight  
~3.5kg

ATOM



Weight  
~2.5kg

\*comparison to VES

GA BUSINESS SEGMENT

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# COMMERCIAL APPLIANCES

# Solutions For Commercial Appliances

embraco  
Nidec

Nidec  
Global Appliance



**Naturally efficient:** solutions with ultra low GWP



**Energy efficiency:** robust portfolio with low energy consumption



**Innovation:** tailor-made solutions for the system needs.



**Reliability:** extended product life



**High-quality and high performance**

# Wide Application Range for Commercial Refrigeration

embraco

Nidec  
Global Appliance



Naturally Efficient



Energy Efficiency



Reliability

FIXED-SPEED

*Extended cooling capacity*



EL



EM



EH



EG / F



NE



NT



NJ



SCROLL

VARIABLE-SPEED

*Excellence in energy efficiency*



FMX



VES



FMS



VEM



FMF



VEH



VNE



VNEX

CONDENSING UNITS

*Optimized design for better performance*



Standard portfolio



Customized solutions



BIOMA



Monoblock

ELECTRONICS

*Controllers and EC fans*

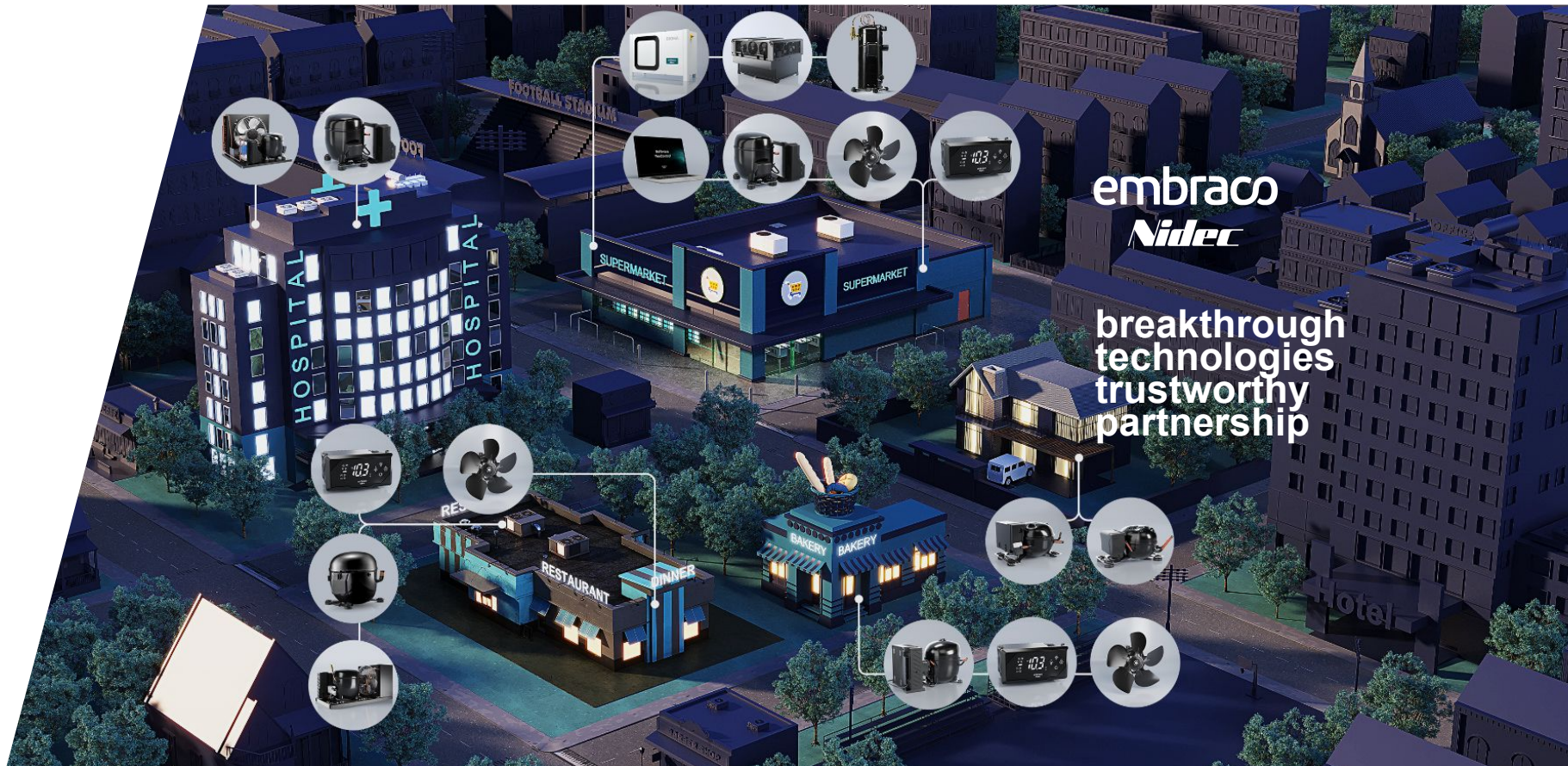


Controller



Fan motor

# Providing Everything To Be Everywhere



embraco  
**Nidec**

breakthrough  
technologies  
trustworthy  
partnership

# Compressors Highlights: EM Series

embraco  
Nidec

Nidec  
Global Appliance

## The World's Best Selling Compressors



*Ideal for several applications*



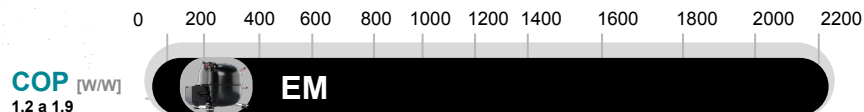
**High efficiency:** The most efficient reciprocating compressor in the market



**Wide envelope:** L/MBP Working range  $-35^{\circ}\text{C}$  /  $+10^{\circ}\text{C}$



**Smaller size:** less use of raw materials & optimized space for transportation



**Available in**



R290



R134a



R404A



R600a

Made in  
Brazil



Made in  
China



# Compressors Highlights: NEX Series

embraco  
Nidec

Nidec  
Global Appliance

## Robustness in smaller design



Ideal for several applications



High efficiency: Up to 10% more efficient\*



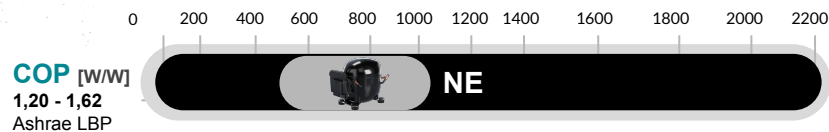
Smaller size: 10% less height and 30% less weight\*



+ 24%\* cooling capacity



Lower noise level



Available in



R290



R134a



R404A

Made in Slovakia



Made in China



\*Versus previous families

# Compressors Highlights: FMF Series

embraco  
Nidec

Nidec  
Global Appliance

## The most efficient compressor for the commercial segment



Ideal for supermarkets and special applications



Reduces energy consumption by up to 40 % in comparison to fixed (on-off) compressors



Extended cooling capacity allows reducing the quantity of SKUs



SDI\*, Dual Voltage and PFC\*\* ready



Low noise



High temperature stability

0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200

COP [W/W]  
1,7,5 a 2,0



Available in

Made in Brazil



\*Smart Drop In \*\*Power Factor Correction

# VNEX Series

## The largest reciprocating variable speed compressor in the market



Ideal for supermarkets and special applications



embraco  
Nidec

Nidec  
Global Appliance



Enhanced cooling capacity covering up to 30cc fixed speed



Pioneers in the creation of large VCC reciprocating compressors



SDI, Dual Voltage, PFC and GFCI ready



Low noise



High temperature stability

0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200

COP [W/W]  
1,60 a 1,84  
Ashrae LBP



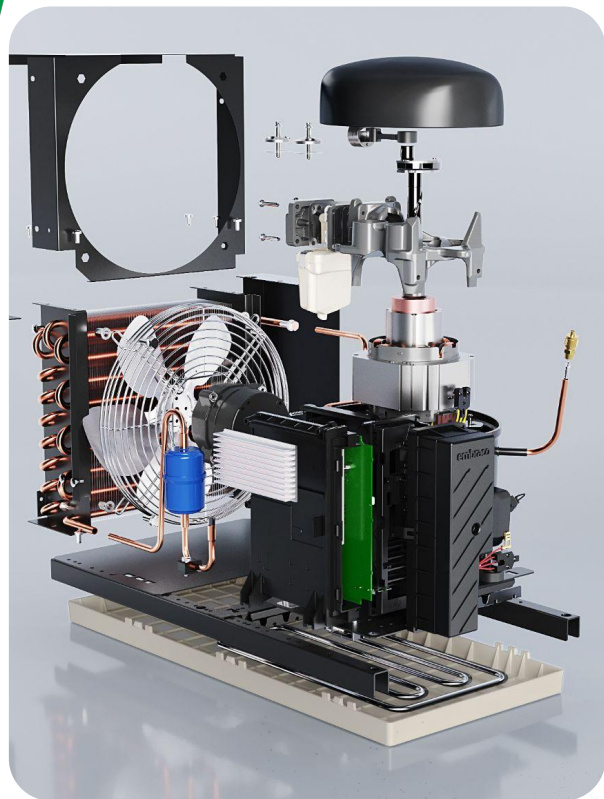
Available in



Made in Slovakia



# Embraco Original Cooling Solutions



Complete portfolio for a diverse range of applications



Customization possibilities according to customer needs



Optimized condenser and compressor project for **improved performance and reliability**



With approved options for the use of **natural refrigerants**



*All components feature Embraco quality*

# Condensing Units And Monoblocks

## Complete compressor range to meet every solutions need

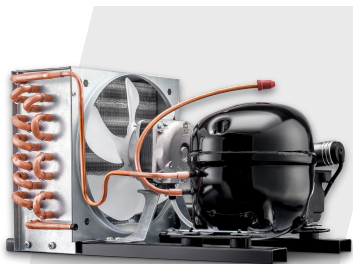


Power (HP)

1/10 HP

2 HP

13 HP



Standard  
portfolio



Customized  
units



EDP Portfolio



Monoblock



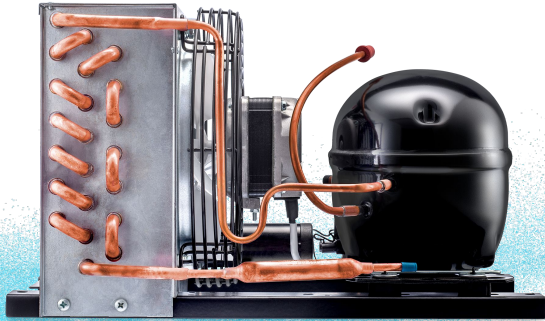
Bioma

# Condensing Units: Standard Portfolio

embraco  
Nidec

Nidec  
Global Appliance

## Reliable portfolio of cooling solutions



*Covering multiple applications*



Cold room



Display cases

**LESS COMPLEXITY:** complete pre-assembled high pressure side solution simplifies production process and maintenance.



Customization capabilities: standard portfolio covering a wide range of applications.



Optimized condenser-compressor design leading to improved performance and reliability.



Approved for natural refrigerants use

# Condensing Units: EDP Portfolio



## EDP units: high efficiency in a compact and modular design



*Main applications: Food Service*



Removable evaporation tray with stainless steel hot-loop to speed up evaporation



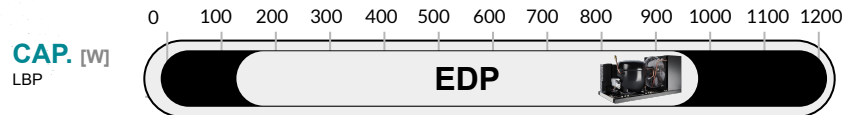
Designed for easy replacement of components



Easy mounting of the compressor using snap-on fasteners



Customizable: compact, inverter and plus versions



Available in



R290



R134a



R404A

Made in Brazil

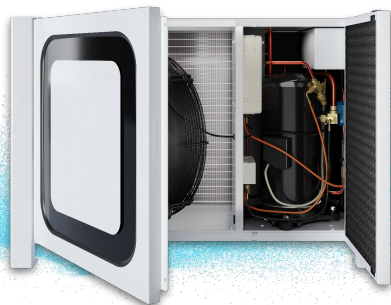


# Condensing Units: Bioma

embraco  
Nidec

Nidec  
Global Appliance

## The world's quietest condensing unit in its capacity range



*Main applications*



**Silent:** with a robust design that absorbs vibrations (models emit from 36 to only 28 dB)



**Robust design:** Stackability and longitudinal airflow

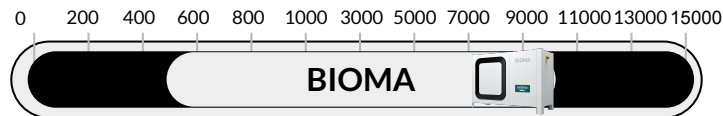


Easy access to all internal components



High-efficiency compressors with multiple refrigerant implementation

REF.  
CAP. [kW]



Available in

R452A  R449A  R513A

Made in Slovakia



# Sync It All portfolio

## No one controls Embraco better than Embraco

### Embraco Sync

It works **connected to You Control** and **manages the whole system** for an **optimized performance**.

### Variable Speed

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

**Optimized performance, less energy consumption and set up time reduction from weeks to days.**



### Embraco AIR

With an electronic motor, the fan is **energy efficient** and works with **single, multi or variable speed**.

The exclusive design allows **flexible assembly and fixation**.

### YouControl

An easy interface that allows **you** to define the system's parameters, with an automatic tuning feature.



# Scroll For Refrigeration

embraco

**Nidec**  
Global Appliance



Main applications

## Food Storage



Cold Rooms

Multi deck reach ins

## Cooling Tanks



Milk Cooling Tank

## Remote Systems



Racks



## Multi refrigerant platform

HFC: R404A, R448A, R449A, R452A, R134a, R450A, R513A



Released options for **new low GWP options: R290 and A2Ls** (R455A, R454C, R454B, R32) & backward compatibility with HFCs



**Versatile solution:** Liquid and vapor injection for low temperature applications for improved performance.

1/2 3/4 1 1 1/2 2 4 6 8 10 12 35

Comm. Ref [HP]

SCROLL

GA BUSINESS SEGMENT

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# Climate Technology

# U.S. Motors® Brand

**Nidec**  
Global Appliance

One of the oldest and most trusted brands in the motor industry, recognized worldwide as **the mark of leadership and technological innovation**

U.S. MOTORS brand encompasses a complete line of general and special purpose residential and commercial motors for a wide variety of applications.



Residential



Commercial

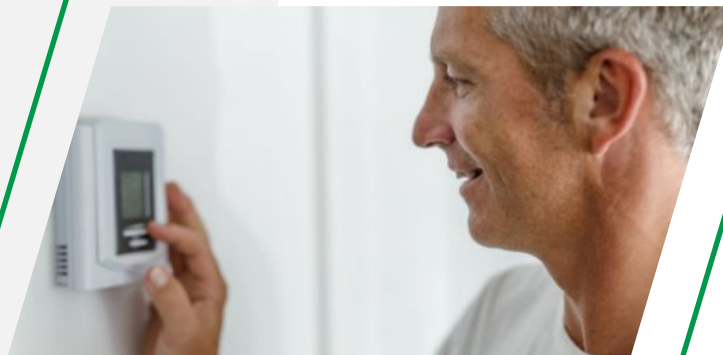


# Background

## HVAC

### Tradition and Experience

With roots dating back to 1908, our motor brands are leaders in the North American market, offering a full complement of induction or EC motors designed for single or three phase applications.



# Main Attributes

## Heating, Ventilation and Air Conditioning (HVAC)

Get to know the main attributes of our portfolio of components for the HVAC industry:



Technology & Innovation



Reliability



Low lead time



Rely on US

# Rescue® Motors Brand

The **RESCUE®** line of HVAC motors is part of the U.S. **MOTORS®** brand product family. Ask for **RESCUE®**, The **Ultimate Truck Stock Motor™**.



## Premium brand

Different technologies:  
**ECM: 85% EFFICIENCY**  
*higher cost / premium material inside*  
**PSC: 60% EFFICIENCY**  
*price fighting motors*



# Portfolio To Serve All OEM Motor Needs

## Commercial



140 Frame & Larger | 3-PH



56 Frame 1-PH, 3-PH



5.5" PSC



PEP High Eff. PSC

## Induction Motors

## ECM



PerfectSpeed Constant CFM



SelectTech Constant Torque



EcoApex 48



EcoApex 56 Frame

## Heat Pump & Condensing Unit



4.8" PSC



5.5" PSC



PEP High Eff. PSC



EcoApex 48

## Furnace



Draft Inducer



PerfectSpeed Constant CFM



SelectTech Constant Torque



Ecotech

## Air Handler



PerfectSpeed Constant CFM



SelectTech Constant Torque



RESCUE Ecotech

CLIMATE TECHNOLOGY BUSINESS SEGMENT

**SCROLL COMPRESSORS FOR  
REFRIGERATION, HEATING AND  
AIR-CONDITIONING**

# Scroll Portfolio Main Features

embraco

**Nidec**  
Global Appliance



**Wide range of capacities, from 1.2HP to 35Hp**, for all main applications: **refrigeration, air conditioning and heating**

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**High reliability: Internal overload protector (OLP) & dual scroll compliance** for better liquid management and performance

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**High energy efficiency:** Liquid & vapor injection for wider LBP (low back pressure) envelope & improved system performance

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**Multi-refrigerant:** platform approved for multiple HFCs (**R410A, R404A and others**) and ready for new solutions - R290 & A2L (R455A, R454C, R454B, R32)

# Scroll For Refrigeration

embraco

**Nidec**  
Global Appliance



Main applications

Food Storage



Cold Rooms

Multi deck reach ins

Cooling Tanks



Milk Cooling Tank

Remote Systems



Racks



**Multi refrigerant platform**

HFC: R404A, R448A, R449A, R452A, R134a, R450A, R513A



Released options for **new low GWP options: R290 and A2Ls** (R455A, R454C, R454B, R32) & backward compatibility with HFCs



**Versatile solution:** Liquid and vapor injection for low temperature applications for improved performance.

Comm. Ref [HP]

1/2 3/4 1 1 1/2 2 4 6 8 10 12 35

SCROLL

# Scroll For Air-Conditioning

embraco

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Global Appliance



Main applications

Residential

Commercial



Large Splits



Ducted / Central



Packaged systems (rooftop)



Chiller



Available for Air cooled and water cooled applications in R410A



Released options for new low GWP options: R32, R454B and R290



Vapor injection available for improved system performance

Comm. Ref [HP]

1/2 3/4 1 1 1/2 2 4 6 8 10 12 35

SCROLL

# Scroll For Heating

embraco

**Nidec**  
Global Appliance



**Main applications**

**Residential**

**Commercial**



Space heating  
- Air to Air (direct)  
- Air to Water



Pool heating



Agriculture (dryers and maturing chambers)



Air Chiller



Available for R134a and R410A



Released options for new low GWP options R290



Available for high temperature applications (R515B & R1233zd)



Vapor injection available for improved system performance

1/2 3/4 1 1 1/2 2 4 6 8 10 12 35

Comm. Ref [HP]

SCROLL

**For an in-depth look about  
our company and solutions,  
follow our pages:**



The Nidec logo is rendered in a bold, italicized, green sans-serif font. The letters are closely spaced, and the 'i' has a distinct dot. The entire logo is centered horizontally on the page.

***Nidec***

**Global Appliance**