

## Case Study

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NEX Application test for  
Kitchen Freezer

Marketing-Beijing

June 2021

# We are Nidec Global Appliance, a global partner for home and commercial appliances industries



**HQs:** Joinville (Brazil) and Pordenone (Italy)



**13** manufacturing plants and **4** business offices across 9 countries



**7 R&D Centers** worldwide and **500+** engineers



**+12,000** employees



Annual production capacity of **80 million** motors and compressors



**90 countries** served by our products



## Home Appliances

Solutions for Refrigerators  
Washing Machines,  
Dishwashers and Dryers.



**Nidec**



**embraco**  
**Nidec**



## Commercial Appliances

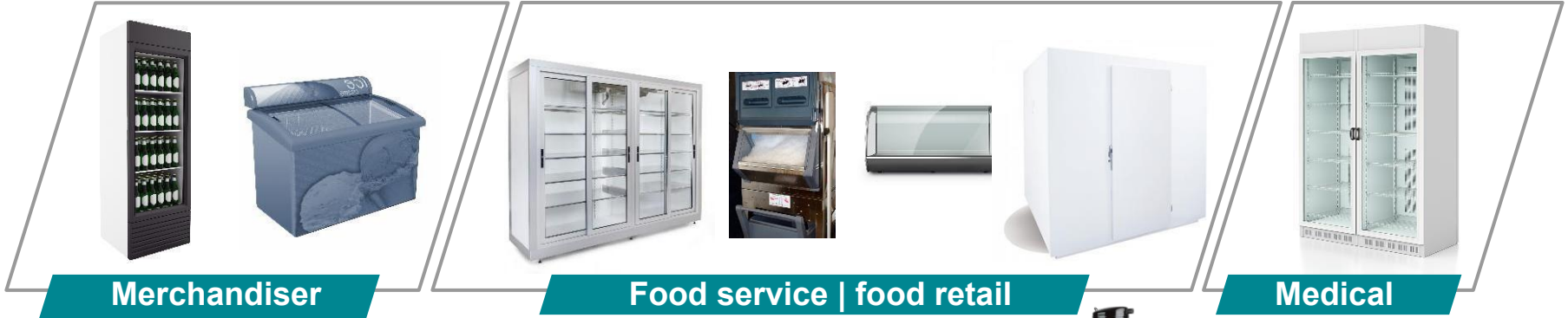
Compressors and  
Condensing Units for  
Refrigerators and Cooling  
Systems.



**embraco**  
**Nidec**



# Embraco portfolio for commercial refrigeration



**Merchandiser**

**Food service | food retail**

**Medical**

**Fixed Speed**



EM



F



NE



EMF



INE



INI



NJ



SCROLL



NE



NT



NJ

**Variable Speed**



FMF



FMX



VNE



FMF



VNE



FMX



VNE



FMF

**Condensing Units / systems**



Cond. Unit



Cond. Unit



Plug n' cool



Falcon

Bioma

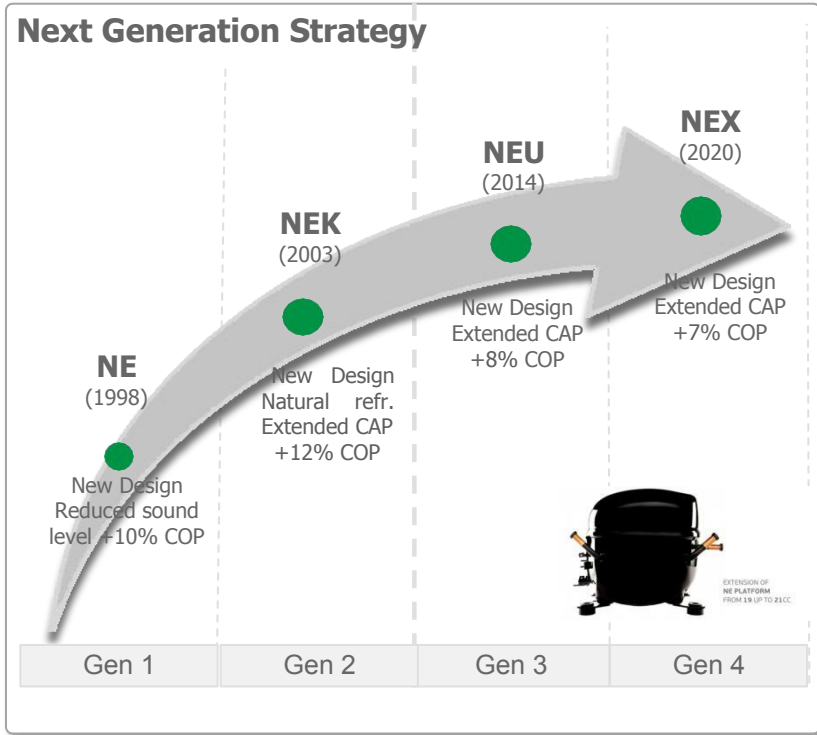


Cond. Unit



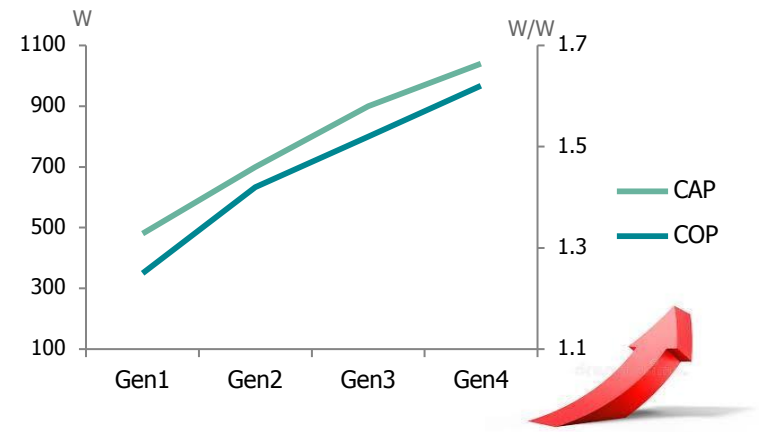
**RECIPROCATING: 2-38CC | SCROLL: 2-13HP AVAILABLE FOR LBP, MBP, HBP APPLICATIONS**

# Energy Efficiency Evolution



### Performance/ COP

	Gen 1	Gen 2	Gen 3	Gen 4
<b>CAP max (w)</b>	Up to 480	Up to 700	Up to 900	Up to 1040
<b>COP (w/w)</b>	1.25	1.42	1.52	1.62



# NEX – Extension of NE platform from 19 to 21cc



**+24% Cooling Capacity**



HIGH  
EFFICIENT

**+7% More Efficiency**



**25mm smaller & 30% lighter\***



**Robust and Reliable**



**Lower Noise Level**  
on the system\*

# Case study | System & suggestions

## System information

Application: Food service ( Kitchen refrigeration)

End use: Export to USA market

Appliance	MCF8703GR
Volume	1200L
Refrigerant	R290/150g
Compressor 1	NEU2168U
Compressor 2	NEX4170U
Compressor 3	NEX4180U



# NEX platform

## Startability

Original system with NEU2168U can not start in 115V at ambient of 43°C. starting at 127V

- System with NEX4180U can start at 115V without any tripping.
- System with NEX4170U can start at 115V without any tripping.

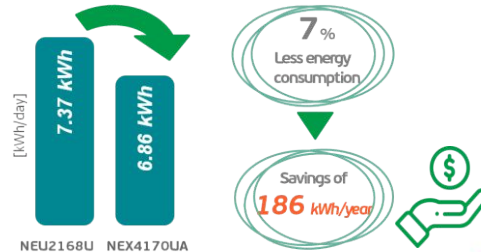
Model	Start	Peak cond. temp.	Start Voltage
NEU2168U	✘	-	115V (Ambient 43°C)
	✔	66.0°C	127V
NEX4170U	✔	64.0°C	<115V
NEX4180U	✔	63.5°C	<115V

## Energy consumption

NEX4170U has the highest COP vs NEU model due to new compressor design.

Energy saving for NEX4170U :

- At 25°C Amb.: +7.3% w/o defrost / +7% w/ defrost
- At 32°C Amb.: +10% w/o defrost / +7% w/ defrost

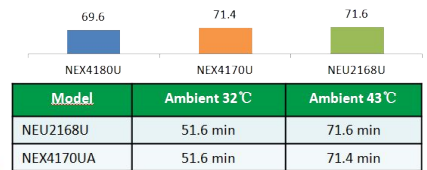


## Pull down

NEX4180U has the lowest pull down but restricted due to high condensing temp. & heat exchanger

- At ambient 32°C, the three models are in the same level limited by heat exchanger capacity.
- Increasing charge or replacing for higher capacity condenser can further reduce pull down with NEX4180U.

Time to reach -18°C (43°C) (min.)



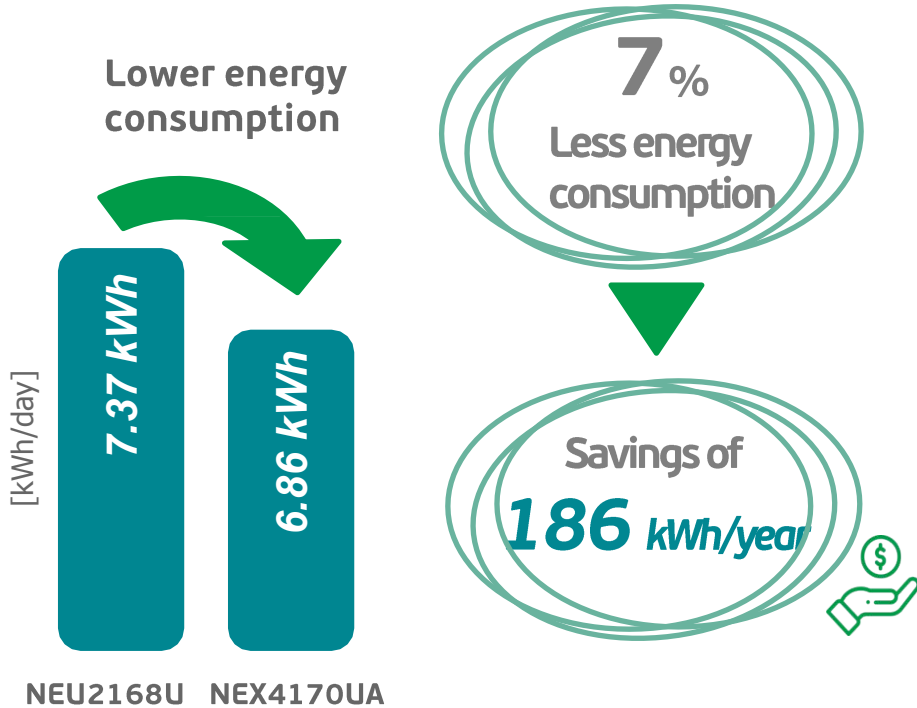


# Startability comparison – NEX vs. NEU

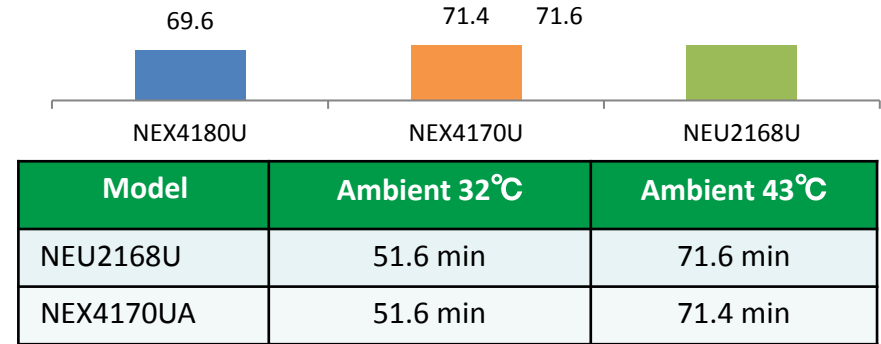
Model	Start	Peak cond. temp	Start Voltage
NEU2168U		66.0°C	127V
NEX4170U		64.0°C	<115V
NEX4180U		63.5°C	<115V

1. Original system with NEU2168U starting at **127V** with peak condensing temp at **66°C**.
2. System with NEX4180U can start at **115V** without any tripping, peak condensing temp is **63.5°C**.
  - For start phase, NEX4180U is better than NEU2168U.
3. System with NEX4170U can start at **115V** without any tripping, peak condensing temp is **64°C**.
  - For start phase, NEX4170U is better than NEU2168U.

# Pull down tests & Energy consumption comparison



Time to reach -18°C ( 43°C (min.)



1. For faster pull down in high ambient (43°C) NEX4180U is the best option due to larger displacement which can be reached with more refrigerant charge or more efficient Heat exchanger.
2. At ambient 32°C, the three models are at the same level due to restriction of heat exchanger.

# Certifications

