

NEX Application test for Kitchen Freezer

2021

embraco
Nidec



GA Platform details

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.



Commercial Appliances

Compressors and
Condensing Units for
Refrigerators and Cooling
Systems.



Embraco portfolio for commercial refrigeration



Merchandiser

Food service | food retail

Medical

Fixed Speed



Variable Speed

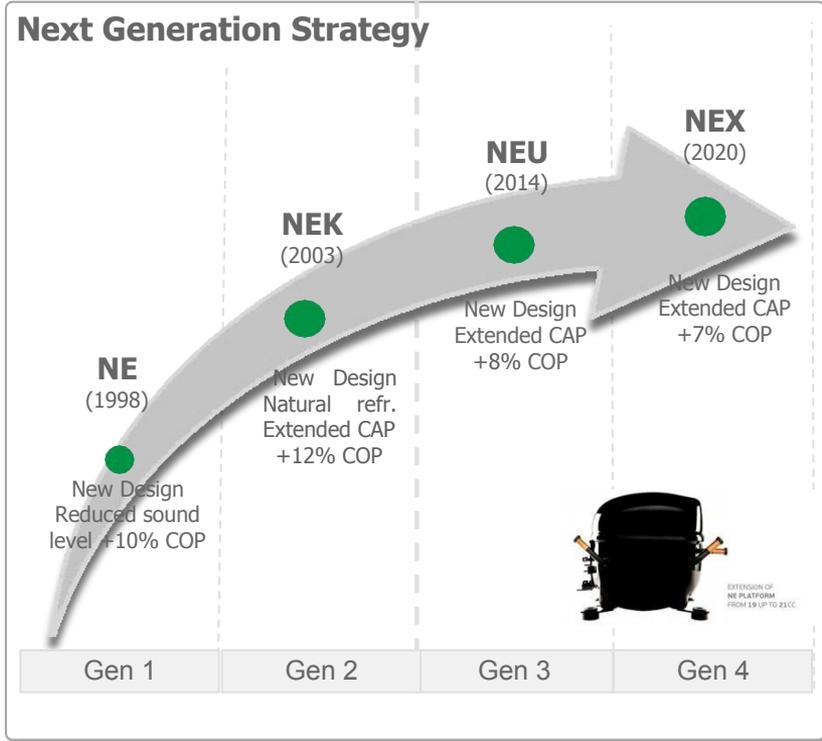


Condensing Units / systems



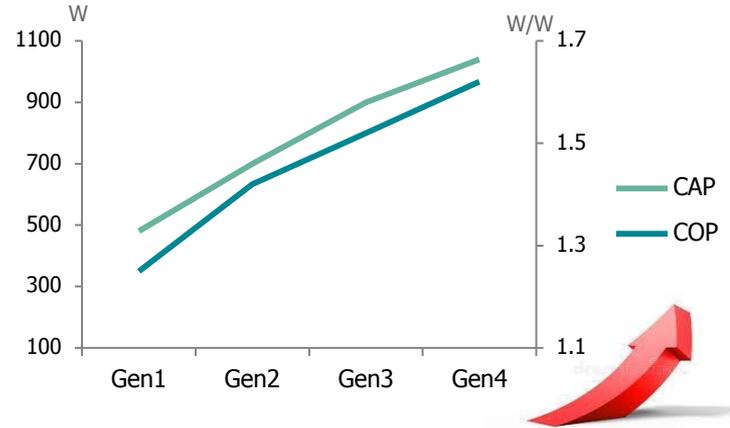
RECIPROCATING: 2-38CC | SCROLL: 2-13HP AVAILABLE FOR LBP, MBP, HBP APPLICATIONS

Energy Efficiency Evolution



Performance/ COP

	Gen 1	Gen 2	Gen 3	Gen 4
CAP max (w)	Up to 480	Up to 700	Up to 900	Up to 1040
COP (w/w)	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



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.

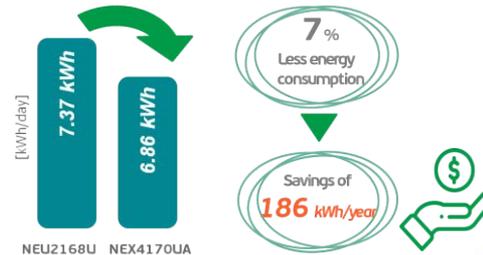
Model	Start	Peak cond. temp	Start Voltage
NEU2168U	✘	-	115V (Ambient 43°C)
	✔	66.0°C	127V
NEX4170U	✔	64.0°C	<115V
NEX4180U	✔	63.5°C	<115V

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

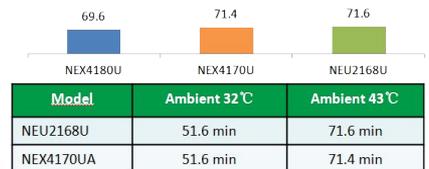


Pull down

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.)

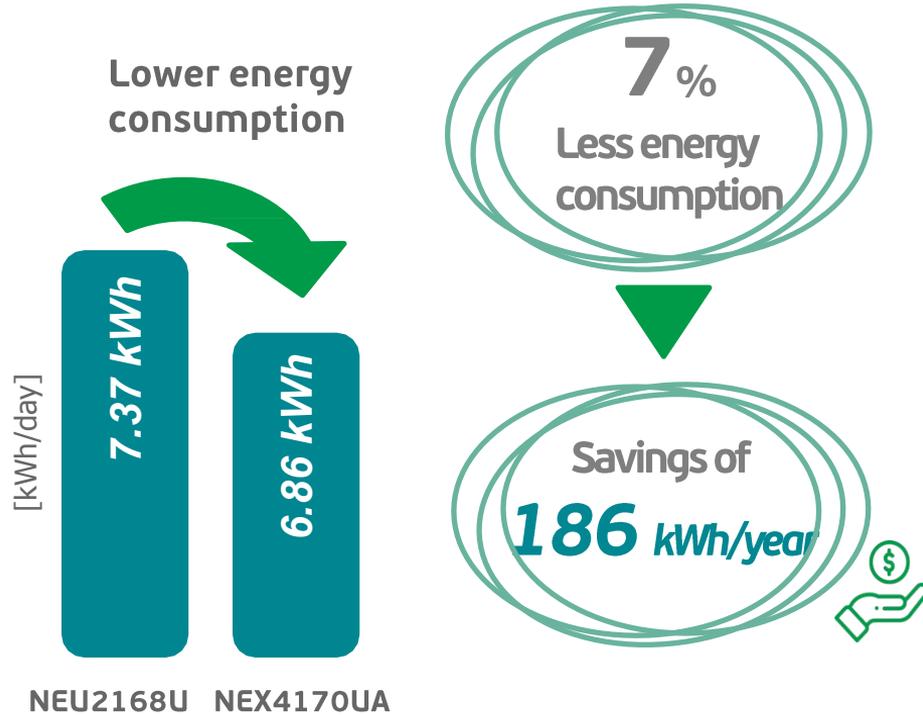


Startability comparison – NEX vs. NEU

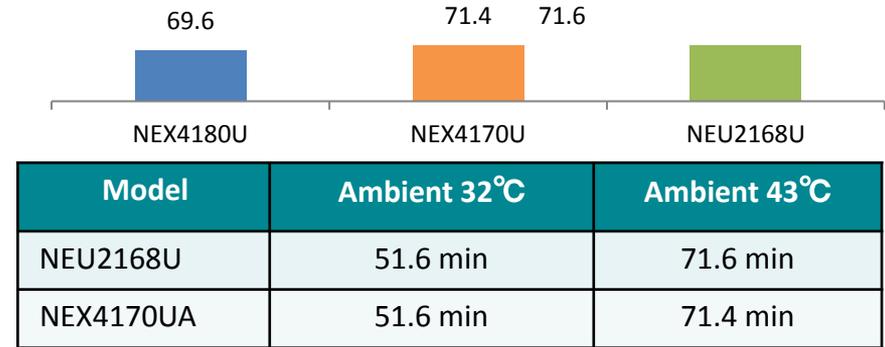
Model	Start	Peak cond. temp	Start Voltage
NEU2168U		66.0°C	127V
NEX4170U		64.0°C	<115V
NEX4180U		63.5°C	<115V

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

