

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.

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Commercial Appliances

Compressors and
Condensing Units for
Refrigerators and Cooling
Systems.

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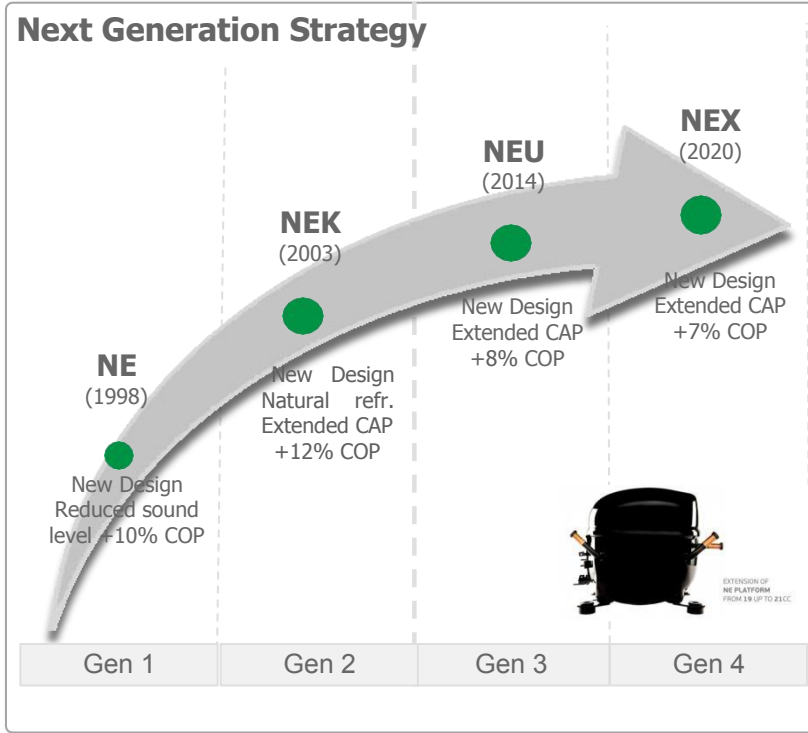


Embraco portfolio for commercial refrigeration

	Merchandise		Food service food retail							Medical		
Fixed Speed												
	EM	F	NE	EM _F	NE	INI		NJ	SCROLL	NE	NT	NJ
Variable Speed												
			FMF	FMX	VES	FMF		VNE		FMX	VNE	FMF
Condensing Units / systems												
	Cond. Unit		Cond. Unit		Plug n' cool	Falcon	Bioma	Cond. Unit				

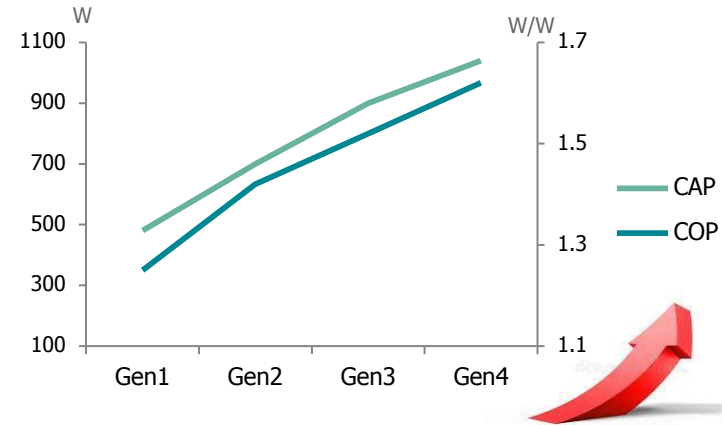
RECIPROCATING: 2-38CC | SCROLL: 2-13HP AVAILABLE FOR LBP, MBP, HBP APPLICATIONS

Energy Efficiency Evolution



Performance/ COP

	Gen 1	Gen 2	Gen 3	Gen 4
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



+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.

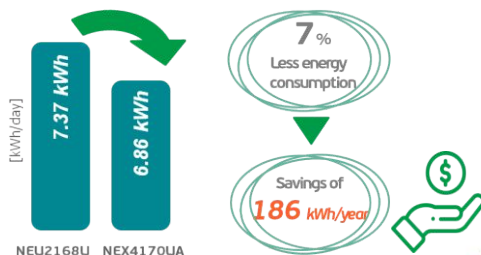
Model	Start	Peak cond. temp.	Start Voltage
NEU2168U	✗	-	115V (Ambient 43°C)
	✓	66.0°C	127V
NEX4170U	✓	64.0°C	<115V
NEX4180U	✓	63.5°C	<115V

Energy consumption

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

Energy saving for NEX4170U :

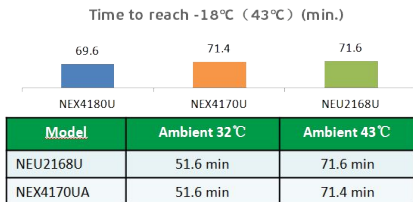
- At 25°C Amb.: +7.3% w/o defrost / +7% w/ defrost
- At 32°C Amb.: +10% w/o defrost / +7% w/ defrost



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.

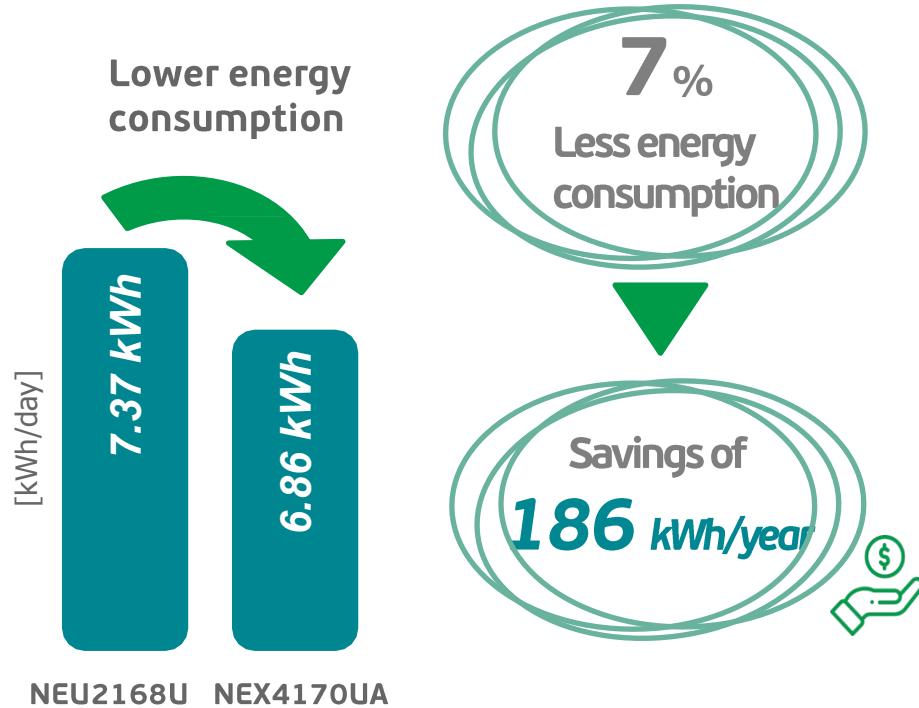


Startability comparison – NEX vs. NEU

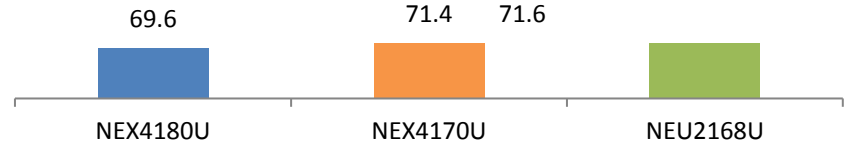
Model	Start	Peak cond. temp	Start Voltage
NEU2168U		66. 0°C	127V
NEX4170U		64. 0°C	<115V
NEX4180U		63. 5°C	<115V

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.)



Model	Ambient 32°C	Ambient 43°C
NEU2168U	51.6 min	71.6 min
NEX4170UA	51.6 min	71.4 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

